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Edges in Syntax

Scrambling and Cyclic Linearization

HEEJEONG KO
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First Edition published in 2014
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General preface

The theoretical focus of this series is on the interfaces between subcomponents of the human grammatical system and the closely related area of the interfaces between the different subdisciplines of linguistics. The notion of ‘interface’ has become central in grammatical theory (for instance, in Chomsky’s Minimalist Program) and in linguistic practice: work on the interfaces between syntax and semantics, syntax and morphology, phonology and phonetics, etc. has led to a deeper understanding of particular linguistic phenomena and of the architecture of the linguistic component of the mind/brain.

The series covers interfaces between core components of grammar, including syntax/morphology, syntax/semantics, syntax/phonology, syntax/pragmatics, morphology/phonology, phonology/phonetics, phonetics/speech processing, semantics/pragmatics, and intonation/discourse structure, as well as issues in the way that the systems of grammar involving these interface areas are acquired and deployed in use (including language acquisition, language dysfunction, and language processing). It demonstrates, we hope, that proper understandings of particular linguistic phenomena, languages, language groups, or interlanguage variations all require reference to interfaces.

The series is open to work by linguists of all theoretical persuasions and schools of thought. A main requirement is that authors should write so as to be understood by colleagues in related subfields of linguistics and by scholars in cognate disciplines.

The notion of cyclicity has been fundamental since the 1960s in generative grammar, requiring syntactic rules to apply within cyclic domains, usually identified as clauses and noun phrases. Over the years, however, how cyclic domains interact with the structures that embed them became equally important and wide-ranging theories of movement relations came to depend on this. Chomsky’s suggestion in the early 2000s that cyclic domains have the syntactic properties they do because they are points where syntactic information connects with semantic and phonological systems provided a new set of research questions about these domains and their role at the interfaces. In the current volume, Heejeong Ko addresses some of these questions, arguing that cyclic domains can be identified by a fundamentally semantic notion (the subject-predicate relation) but that they also govern the linear order of elements. Her proposals throw new light on the intricate connection between semantic predication, syntactic locality, and linear order.

David Adger
Hagit Borer
Preface

I first started to look at the syntax of edges when I wrote my syntax term paper at MIT in 2003. There are still many questions left for future research, but I believe that this is a good time to ‘Spell-out’ my thoughts so far on syntactic edges.

Some ideas developed in this book have their origins in my MIT doctoral dissertation, ‘Syntactic edges and linearization’ (Ko 2005a). After I finished my thesis, however, a number of interesting proposals on cyclic syntax were published, and I have naturally been influenced by the development of the field. In writing this book I have incorporated novel ideas on cyclic syntax, and subsequently the book has turned into a substantially different work from my thesis both in fundamental content and in organization. Most notably, this book adopts the research program that a predicational structure in general constitutes a Spell-out domain. Such a possibility was not considered in any depth when I wrote my thesis. The idea that a predicational structure matters in cyclic Spell-out was first inspired by a series of special lectures by Marcel den Dikken given at the 2007 Seoul International Conference on Generative Grammar, and it has become a major part of this book. Chapters 1, 4, and 5, in particular, extensively discuss this issue.

In my previous works on floating quantifiers (Ko 2005a; 2007; Ko and Oh 2012), I have suggested that some floating quantifiers must be considered as adnominal, whereas some must be categorized as adverbial. I remained silent, however, about which factors might contribute to the different types of floating quantification. In this book, I provide some principled reasonings on how adnominal floating quantifiers differ from adverbial floating quantifiers in their syntax and semantics. In Chapter 3, in particular, I have incorporated Fitzpatrick’s (2006) theory of floating quantification and É. Kiss’s (2010) theory of focus into my proposals on syntactic edges and linearization. In my previous works on secondary predication (Ko 2005a; 2011), I had not considered the role of anti-locality for linearization. In this book, I explore the issue in depth and derive an interesting correlation between predicate fronting and order-preservation effects within non-primary predicational domains. The discussion on Subject-to-Object Raising and Sentential Predication is also newly added. Chapters 3, 4, and 5, in particular, are composed of new material that presents my perspectives on these issues.

An earlier version of parts of Chapter 2 (sections 2.1–2.4) appeared in Linguistic Inquiry 38 as a paper entitled ‘Asymmetries in scrambling and Cyclic Linearization’ (Ko 2007), and parts of section 4.2 and sections 5.1–5.3 are based on my article ‘Predication and Edge effects’, which appeared in Natural Language and Linguistic Theory (Ko 2011). In this book, however, I present a perspective that derives the
peculiar properties of subject scrambling and object scrambling discussed in Ko (2007; 2011) from a general proposal regarding syntactic edges. I also extend the empirical coverage of the core proposal to sub-extraction in Russian in Chapter 2. In addition, I have incorporated into Chapter 5 some discussion on ditransitive verbs which is not available in Ko (2011). The general discussion of cyclic syntax has also undergone extensive revisions so that the book may provide a better theoretical backdrop for the reader. This book includes new chapters providing critical reviews on current debates regarding cyclic Spell-out and evaluating my proposals against other general theories of cyclic syntax (see Chapters 1 and 6).

This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2007-361-AL0016). At various stages, helpful discussions with colleagues and scholars at conferences have influenced development of the research reported here. I wish to thank in particular: audiences at Ling-Lunch (MIT), Approaching Asymmetry at Interfaces Workshop (Université du Québec à Montréal), the 78th and 79th LSA Annual Meeting, WCCFL 23 (UC Davis) and WCCFL 26 (UC Berkeley), the 2004 Linguistic Society of Korea International Conference (Yonsei University), the Workshop in Altaic Formal Linguistics 2 (Boğaziçi University), the Japanese/Korean Workshop: the COE project and the JSPS project (Kyoto University), the Workshop on SOV Variation (Syracuse University), the Workshop on Raising and Control (Harvard University), the 11th Harvard International Symposium on Korean Linguistics (Harvard University), CUNY Supper (CUNY Graduate Center), the Workshop on Interphase (University of Cyprus), the 9th Seoul International Conference on Generative Grammar (Kwang-Woon University), the 7th GLOW in Asia (EFL-Univ, Hyderabad), Japanese/Korean Linguistics 19 (University of Hawaii, Manoa), and the Spring Conference of the Korean Generative Grammar Circle in 2011 (KyunghEE University).

I have benefited tremendously from many people in developing this work. I would like to express once again my gratitude to my thesis committee: David Pesetsky, Danny Fox, Shigeru Miyagawa, and Norvin Richards. Their support, encouragement, and guidance have provided me with key inspiration and questions that helped me start this project and continue to pursue it. I am also deeply indebted to Marcel den Dikken for his helpful comments on my research at various stages of this work. Marcel’s insightful comments and lectures have played a crucial role in reshaping my thoughts on phases and cyclicity in syntax reported in this book. I am also grateful to those who have given me helpful feedback and input through occasional meetings or correspondence. Especially, thanks to Hee-Don Ahn, Hiroshi Aoyagi, Cedric Boeckx, Željko Bošković, Seth Cable, Sungeun Cho, Daeho Chung, Justin Fitzpatrick, Heidi Harley, Nobuko Hasegawa, Hajime Hoji, Ki-Sun Hong, Hakyung Jung, Yeun-Jin Jung, Jong-Bok Kim, Kwang-sup Kim, Ranghyeyun Kim, Sun-Woong Kim, Richard Larson, Chungmin Lee, Martha McGinnis, Seungho Nam, Eunjeong Oh, Myung-Kwan Park, Mamoru Saito, Peter Sells, Peter Svenonius, Koichi Takezawa, Lisa
Travis, John Whitman, Hyun-Kwon Yang, Hang-Jin Yoon, James Hye-Suk Yoon, and Maria Luisa Zubizarreta, among many others. Special thanks also go to David Adger and two anonymous reviewers of this book. I believe that the organization and content of the book have been greatly improved thanks to their comments and critical reviews. Thanks, too, to Daniel Edmiston, Chorong Kang, Hyondok Pahk, and Saetbyol Seo for their editorial help during preparation of the book manuscript.

This book would not exist without the generous support of my family. I thank my husband, Joon Yong, my son, Jungwon, and baby girl, Suh-yeon, for their love and patience. Finally, my deepest gratitude goes to my parents for their everlasting love and support. This work is dedicated to them.

Heejeong Ko
Seoul, October 2013
### List of abbreviations

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<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>adjective</td>
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<tr>
<td>Abs</td>
<td>absolutive</td>
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<tr>
<td>Acc</td>
<td>accusative</td>
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<td>adnFQ</td>
<td>adnominal floating quantifier</td>
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<tr>
<td>Adv</td>
<td>adverb</td>
</tr>
<tr>
<td>advFQ</td>
<td>adverbial floating quantifier</td>
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<td>agreement head</td>
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<td>AGRO-P</td>
<td>object agreement phrase</td>
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<td>adjectival phrase</td>
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<td>APPL-E</td>
<td>event applicative head</td>
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<td>applicative phrase</td>
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<tr>
<td>C</td>
<td>complementizer</td>
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<tr>
<td>Cl</td>
<td>classifier</td>
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<tr>
<td>CL</td>
<td>Cyclic Linearization</td>
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<td>classifier phrase</td>
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<td>copula</td>
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<td>complementizer phrase</td>
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<td>ECM</td>
<td>Exceptional Case Marking</td>
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<td>Edge Generalization</td>
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<td>EPP</td>
<td>Extended Projection Principle</td>
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<td>FNQ</td>
<td>floating numeral quantifier</td>
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<td>focus head</td>
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<td>focus phrase</td>
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<td>functional phrase</td>
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<td>future tense</td>
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<td>high applicative phrase</td>
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<td>Hon</td>
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<td>internal argument</td>
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<td>indirect object</td>
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<td>inflectional phrase</td>
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<td>Japanese</td>
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<td>Korean</td>
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<td>low-adverb</td>
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<td>Lexical Functional Grammar</td>
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<td>mood</td>
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<td>MNC</td>
<td>Multiple Nominative Construction</td>
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<td>negation</td>
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<td>nP</td>
<td>little n phrase</td>
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<td>NP</td>
<td>noun phrase</td>
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### List of abbreviations

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<th>Definition</th>
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<td>nonpast</td>
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<tr>
<td>NQ</td>
<td>numeral quantifier</td>
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<tr>
<td>NumP</td>
<td>numeral phrase</td>
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<tr>
<td>Obj/O</td>
<td>object</td>
</tr>
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<td>ODP</td>
<td>object-oriented depictive phrase</td>
</tr>
<tr>
<td>P</td>
<td>preposition/postposition</td>
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<tr>
<td>PASS</td>
<td>passive</td>
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<td>past tense</td>
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<td>Proper Binding Condition</td>
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<td>perfective</td>
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<td>Phonological Form</td>
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<td>PIC</td>
<td>Phase Impenetrability Condition</td>
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<td>plural</td>
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<td>prepositional phrase/postpositional phrase</td>
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<td>question particle</td>
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<td>relativizer</td>
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<td>repetitive</td>
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<td>REST</td>
<td>restitutive</td>
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<td>relator phrase</td>
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<td>resultative subject</td>
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<td>SDP</td>
<td>subject-oriented depictive phrase</td>
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<tr>
<td>SING</td>
<td>singular</td>
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<tr>
<td>SOR</td>
<td>Subject-to-Object Raising</td>
</tr>
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<td>Spec</td>
<td>specifier</td>
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<td>subject of a small clause</td>
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<td>SUBJ/S</td>
<td>subject</td>
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<td>-----------------------------------</td>
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<td>tense head</td>
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<td>Top</td>
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<td>topic phrase</td>
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<td>translativ</td>
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<td>verb</td>
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<td>light verb</td>
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<tr>
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<td>transitive light verb</td>
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<td>v*P</td>
<td>transitive light verb phrase</td>
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<tr>
<td>WCO</td>
<td>Weak Cross-Over</td>
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Introduction

This book provides an in-depth discussion of cyclic syntax by examining the characteristics of syntactic edges and their interactions with linearization and movement. In particular, the book contributes to the current debate over how cyclic Spell-out affects the (re)ordering of elements in scrambling. Contrary to previous attempts to view syntactic edges as a designated escape hatch or predetermined opaque domain, I argue that the nature of syntactic edges can be derived from a conspiracy of independently motivated principles in the grammar.

In particular, this book is built on three research programs in cyclic syntax. The first one concerns the consequences of cyclic Spell-out for the linearization of syntactic structures. I argue with Fox and Pesetsky (2005a; 2005b) that syntactic structures undergo cyclic Spell-out and linearization at the PF-syntax interface. I provide a wide range of evidence for the claim that as a result of Cyclic Linearization, the linear orderings of a syntactic unit are fixed after Spell-out, as stated in (1). In doing so, I defend the claim that edges must be spelled out together with the complement, contra Chomsky’s influential claim that edges are designated escape hatches.

(1) Consequence of Cyclic Linearization (Fox and Pesetsky 2005a; 2005b)
The linear ordering of syntactic units is affected by Merge and Move within a Spell-out domain, but is fixed once and for all at the end of each Spell-out.

The second agenda concerns the domain of cyclic Spell-out. I propose that a predicational structure undergoes cyclic Spell-out and linearization, as stated in (2). My proposal in (2) has been inspired by the pioneering works of den Dikken (2006a; 2007a; 2007b) on phase extension and predication. Adapting den Dikken (2007a), I argue for the thesis that a predicational structure in general constitutes one cyclic unit in syntax. In the implementation of this idea, however, I depart from the original proposal by den Dikken (2007a) in some significant ways. Most importantly, I develop the proposal in (2) from the perspective of the Cyclic Linearization model. In this book, I attempt to establish robust theoretical and empirical challenges against Chomsky’s proposition-based phase system, which assumes that transitive vPs and CPs are the only cyclic domains.

(2) Spell-out domains (cf. den Dikken 2007a for ‘inherent phases’)
A Spell-out domain is a ‘predication’ (subject–predicate structure).

The third agenda is about locality conditions in movement. I assume with Chomsky (2000; 2001) that movement is triggered by a probe which searches and agrees with a
goal in its c-command domain. In particular, I consider the consequences of the probe-goal theory (3) for the (re)orderings of elements merged on syntactic edges. I show that under the probe-goal theory, the elements externally merged on the edge must be temporarily frozen in situ, and that this results in peculiar ordering restrictions for sub-extraction out of edges. Furthermore, I show that (sub-)extraction out of multiple edges is subject to more severe restrictions than movement out of a single edge, although both edges are accessible to movement in principle. I propose that the rigidity of syntactic edges can be captured by the interactions between the probe-goal theory (3) and the monotonicity of linearization (1) at the interface.

(3) **Probe-goal theory of movement** (Chomsky 2000; 2001)

A probe may search a goal in its c-command domain.

In this book, we will observe various types of ordering puzzle in syntactic edges. I show that sub-extraction out of syntactic edges is severely restricted in comparison to sub-extraction out of complements. Given a number of previous studies on extraction from within subject and adjunct positions, it may not be so surprising to us that syntactic edges should be opaque domains for extraction in syntax (see e.g. Boeckx 2003a; Chomsky 2008; Gallego 2007; Gallego and Uriagereka 2007; Jurka 2010; Lasnik and Saito 1992; Lohndal 2011; Müller 2010; Polinsky et al. 2013; Rizzi 2006; Stepanov 2007; Surányi 2009 for a ban on extraction out of subject domains). Crucially, however, this book does not argue for a general ban on (sub-)extraction out of edges. It is shown that sub-extraction out of syntactic edges is in principle possible, but restricted only in the domain to which the edges are externally merged.

I propose that the peculiarity of syntactic edges can be captured under a general theory of cyclic syntax developed in this book—which is a consequence of interactions of the three major factors addressed above. Specifically, the probe-goal theory of movement restricts certain types of movement out of edges: movement from an inner edge to an outer edge of the same head is impossible. I argue that this ordering restriction for syntactic edges is preserved in the later stages of derivations due to cyclic Spell-out and linearization at PF. I furthermore argue that the edges of a predicational structure in general show the same ordering restrictions, which can be best captured under the thesis that a predicational unit undergoes cyclic Spell-out.

Evidence for my proposal is drawn from sub-extraction and (re)ordering patterns out of edges in various types of predicational domains. This includes a primary predicational domain vP, small clause complements, infinitival complements, Sentential Predication, adjunct small clauses (subtypes of resultative phrases and depictive phrases), and hidden small clauses within a decomposed VP. I provide empirical support for my proposal by closely examining a wide range of scrambling data in Korean and Japanese (with some reference to Russian in Chapter 2). In particular, the consequences of cyclic Spell-out for (sub-)scrambling, types of quantifier floating, predicate fronting, and predicational structures are examined in this book.
This book is composed of five substantial chapters, preceded by this brief introduction and followed by a concluding remark in Chapter 6. In Chapter 1, I lay out theoretical foundations for my proposals on syntactic edges. I explain why multiple Spell-out is important in the current Minimalist Program, and discuss the three major agenda addressed in (1)–(3). I explain in what aspects the proposal based on Cyclic Linearization makes different predictions from the phase model proposed by Chomsky (2000 and subsequent works). I then consider which syntactic unit must be considered as a proper cyclic domain. I critically review the proposition-based model by Chomsky, and present my own perspective. I propose that a general predicational structure undergoes cyclic Spell-out and linearization. In this chapter, I also introduce a probe-goal theory of movement by Chomsky (2000; 2001), and consider its consequences for the linearization of multiple edges. The chapter presents various types of prediction that follow from the research programs in (1)–(3) at an abstract level, which lead to my main arguments in the following chapters.

In Chapter 2, I investigate the consequences of Cyclic Linearization for syntactic edges in primary predicational domains, with special attention to scrambling and quantifier stranding. I start the discussion by introducing a long-standing puzzle concerning a subject–object asymmetry in licensing floating numeral quantifiers in Korean and Japanese, which I call the Subject Puzzle. I show that previous accounts that rely on a mutual c-command condition (Miyagawa 1989) or a ban on subject scrambling (Saito 1985) do not solve the puzzle properly. I propose that the Subject Puzzle is derived from a general ordering restriction predicted for syntactic edges. In particular, I show that interactions of Cyclic Linearization and constraints on domain-internal movement explain the Subject Puzzle. This argument is further supported by a variety of other asymmetries between subject scrambling and object scrambling. I extend my claims for Korean to scrambling in Japanese and sub-extraction in Russian. Important theoretical challenges against the model based on the Phase Impenetrability Condition (Chomsky 2000) are also discussed. Concluding the chapter, I show that the puzzles concerning sub-extraction out of a subject can be subsumed under one and the same generalization concerning syntactic edges—the Edge Generalization (EG).

In Chapter 3, I investigate interactions between underlying constituency and orderings at syntactic edges. Developing the theory of floating quantification proposed by Fitzpatrick (2006), I argue for a hybrid approach to floating quantifiers: some floating quantifiers are adnominal and some are adverbial in base structure. It is shown that adverbial quantifiers show different distributions from adnominal quantifiers at syntactic edges, and an apparent violation of the EG can be explained by the hybrid approach. I also discuss how different types of floating quantification can be systematically correlated with a theory of exhaustive focus proposed by É. Kiss (2010). I argue that adverbial floating quantifiers carry an exhaustive reading because they are externally merged in a focus projection outside a verbal domain and bind a
variable inside the vP. On the basis of this proposal, I analyze how and why adverbial quantifiers behave differently from adnominal quantifiers in their syntax and semantics.

In the next two chapters, I turn to the consequences of Cyclic Linearization for non-primary predicational domains. Chapter 4 concerns ordering puzzles in complement predicational domains such as small clauses, Raising/Control infinitivals, and Sentential Predication. In particular, I focus on the distribution of the object which is interpreted as the subject of an embedded predicational domain. It is shown that the object may not undergo scrambling freely. Rather, the distribution of the object is crucially affected by the argument structure of the main verb and embedded clauses. When the object is externally merged as the subject of the complement, the distribution of the object shows the same pattern as the subject in vP. Strong order-preservation effects are observed for the object merged on the edge of an embedded predicational domain. By contrast, when the object is merged as a direct object or proleptic object of the main verb, order-preservation effects seem to be lifted.

In Chapter 4, I propose that a conspiracy of various factors such as the probe-goal theory, anti-locality and cyclic Spell-out leads to extremely rigid ordering not only for the edges but also for the complement when the complement is a predicate. I argue that this proposal captures seemingly complex interactions among a null subject, predicate fronting, and quantifier floating in the complement domains. I also discuss why Cyclic Linearization provides a better solution to ordering puzzles than the alternative hypotheses based on the Proper Binding Condition (Fiengo 1977) or affixal status of inflectional morphemes in Korean (cf. Chung 2007; 2011). I then explain why adverbial floating quantifiers are not compatible with predicate fronting, contrary to the common assumption that adverbials may appear rather freely. Implications of the current proposal for the theory of Subject-to-Object Raising and Sentential Predication are also discussed, with reference to J. H.-S. Yoon’s (2007) work on Major Subjects in Korean.

In Chapter 5, I explore possible interactions between underlying predicational structure and ordering patterns at syntactic edges. In particular, I discuss ordering puzzles in adjuncts and secondary predicational domains, which include resultatives, depictives, and small clauses within a decomposed VP. The chapter starts with an observation that a resultative phrase headed by -key in Korean shows different ordering patterns from a resultative phrase headed by -ni in Japanese. I propose that this contrast can be captured by my overall proposals for syntactic edges, coupled with a theory of resultatives by Simpson (1983). It is shown that the space within a resultative phrase is so limited that neither the edge nor the complement predicate may move around within the resultative phrase, and this leads to rigid ordering patterns for resultatives. I also consider order-preservation effects in depictive domains in Korean and Japanese. It is argued that depictives are merged as an adjunct to a verbal projection both in Korean and in Japanese (supporting Koizumi
and that a null subject must be postulated within depictive phrases. This explains otherwise surprising contrasts between resultatives and depictives in terms of (re)ordering and scrambling out of their edges.

The chapter also concerns hidden predicational units within a decomposed VP. I examine interactions between the meaning of ‘again’ in Korean and Japanese and the distribution of the object. I assume that the semantic ambiguity of ‘again’ (restitutive, intermediate, and repetitive readings) must be derived from their diverse syntactic positions (see esp. Bale 2007; von Stechow 1996). I propose that hidden small clauses within a VP undergo cyclic Spell-out, and argue that this explains why the ambiguity of ‘again’ can be obtained only with certain types of orderings at the edge. My proposal for small clauses is extended to ditransitive constructions, with some interesting consequences for the possible position of applicative arguments.

In Chapter 6, I evaluate my proposals against the other influential model of cyclic syntax reviewed in Chapter 1. In particular, I consider the impact of my arguments for Chomsky’s proposition-based phase model (see esp. Chomsky 2000; 2001; 2004; 2008). I also discuss the implications of my proposal for principles in the narrow syntax such as locality in movement, scrambling, and argument structure. I then wrap up the discussion with an overall summary.

This book has been written for syntacticians at the graduate level and above as well as for theorists concerned with the syntax–phonology and syntax–semantics interfaces. This book aims to provide theoretical and empirical support for a particular combination of research programs in cyclic syntax proposed in Chapter 1, but each chapter can also be read as an independent research paper. The advanced reader may skip the first three sections in Chapter 1 that provide a theoretical background for cyclic syntax, and move straight on to the overall outlook in section 1.4.

This book employs the Yale romanization system to transliterate Korean examples (Martin 1992). The Kunrei-shiki system is used for romanization of Japanese examples. For convenience, however, long vowels in Japanese are marked by doubling short vowels instead of using the circumflex. For ease of presentation, unimportant morphological details are omitted in the glosses. Throughout the book, I indicate a dependency between a noun and its associate quantifier with boldface, and between the subject and a secondary predicate with italics (for clarification, the predicational relationship can be indirect due to the mediation of a null subject: see Chapters 4 and 5). I use the term \( np \) atheoretically to mark a nominal phrase that contains a noun and an associated quantifier. I employ the term \( np \) to emphasize my lack of commitment as to whether the DP layer is projected in all nominal projections discussed in this work. \( np \) may correspond to DP, NumP, or something smaller than DP. Nothing in this book hinges on the choice of term.
Chapter 1

Edges in cyclic syntax

This chapter lays out the theoretical foundations concerning cyclic syntax which are crucial to understand my proposals developed in this book. I start the discussion by examining two competing programs concerning cyclic Spell-out (section 1.1). I then turn to the question of which syntactic unit must be considered as a proper cyclic domain (1.2). I also discuss how movement is regulated by locality conditions at the syntax proper (1.3). Finally, I present the general outlook of the book regarding syntactic edges and linearization (1.4).

1.1 Cyclic Spell-out

1.1.1 Multiple Spell-out

The first issue to be discussed in this book is cyclic Spell-out. The Minimalist Program adopts a strongly derivational model in which syntactic trees are built up out of lexical items via the operations Merge and Move. It is assumed that the computational system of the grammar meets with the interface levels, Phonological Form (PF) and Logical Form (LF); a derivation is given a phonological representation at PF and receives a semantic representation at LF. A central proposition advanced by the Minimalist Program is to reduce all substantive principles to interface conditions and all formal principles to economy considerations (Chomsky 1995). Thus, elimination of theory-internal levels such as D(EEP)-structure and S(SURFACE)-structure becomes a logical necessity. Naturally, much energy has been devoted to rethinking constraints and phenomena described as properties of D-structure and S-structure. ‘Spell-out’, later together with ‘cyclicity’, is one such innovation that the Minimalist Program employs to describe the connection between the lexicon and the interface levels in the grammar.

Spell-out separates the information relevant for phonetic interface from the information that pertains to the semantic interpretation, and ships each off to the appropriate interface. In the earlier version of the Minimalist Program (Chomsky 1993; 1995), a major function of Spell-out was viewed as making a useful distinction between overt vs. covert movement. If movement occurs before Spell-out, the
outcome of the movement will be visible at PF and thus it results in overt movement. If movement occurs after Spell-out, it affects the semantic interpretation at LF, but cannot alter the phonetic information that has already been shipped to PF; hence post-Spell-out movement is considered as covert movement. See (1) for a diagrammatic representation.

(1) Numeration

\[
\begin{array}{c}
\text{Overt operations} \\
\text{Covert operations}
\end{array}
\]

In the later development of the Minimalist Program, however, the focus of studies has shifted to the intrinsic property of Spell-out itself, whose function is not limited to the computational split of overt vs. covert operations (e.g. Chomsky 2000; 2001; 2004; 2005; 2007; 2008; 2013; Fox and Pesetsky 2005a; 2005b; Nissenbaum 2000; Uriagereka 1999). Uriagereka (1999), one of the pioneering works in this vein, argues that the earlier assumption that Spell-out applies only once is an undesirable residue of the T-model, and proposes that Spell-out applies as many times as possible up to economy. Uriagereka (1999) maintains that multiple Spell-out is not only possible but also necessary to obtain a legitimate syntactic object that can be linearized and interpretable at PF.

Merge produces a completely basic and merely associative set-theoretic object with no internal ordering (see Chomsky 1993; 1995). Only if collapsed and linearized into an ordered object can the syntactic unit be interpretable at PF. This means that a syntactic object must be linearized upon Spell-out before it is shipped off to the PF branch; otherwise the unordered syntactic unit will crash at PF. Uriagereka (1999) argues that a complex structure in syntax cannot be linearized all at once—there is no mapping procedure that maps a complex structure into an ordered flat structure all at once. Thus, it is necessary that Spell-out apply to different chunks of structure in different cycles; syntactic structures must be linearized in smaller units to which a mapping procedure may apply in a successive cyclic fashion.\(^1\)

\(^1\) Uriagereka (1999) adapts Kayne’s (1994) Linear Correspondence Axiom (LCA) to Chomsky’s bare phrase structure. Uriagereka argues that command maps to a PF linearization convention in simple Command Units (CUs), where LCA may apply, as described in (i):

(i) **Linear Correspondence Axiom (LCA)** (Uriagereka 1999: 252)

a. Base step: If $\alpha$ commands $\beta$, then $\alpha$ precedes $\beta$.

b. Induction step: If $\gamma$ precedes $\beta$ and $\gamma$ dominates $\alpha$, then $\alpha$ precedes $\beta$.

Multiple Spell-out is forced when a derivation involves more than one CU. To linearize a complex object with more than one CU under LCA, it is necessary to assume that each CU is linearized in different
Once it is assumed that multiple Spell-out and multiple linearization are ever possible, the notion of ‘cyclicity’ becomes central to a formal theory of the grammar (see Svenonius 2004 for a historical review of cycles in earlier works by Chomsky 1965; 1973; 1986; 1995). In fact, many recent studies in Minimalist syntax share the assumption that syntactic structure undergoes multiple Spell-out, and that Spell-out is strictly cyclic in the sense that the syntax utilizes all and only information available in the current cycle. In other words, once the information concerning (parts of) a derivation is sent off to the interfaces in a given cycle via Spell-out, that information cannot be accessed or altered in a later cycle.

1.1.2 Two competing research programs

Perspectives on cyclic syntax, however, may be quite divergent from each other depending on their basic assumption on the nature of cyclic Spell-out—in particular, how much information is encapsulated as a result of cyclic Spell-out. A model can be strict in varying degrees. Under the strictest model, it is assumed that units are completely removed from the syntax upon Spell-out and thus no longer accessible to later cycles. This means that a spelled-out unit can neither re-enter the syntax nor merge with the rest of the structure, and the final process of interphrasal association is accomplished in the performative components. On a less strict version, on the other hand, a model assumes that, though certain information concerning syntactic terms becomes inaccessible as a result of Spell-out, spelled-out terms may re-enter the syntax and be interpretable in later stages of syntax (see Uriagereka 1999 for comparison of different models).

In this section, I review two competing research models regarding this issue. One is the model developed by Chomsky in his series of work on phases (e.g. Chomsky 2000; 2001; 2004; 2007; 2008; 2013)—the most widely adopted and moderately strict model. Under the phase model, spelled-out units are not accessible to any further syntactic operations such as ellipsis and movement. The spelled-out units, however, may re-enter the syntactic derivation and merge with the rest of the structure in a later cycle, just like lexical items in the Numeration. The other model to be reviewed is the one developed by Fox and Pesetsky (2005a) known as Cyclic Linearization—a relatively recent and radically liberal model. This model assumes that syntactic terms are all accessible to syntactic operations even after Spell-out, and argues that cyclic effects observed in the grammar can be understood as a result of Cyclic Linearization.
In this book, I will argue for the latter model with evidence from scrambling in Korean and Japanese. Before doing so, I briefly review the two models and their diverging predictions relevant to this book.

Let us first consider the phase-based model proposed by Chomsky (2000; 2001). Chomsky argues that syntactic derivation proceeds phase by phase. A phase is assumed to be a syntactic unit that is sent to the interfaces upon each Spell-out. In the earlier versions of his work, verbal phrases with full argument structure (transitive v*Ps) and CPs are considered the relevant unit, called ‘strong phases’. It is assumed that Spell-out applies only to these strong phases (see Chomsky 2008 for nominal domains; see section 1.2 for detailed discussion on this issue).

Under the phase model, the operation ‘Spell-out’ applies cyclically. Each phase is spelled out and passed on to the phonological and semantic systems at the point at which the next higher strong phase is completed (Chomsky 2001: 13). Chomsky argues that the computational burden is significantly reduced if the earlier stages of the cycle can be forgotten or are inaccessible to further syntactic operations after Spell-out. The Phase Impenetrability Condition (PIC) is employed to implement this idea under the phase model (cf. also van Riemsdijk’s (1978: 169) Head Constraint in an earlier framework, which forces movement paths to be punctuated).

(2) **Phase Impenetrability Condition** (Chomsky 2001: 13)

[For a strong phase HP with a head H,] the domain of H is not accessible to operations outside HP; only H and its edge are accessible to such operations.

[The edge includes the elements outside H, the specifiers (Specs) of H and elements adjoined to HP.]

One surprising consequence of the PIC is that the domain of Spell-out must be limited to the complement of a phase head, and that the edges and complements are spelled out separately. To be more concrete, consider configurations like (3) where ZP and HP are strong phases. Under the PIC, the complement of a phase HP is not accessible to operations at ZP once HP is spelled out. Crucially, however, the head H and its edge α are still accessible to syntactic operations in ZP even after the Spell-out of HP.

(3) \[ZP \quad Z \quad ... \quad [\text{Phase of HP}] \]

In effect, this proposal amounts to arguing that H and its Spec α in (3) belong to the next phase ZP for the purpose of Spell-out. As Nissenbaum (2000) argues, this would naturally follow from the proposal that Spell-out applies to the complement domain of a phase head, but not beyond. In other words, when Spell-out applies to a
given phase, only the complement of the head is spelled out and handed over to PF; the rest of the phase (the head and edge) must be spelled out in the next phase so that it is accessible to operations in the next phase.\(^2\)

Another important consequence of the PIC is that ‘escape hatches’ must be postulated to explain long-distance movement in the grammar. Under the PIC, elements in the complement domain are inaccessible to any further operations in the higher domains. Once the terms in the complement domain are spelled out, they cannot undergo any type of movement and must be frozen in situ. To explain the fact that a phrase merged in a complement domain may undergo long-distance movement across phase boundaries (e.g. wh-movement), it is necessary to assume that movement occurs through the edge of every strong phase in a successive cyclic fashion.

For instance, what in (4) must move out of the complement domain VP before the vP phase is spelled out; otherwise, what would be trapped in VP and would not be able to undergo wh-movement to [Spec,CP]. To explain the fact that what in (4) lands at [Spec,CP], it is necessary to assume that what first moves to the edge of the phase, vP, and then to the edge of CP. The same story must be told for long-distance wh-movement such as (5): what moves through the edge of every strong phase in its way to the matrix [Spec,CP]. On this approach, successive cyclic movement is a necessary consequence of the PIC, and the edge must be designated as an escape hatch for movement out of strong phases.

(4) \[ [\text{CP} \text{What}_1 \ [c'] \ 	ext{did} \ [\text{TP} \ 	ext{you} \ [\text{vP} \ t_1 \ [v \ [\text{VP} \ 	ext{buy} \ t_1]]]] ] ] \]

CP-phase  vP-phase

(5) \[ [\text{CP} \text{What}_1 \ 	ext{do} \ 	ext{you} \ [\text{vP} \ t_1 \ [v \ [\text{VP} \ 	ext{think} \ [\text{CP} \ t_1 \ 	ext{that} \ \text{Mary} \ [\text{vP} \ t_1 \ [\text{VP} \ 	ext{bought} \ t_1]]]] ] ] ] \]

CP-phase  vP-phase  CP-phase  vP-phase

(For ease of exposition, irrelevant details are omitted in (4)–(5).)

As a representative model of cyclic syntax, Chomsky’s phase approach has been adopted by many, but at the same time it has prompted important research questions. The validity of the PIC and accompanying claims concerning successive cyclic movement were especially at the centre of controversy. This has led to modifications of the phase model and novel theories concerning multiple Spell-out and long-distance movement (e.g. Bruening 2001; Chomsky 2008; 2013; den Dikken 2007a;

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\(^2\) Under the phase model, spelled-out units cannot be a target of any operations at the syntax proper (except for External Merge). Note, however, that spelled-out units are not completely opaque for cross-phrasal interactions. Even after Spell-out, information relevant to semantics and phonology is still accessible. For instance, information concerning the label of the complement, referential properties of nominal elements, and structure for prosodic assignment are still available even after Spell-out (see Uriagereka 1999 for discussion).
Capitalizing on the consequences of linearization at the interfaces, Fox and Pesetsky (2003; 2005a; 2005b) propose an alternative approach to cyclic Spell-out, which derives successive cyclic movement without assuming escape hatches. Fox and Pesetsky argue with Chomsky (2000; 2001) that Spell-out results in linearization of syntactic structure, but depart from the phase model by arguing that all items are accessible to syntactic operations, such as movement, even after Spell-out. Under this approach, the PIC, or notion of an escape hatch, is simply unnecessary. Successive cyclic movement follows from a consequence of linearization that occurs at each Spell-out, called Cyclic Linearization (CL). CL refers to a mapping procedure between the syntax and PF, which linearizes syntactic structure and establishes relative orderings of syntactic terms contained in a Spell-out domain.

The implementation and consequences of cyclic Spell-out under the CL approach are significantly different from those under Chomsky’s phase model. Most importantly, the domain of Spell-out is understood differently from the phase model. As mentioned above, under the phase model, the edge and the complement must be spelled out separately; otherwise, there is no way of explaining long-distance movement out of the complement domain. By contrast, under the CL model, the edge and the complement are spelled out together and get linearized in the same cycle.

For instance, in configurations like (6), not only the complement YP but also the head H and its Spec α get linearized when the HP is spelled out. Once spelled out, syntactic units in the same cycle are linearized and statements concerning relative ordering of the units are sent off to PF. For example, when HP in (6) is spelled out, relative orderings among the syntactic terms contained in HP are shipped to PF: namely, \( \alpha < H \) (α precedes H), \( \alpha < YP \) (α precedes YP), and \( H < YP \) (H precedes YP). An ordering statement of the form \( \alpha < \beta \) is understood by PF as meaning that the last element of α precedes the first element of β, with the exclusion of traces.4

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3 For instance, previous researchers suggest that sometimes a less tight system must be enforced. Rackowski and Richards (2005) suggest that some movement does not move through phase edges due to agreement (e.g. long wh-movement in Tagalog proceeds through vP-edges, but not through embedded [Spec,CP] when the matrix verb agrees with C). Den Dikken (2007a; 2007b) claims that a phase may lose its phasehood due to phase-extending head movement. See also den Dikken (2010) for extensive critical reviews concerning evidence for successive cyclicity. As will be shown shortly, Fox and Pesetsky (2005a; 2005b) argue that in certain circumstances, movement must not proceed via phase edges. The evidence adduced against strict successive cyclicity naturally led researchers to modify Chomsky’s phase model or develop new models of cyclic syntax (see Boeckx and Grohmann 2007 and references therein for an overview).

4 For ease of exposition, I employ the term (and notation) of traces. Strictly speaking, however, traces do not exist in the derivation under the CL approach. Fox and Pesetsky (2003; 2005a; 2005b) assume that movement is the ‘Remerge’ of elements introduced in the previous derivation, and that ordering statements...
For convenience, I continue to call the Specs of a Spell-out domain the edges, as in Chomsky’s phase system. It is important to note, however, that ‘edges’ under the CL model are just derivative notions (i.e. non-complement positions) and have no special grammatical status as a designated escape hatch. If edges are accessible to certain syntactic operations, complements are accessible to those operations as well.

In sharp contrast with Chomsky’s phase model, the CL approach argues that terms are accessible to syntactic operations after Spell-out and free to move out of the already spelled-out domains. In the configuration of (6) seen above, not only the edge α but also the complement YP are eligible to movement triggered by a higher head Z after Spell-out of HP. This does not mean, however, that movement may occur out of spelled-out domains randomly. In fact, the CL model argues for the opposite: movement is restricted not only by the syntax proper, but also by the interactions between the syntax and PF.

Under the CL model, movement is constrained by locality conditions in the syntax, just as in Chomsky’s phase model. More importantly, the CL model further argues that even a derivation created by licit movement is filtered out at PF if the derivation cannot be properly linearized—a proposition that has not been investigated in any depth in Chomsky’s model. In particular, Fox and Pesetsky (2005a) argue that if the result of (licit) movement yields a derivation that cannot be ordered at PF, the derivation is canceled out as being unpronounceable. A derivation cannot be linearized at PF if ordering information stored in previous cycles is not consistent with ordering information obtained in a later cycle.

To be more concrete, suppose that PF receives an ordering statement such that α precedes β in an earlier cycle (α<β) but reads the opposite information that β precedes α in a later cycle (β<α). PF then cannot decide the relative orderings between α and β because two conflicting statements have been registered at PF. If the precedence relationship between α and β cannot be determined, the derivation cannot be pronounced and thus will be canceled out at PF. This means that the linear ordering of terms may be shifted via movement before Spell-out (as long as the movement satisfies locality conditions in syntax), but is fixed once and for all after Spell-out at each cycle. If an ordering statement that α precedes β is sent off to PF, α must precede β at the end of later cycles as well; otherwise, an ordering conflict arises and the derivation will be canceled out. This is an important consequence of CL that will be argued for in this book and is summarized in (7).

are established for the most recently merged elements, if they are remerged. See Fox and Pesetsky (2005a; 2005b) for details.
Consequence of Cyclic Linearization

The linear ordering of syntactic units is affected by Merge and Move within a Spell-out domain, but is fixed once and for all at the end of each Spell-out.

Fox and Pesetsky (2005a; 2005b) argue that cyclic effects in the grammar can be captured by this consequence of CL, (7). More specifically, long-distance movement occurs through the edge of the Spell-out domain in each cycle due to the monotonicity of CL; the precedence relationship registered in an earlier cycle must be preserved in later cycles. To illustrate this, consider the derivations in (8)–(10). The derivations in (8) show that movement out of the edge to the next Spell-out domain is possible without ordering contradiction. The contrast between (9) and (10) shows that (single) movement out of a non-edge is impossible if it does not go through the edge. Note that this is exactly the result that the PIC is designed to capture.

Movement out of edge zone

\[
\begin{align*}
\text{(8a)} & \quad [\alpha P \quad X \quad [\alpha \quad Y]]: X < \alpha < Y \\
\text{(8b)} & \quad [\beta P \quad X_1 \quad Z \quad [\alpha P \quad t_1 \quad [\alpha \quad Y]]]: X < Z < \alpha P \Rightarrow X < Z < \alpha
\end{align*}
\]

Consider (8) first. Suppose that \(\alpha P\) and \(\beta P\) are Spell-out domains. In (8a), \(X\) precedes the head \(\alpha\) and the complement \(Y\) in the \(\alpha P\) domain. Once \(\alpha P\) is spelled out, the linear ordering \(X < \alpha < Y\) is established at PF. Crucially, this ordering cannot be erased or changed, so as to avoid ordering contradictions in PF in a later cycle. As described in (8b), suppose that a new element \(Z\) is merged in the higher domain \(\beta P\), and that the element \(X\) merged in \(\alpha P\) is remerged in \(\beta P\) (i.e. movement of \(X\) in \(\beta P\)). After the Spell-out of \(\beta P\), the new orderings \((X < Z < \alpha P)\) are added to PF. Since the first (overt) element in \(\alpha P\) is \(\alpha\), PF obtains new linearization information, \(X < Z < \alpha\). Given that the ordering in \(\beta P\) is consistent with the one in \(\alpha P\), the derivation in (8b) poses no problem for PF.\(^5\) Thus, movement of \(X\) from the edge in (8b) is correctly ruled in under CL.

Compare the derivations in (8) with (9), which show that certain types of movement out of non-edge zones are ruled out under CL. In (9), \(X\) precedes \(Y\) in the lower Spell-out domain \(\alpha P\). Suppose that \(Z\) is merged in the higher domain \(\beta P\), and that \(Y\) undergoes movement over \(Z\) without going through the edge, as described in (9b).

---

\(^5\) It is worth stressing that ordering statements are evaluated with respect to precedence relationship, but not with respect to immediate precedence relationship. In other words, \(X\) and \(Y\) in (a) and (b) must preserve their relative ordering, but the immediate precedence relationship with respect to \(X\) and \(Y\) can be changed by External Merge of a higher element \(Z\), as in (b). I thank Justin Fitzpatrick (p.c.) for clarifying this point.
Movement out of non-edge zone

\( (9) \)

a. \([\alpha P \ X \ [\alpha \ Y]]: X < \alpha < Y\)

b. \(*[^{\beta P} Y_1 \ Z \ [\alpha P \ X \ [\alpha \ t_1]]]: Y < Z < \alpha P \Rightarrow Y < Z < X\)

When the \( \beta P \) in (9b) is spelled out, PF obtains the information that \( Y < Z \) and \( Z < \alpha P \). Since \( X \) is the first element in \( \alpha P \), \( Z \) precedes \( X \). Given that \( Y \) precedes \( Z \) and \( Z \) precedes \( X \), \( Y \) must precede \( X \) at \( \beta P \). Notice, however, that the ordering at \( \beta P \) in (9b) contradicts the ordering established in the lower domain \( \alpha P \). Specifically, the ordering at \( \alpha P \) indicates that \( X \) precedes \( Y \), but the ordering at \( \beta P \) indicates that \( Y \) precedes \( X \). Derivations like (9b) with an ordering contradiction cannot be pronounced and are filtered out at PF. Thus, movement of \( Y \) from non-edge zones in configurations like (9b) is ruled out.

Compare now the derivations in (9) with the paradigms in (10), which show that successive cyclic movement (of a single element) under the CL approach proceeds through the edge. To derive the ordering \( Y < X \) from the underlying structure in (9a) under CL, \( Y \) must move to the left of \( X \) before the Spell-out of \( \alpha P \), as illustrated in (10a).

Successive cyclic movement through the edge

\( (10) \)

a. \([\alpha P \ Y_1 \ [X \ [\alpha \ t_1]]]: Y < X < \alpha\)

b. \(*[^{\beta P} Y_1 \ Z \ [\alpha P \ t_1 \ [X \ [\alpha \ t_1]]]: Y < Z < \alpha P \Rightarrow Y < Z < X\)

If \( Y \) moves over \( X \) before the Spell-out of \( \alpha P \), as in (10a), it is possible that \( Y \) may move to the left of \( Z \) in the higher domain without yielding any ordering contradictions. In particular, the ordering statement in the \( \alpha P \) domain is consistent with the ordering in the higher domain \( \beta P \): in both domains, \( Y \) precedes \( X \) (cf. (9)). Hence, derivations like (10b) are allowed under CL, in contrast to (9b).

As Fox and Pesetsky emphasize, the contrast between (9b) and (10b) shows that the CL approach derives successive cyclic movement without invoking the PIC or the notion of an escape hatch. If an element moves out of the (outmost) edge, it does not create a situation where the ordering statements between the lower domain and the higher domain conflict. Hence, it appears that successive cyclic movement through the edge is necessary. On this view, successive cyclic movement is a natural consequence of the fact that movement from the (outmost) edge does not change orderings established in previously spelled-out domains. Under the CL model, there is no a priori reason to assume that the edge is an escape hatch.
1.1.3 Diverging predictions

On the surface, the CL model seems to provide the same account of cyclic movement as Chomsky’s phase model. It is crucial to note, however, that the CL approach makes significantly different predictions from Chomsky’s PIC approach in certain contexts—especially in the context of multiple movements. In this book, I will present various types of evidence from multiple movements, which show that the CL model is favored over the PIC model.

Predictions of the CL approach are less restrictive than those of the PIC approach when we consider multiple movements out of non-edge zones. Under the PIC approach, movement out of non-edge zones cannot occur at all after Spell-out. Under CL, however, elements are free to move out of the already spelled-out domain as long as the movement does not yield an ordering contradiction at PF. More concretely, a non-edge element may move to the higher domain without going through the edge, as long as all the elements which preceded it also move. A sample derivation from a head-final configuration is depicted in (11).

Multiple movements out of the non-edge and edge zone

(11) a. [αP X [α’ Y α]]: X<Y<α

b. [βP X1 Y2 Z [αP t1 [α’ t2 α]]β]: X<Y<Z<α<β

In (11), the non-edge element Y moves to the next domain together with the edge element X, preserving their relative ordering. Under the PIC, derivations like (11b) would be ruled out: Y would be inaccessible to syntactic operations outside αP. Thus, movement of Y out of αP without going through the edge is predicted to be ungrammatical under the PIC. Under CL, by contrast, derivations like (11b) are allowed since the derivation can be properly linearized without an ordering contradiction: the ordering at αP is consistent with the ordering at βP. In this book, I argue that the prediction by the CL model is indeed supported by empirical data, and that non-edge elements may move out of a complement position if the preceding elements move together, preserving their orderings registered at an earlier Spell-out (see Chapters 4 and 5, in particular).6

6 Fox and Pesetsky (2005a; 2005b) argue that a variety of ‘order preservation’ phenomena receive a natural account as an instance of (11b). For instance, the object in Scandinavian languages may move out of VP when all the overt elements that preceded the object in VP continue to precede the object after Object Shift (Holmberg’s Generalization: Holmberg 1986; 1999). Fox and Pesetsky argue that this follows from CL. Since the verb precedes the object in VP, the verb must precede the object in the CP domain as well; otherwise, an ordering conflict arises between VP and CP and the derivation is canceled out at PF. I refer the reader to Fox and Pesetsky (2005a; 2005b) for extensive discussion on order preservation phenomena in...
The predictions of the CL approach are, however, more restrictive than the PIC approach when we consider multiple movement out of edges. Under the PIC, elements on the edge zone are in principle free to move to the next strong phase. Restrictions on movement out of edge zones, if they exist, need to be explained by additional mechanisms (see e.g. Chomsky 2008 for the claim that locality factors render edges opaque so that sub-extraction out of subjects becomes costly). Under CL, on the other hand, all the elements in a Spell-out domain including Spec, head, and complement are linearized in the same cycle. This implies that if multiple items are merged on the edge, all the units at the edge must preserve their relative orderings, as established upon their first Spell-out. This is illustrated with the derivations in (12).

**Multiple movement out of multiple edges**

(12) a. \([αP \ X \ Y [α’ \ Z \ α]]\): \([X<Y<Z<α]\)

b. \([βP X_1 Y_2 [β’ [αP \ t_1 \ t_2 [α’ \ Z \ α]]β]]\): \([X<Y<αP<β] ⇒ X<Y<Z<α<β]\)

c. \(*[βP Y_2 X_1 [β’ [αP \ t_1 \ t_2 [α’ \ Z \ α]]β]]\): \([Y<X<αP<β] ⇒ Y<X<Z<α<β]\)

Suppose that multiple units, X and Y, are merged on the edge of a Spell-out domain \(αP\), as described in (12). Under the CL approach, the orderings between X and Y are fixed upon Spell-out of the \(αP\), as in (12a) \((X<Y)\). Multiple movements out of the edge zone must preserve the relative orderings at \(αP\), as depicted in (12b) \((X<Y)\). If Y moves to the left of X in the higher domain \(βP\), as in (12c), PF receives conflicting information such that X precedes Y at \(αP\) while Y precedes X at \(βP\). PF then cannot decide the precedence relationship between X and Y, and thus the derivation in (12c) would be canceled out. Thus, under CL, we predict that derivations like (12c) would be judged ungrammatical; crucially, this prediction holds even if leftward movement of Y in (12c) can be perfectly licit at the syntax proper.

By contrast, there is nothing inherent about the PIC approach that forces X and Y at the edge in (12a) to preserve their orderings in the next domain. If ungrammatical, derivations like (12c) must be ruled out by other mechanisms (cf. Richards’s (2001) Tucking-In Generalization for some cases). Under the PIC approach, the

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7 Capitalizing on feature-based cyclicity and Shortest Move, Richards (1997; 2001) argues that paths to multiple specifiers of a single head must cross, rather than nest. For instance, when two \(wh\)-phrases move to multiple specifiers of a single head C, the two \(wh\)-phrases must maintain their base c-command relations and base orderings, as described in (i). The higher \(wh\)-phrase \(wh_1\) must be attracted first to the specifier of C since it is closer to C than \(wh_2\), and when \(wh_2\) is attracted by C, it must tuck itself in below \(wh_1\), because
grammaticality of (12c) is solely dependent on considerations at the syntax proper, and if leftward movement of Y in (12c) is legitimate at the syntax proper, the derivation in (12c) would be considered grammatical—there would be no reason to reject the derivation (12c) at the PF component under the PIC.

In this book, I will argue for the predictions of the CL model concerning multiple edges. In particular, I show that multiple movements out of the edge zone do indeed proceed as predicted by the CL model, and that this enables us to tie seemingly heterogeneous types of puzzles in scrambling to a general ordering restriction imposed by cyclic Spell-out.

1.2 Cyclic domains

The second issue to be discussed in this book is the nature of cyclic domains—namely, how to identify a syntactic unit that is handed over to PF at Spell-out. As discussed above, the question of how much information becomes inaccessible after cyclic Spell-out has been at the heart of controversy. Together with this, the question of which syntactic unit must form a cyclic domain has been central to the development of theories of cyclic syntax. Notably, researchers take one of two strategies.

One strategy is to present some conceptual argument on Spell-out and hypothesize that a domain X is a cyclic domain when it passes the conceptual criterion. The other strategy is to simply list possible cyclic domains, which may or may not form a natural class. In the latter case, arguments for cyclic domains are mainly driven by empirical evidence. Thus, the claim that a domain X is a cyclic domain is valid to the extent that the evidence holds strong. In this book, I take the former approach and argue for the research program that predicational structures undergo cyclic Spell-out.

To set the baseline, I start the discussion by reviewing Chomsky’s proposal on cyclic domains and introduce the theoretical assumptions that I adopt in this book.

1.2.1 Proposition-based phase approach

In the initial stage of development of a phase model, Chomsky (2000; 2001) hypothesizes that phases belong to a natural class, characterized as semantically ‘propositional’ and phonologically ‘isolable’. Chomsky claims that only transitive $v$*Ps and CPs pass the phasehood tests, and thus are the only units that undergo Spell-out, calling them ‘strong phases’. Chomsky further claims that intransitive verbal

that makes the path shortest. Thus, movement to multiple specifiers of a single head results in order preservation. The prediction in (12), however, covers a much broader range of data than (i). The prediction in (12) holds whether or not X and Y target multiple specifiers of the same head. As soon as X and Y are spelled out together in the same domain, they must preserve their relative orderings in the later domains regardless of their landing sites. In later chapters, I show a range of data that cannot be subsumed under the Tucking-In Generalization. See esp. Appendix 2A for discussion.

(i) $[CP \ \wh_1 \ \wh_2 \ C \ [IP \ \ldots \ t_1 \ \ldots \ t_2 \ \ldots \ ]]$
projections lacking external arguments (e.g. passive, unaccusative verbal projections) do not undergo Spell-out though they may maintain some semantic independence; these categories are referred to as ‘weak phases’.

Later, Chomsky (2008) attributes further characteristics to the (strong) phase and argues that only phase-heads can serve as the loci of probes and trigger movement to their edges. When combined with previous claims on phasehood, this claim amounts to saying that only $v^*$ and $C$ can be a probe for agreement and carry an EPP-feature that triggers movement. Chomsky argues that even $T$, a prototypical EPP-carrier, is not the locus of $\phi$-features and EPP, and that $T$ inherits such properties from the phase head $C$. The statements in (13) summarize the hypotheses on phases advanced by Chomsky in his series of works (Chomsky 2000; 2001; 2004; 2008).

(13) *The characteristics of phases*

a. The complement of phases is spelled out and sent to the interpretative components.

b. Phases are propositional domains: $v^*$Ps and CPs.

c. Phases are semantically (at LF) and phonologically (at PF) ‘coherent and independent’.

d. Phases are the loci of probes (‘only phase heads trigger operations’) and EPP.

As reviewed extensively by Matushansky (2005), however, the claims in (13) do not make consistent predictions and have non-trivial conceptual problems (see also Boeckx and Grohmann 2007 for an excellent review). In particular, Matushansky (2005) points out a conceptual problem with the idea that only $v^*$Ps and CPs undergo Spell-out. It has not been properly explained why propositions should be the unit of phase. Furthermore, even if we take it for granted that propositions must be the unit of phase, it has not been discussed why only $v^*$Ps and CPs are the relevant propositions. If reduction of complexity is determined by the number of items kept in memory, various layers of projections attached to the vicinity of $v^*$Ps and CPs must also be considered. Specifically, the existence of modifiers, the fine structure of IP, various aspectual projections, and the left peripheries of CP are not negligible; but Chomsky’s phasehood does not consider arguments beyond the object (cf. Bošković 2012 for extended verbal domains; Svenonius 2004 for a space between edges, ‘Mittelfelt’; Hinterhölzl 2006 for aspectual phases).

The validity of the claim that phases are independent and isolable at PF should be seriously questioned as well. After thoroughly reviewing isolability tests, Matushansky (2005) concludes that, in fact, no isolability test singles out $v^*$Ps and CPs as a natural class. As shown in (14), it is also not the case that only $v^*$P and CP are PF-isolable (a–c), and it is not the case that $v^*$Ps and CPs are always isolable (d, e) (see also Bošković 2002 for the evidence that PF isolability is a problematic criterion).
PF-isolability tests

a. I have been wondering whether, but would not positively want to state that, 
   \[TP \text{your theory is correct}.\] (TP-RNR, Bresnan 1974: 618)
b. Alice, seems \[t, \text{happy}.\] (DP movement)
c. Alice didn’t leave—\[TP \text{Didn’t leave}?\] What do you mean, \[TP \text{didn’t leave}?\]
d. *It’s \[VP \text{doubt that Desdemona was faithful}] that Othello did.
e. *\[CP \text{That she would marry her lover}] though Juliet said, the results were 
disastrous.

It is not clear whether LF independence is a reliable diagnostic, either. Since 
Chomsky did not define the notion of ‘proposition’, it is unclear what ‘proposition’ 
means in semantics. But, if it is meant to be the semantic type \(<t>\), we are led to 
assume that CPs and vPs have the semantic type \(<t>\) while TPs and VPs are assumed 
to have some other type. Note, however, that if CPs and vPs are the type \(<t>\), 
abstracting away from event semantics, TPs also have the type \(<t>\). If we allow for 
the time and world variables to make a difference between CPs and TPs, then vPs and 
CPs have different types—a CP is saturated \(<t>\) but the time argument slot of vPs and 
TPs is not, so they are both \(<i,t>\) type. The semantic type of VP is unclear as well. If 
we may disregard event semantics, a projection headed by an unaccusative verb has 
the type \(<t>\). Overall, it is not obvious which semantic factor sorts out \(v^*P\) and CP as 
one group and TP and VP as the other.

Lastly, there is some internal inconsistency among the claims presented in (13). 
Chomsky (2004) notes that a \(vP\) with a non-transitive \(v\) is relatively isolable at PF and 
is a domain for quantifier raising (and reconstruction/parasitic gaps) at LF, but 
claims that such intransitive vPs cannot be phases for Spell-out (cf. Legate 2003). If 
quantifier movement and parasitic gaps provide a diagnostic for vP-adjunction (Fox 
2000; Nissenbaum 2000) and if vP-adjunction happens only at phase edges (13d), it is 
unclear why intransitive vPs do not qualify for Spell-out. In fact, the very existence of 
weak phases suggests a contradiction between the conceptual hypotheses in (13a,b) 
and empirical claims in (13c,d).

1.2.2 Other cyclic domains

The discussion presented above suggests that Chomsky’s claims in (13) are conceptu-
ally vague and inconsistent. On the basis of empirical evidence, however, one can 
still maintain the claim that v*Ps and CPs are the units that cyclic syntax operates on, 
as Chomsky originally proposes. Researchers, however, have found that other major 
categories may also show cyclic effects. Given the ongoing debate on this issue, it 
seems unreasonable to simply limit the cyclic units to v*Ps and CPs. Certainly, more 
elaborate research on this issue is in order.

In fact, most major categories in syntax have been pointed to as a possible cyclic 
node. Speaking of verbal projections, previous researchers have occasionally raised
the possibility that bare/intransitive VPs can be a cyclic domain, contra Chomsky’s original claims (e.g. Bošković 2012; Fox and Pesetsky 2005a; 2005b; Holmberg 2002; Ko 2005a; Legate 2003). For instance, Fox and Pesetsky (2005a; 2005b) argue that VP is a Spell-out domain in Scandinavian languages, and show that the order between the internal arguments and the verb must be fixed within VP, which in turn suggests that VP is a Spell-out domain. In Ko (2005a), I also argued that VP is a Spell-out domain and explained some restrictions on object scrambling under that hypothesis (but see Chapters 4 and 5 below, where I reinterpret the relevant data adopting a small-clause analysis).

Legate (2003) argues that passive and unaccusative verbal projections must also undergo Spell-out. Based on evidence from reconstruction, quantifier raising, parasitic gaps, and nuclear stress rule tests, Legate concludes that successive cyclic movement proceeds through the edge of passive/unaccusative verbal projections (but see also den Dikken 2006b for a response that Legate’s evidence is inconclusive). Sauerland (2003) demonstrates that there is a reconstruction site for A-movement at the edge of raising vP, which indicates that raising vPs are cyclic nodes, contra Chomsky’s (2000) proposal on raising infinitives. Holmberg (2002) also shows that there are cross-linguistic variations in the phasehood of passive projections in Scandinavian languages.

Some have argued that nonverbal structures may count as a phase as well. Matushansky (2000) argues that the distribution of Case in Russian copula sentences can be explained by assuming that a certain type of small clause is a phase. Den Dikken (2007a) maintains that predicational structures in general count as an inherent phase. McGinnis (2001) claims that the sister of VP heads a phase if it assigns a theta-role to a syntactic argument, and argues that a subtype of applicative phrases (e.g. Appl-E, a sister of VP in McGinnis 2001) forms a phase and triggers phase-internal EPP movement.

Others also argue that categories like PPs may constitute a phase. Sabbagh (2007) argues that PPs must be a cyclic node which affects the syntax–phonology mapping, and shows that by assuming that PPs are phases, the ordering patterns in rightward movement and right node raising can be properly explained. Abels (2003: ch. 4) extensively argues that we can explain why adposition stranding is impossible in certain languages by assuming that PP is a phase.

Though Chomsky (2001; 2004) remains silent regarding the hypothesis that DP is a phase, a number of studies consider a nominal domain as a cyclic node (see e.g. Bošković 2005; Compton and Pittman 2010; den Dikken 2007a; Giusti 2006; Hiraiwa 2005; Kramer 2009; Lee-Schoenfeld 2008; Reintges and Lipták 2006; Svenonius 2004 for the possibility that DPs are phases; cf. Matushansky 2005 for a thorough review and controversy on phasal DPs). Contra Chomsky’s claims, some researchers seriously question the phasehood of CPs (more precisely, embedded CPs that agree
with a main verb) and argue that embedded CPs are not phases in certain contexts (for evidence, see den Dikken 2009; Rackowski and Richards 2005).

Some scholars have also explored the possibility that phases may be parameterized across languages (e.g. den Dikken 2007a; 2007b; Gallego 2007 for phase extension due to head movement). It has also been suggested that some domains may count as phases for LF but not for PF, or vice versa (e.g. Felser 2004; Marušič 2005). A possibility was also considered by Boeckx and Grohmann (2007) that a phase may correspond to a ‘Complete Functional Complex’ (CFC) proposed in the Barriers system (Chomsky 1986), in which all functional roles are satisfied.

In yet another promising theory, Bošković (2012) argues for a contextual approach where the highest phrase in the extended projection of all lexical categories, Ns, Ps, As, and Vs (passive and active), works as a phase. An extremely dense system has also been adopted by others in which it is assumed that every maximal projection is a cyclic node (e.g. Boeckx 2003a; 2007; Bošković 2007; Epstein et al. 1998; Fox 2000; Fox and Lasnik 2003; Lahne 2008; Manzini 1994; Müller 2010; Richards 2002).

It certainly remains an important research project to account for all the extant data with a conceptually solid and empirically rich architecture of the grammar. This book attempts to contribute to this discussion by focusing on verbal and nonverbal argument structures in the grammar. By closely examining the ordering restrictions in predicational structures, I will argue for the proposal that predicational domains undergo cyclic Spell-out and linearization (a proposal adapted from den Dikken 2007a; see Chapter 4 for the differences between my proposal and den Dikken’s original claim).

Specifically, I argue against the stringent view that only transitive v*Ps and CPs are cyclic nodes, and claim that predicational structures including primary and secondary predication undergo cyclic Spell-out and subsequent linearization. The relevant predicational unit includes transitive v*Ps, intransitive vPs, small clause complements, infinitival complements, Sentential Predication, various types of adjunct secondary predication, resultative phrases, depictive phrases, and decomposed VPs. My goal, however, is not to exclude certain domains from the set of possible cyclic nodes. Rather, I attempt to show that certain projections must be included as a Spell-out domain in which linearization applies, and that predicational structures in general must be identified as such cyclic nodes. Even if future studies find that my theoretical attempt to prove that predicational structures undergo cyclic Spell-out is not as successful as I claim here, the empirical generalization derived from my theoretical attempt would remain intact—namely, that the linear ordering among the elements merged within the same predicational unit must be preserved in higher predicational domains.
1.2.3 Predication as a Spell-out domain

In developing the proposal that every predicational unit undergoes cyclic Spell-out and linearization, I adopt a theory of predication advanced by den Dikken (2006a). Specifically, I defend den Dikken’s claim that a predicational relationship is mediated by a functional head, or a Relator (R), as illustrated in (15). I propose that the predicational structure RP in general undergoes CL, and show that the orderings within the RP are fixed once and for all after their first Spell-out. I argue that order preservation phenomena among elements merged in the same RP domain strongly suggest that the RP domain undergoes Spell-out as a whole (cf. den Dikken 2007a, who argues that the complement of RP undergoes Spell-out under Chomsky’s phase framework). In this section, I lay out theoretical foundations for my proposal by specifying what is to be considered a predicational relationship in terms of the structure in (15). In particular, I specify what I mean by the Relator (R), ‘predicate’, and ‘subject’ on the basis of den Dikken’s (2006a) theory.

(15) The syntactic configuration of predication (den Dikken 2006a: 3)

\[
\text{Relator-P (RP)} \\
\text{subject} \quad \text{Relator'} \\
\text{ Relator} \quad \text{predicate}
\]

The Relator is a cover term which refers to a functional category that takes the subject and the predicate as its dependents. It can be realized by a variety of categories in syntax. The most representative Relator is Chomsky’s (1995) light verb \(v\), which mediates the primary predicational relationship between a thematic subject and a verbal predicate (e.g. (16)). The Relator can also be Tense, the head of TP, which mediates the relationship between the grammatical subject in [Spec,TP] and a predicate that follows it (e.g. (17)). The Relator can be a Top head (or a certain variety of C heads in the ‘left periphery’ in the sense of Rizzi 1997) as well, which mediates the logical subject (Topic) and sentential predicate (Comment) (e.g. (18)). The Relator can be the head of a variety of nonverbal functional categories, which constitute a small clause. Small clauses are subject–predicate structures lacking T. The Relator in small clauses can be realized by overt lexical items such as as, for, and like in English (e.g. (19)–(22)); the examples in (16)–(22) are from den Dikken (2006a: ch. 2).

(16) a. Imogen kissed Brian.
    b. \([\text{VP} \text{ Imogen} \ [\text{v} \text{v=} \text{Relator} \ [\text{VP} \text{kissed Brian}]]]\)

(17) a. Imogen is beautiful.
    b. \([\text{TP} \text{ Imogen} \ [\text{T=} \text{Relator is} \ [\text{AP} \text{ beautiful}]]]\)
(18) a. Brian really adores ec₁.
   b. \([_{\text{Top'}} \text{Brian}]_{_{\text{Top'}} = \text{RELATOR}} [_{\text{TP}} \text{Imogen really adores ec₁}]]\)

(19) a. Imogen regards the president as a fool.
   b. \(\ldots [_{\text{RP}} \text{the president}]_{_{\text{R'}} = \text{RELATOR}} [_{\text{DP}} \text{a fool}]]\)

(20) a. Imogen takes the president for a fool.
   b. \(\ldots [_{\text{RP}} \text{the president}]_{_{\text{R'}} = \text{RELATOR}} [_{\text{DP}} \text{a fool}]]\)

(21) a. Imogen dances like a beauty.
   b. \(\ldots [_{\text{RP}} \text{Imogen dances}]_{_{\text{R'}} = \text{RELATOR}} [_{\text{DP}} \text{a beauty}]]\)

(22) a. We have an idiot doctor.
   b. \(\ldots [_{\text{DP}} \text{an}]_{_{\text{RP}}} [_{\text{NP}} \text{idiot}]_{_{\text{R'}} = \text{RELATOR}} [_{\text{NP}} \text{doctor}]]\)

Note that the \text{RELATOR} in (15) includes, but is not limited to, Bowers’s (1993) ‘Pr’ heads. Den Dikken (2006a: 15) argues that the \text{RELATOR} is a placeholder for any functional head that mediates predication (e.g. copular, preposition, functional category, Topic, or Focus). Bowers (1993: 595), on the other hand, designates a ‘Pr’ head as a functional category that denotes the semantic function of predication and takes lexical categories (i.e. VP, AP, NP, or PP) as its complement. I adopt den Dikken’s perspective on this issue, and in Chapter 4, in particular, I present some evidence which shows that a general predicational unit, including Sentential Predication, must undergo Spell-out, just as the primary and secondary predicational domains.

Following den Dikken (2006a: 12), I assume that the \text{RELATOR} in (15) accommodates the predicate and the subject in its minimal domain: that is, no other heads except for the \text{RELATOR} may intervene between the predicate and the subject. This is a modern interpretation of Williams’s (1980) Mutual C-command Condition for predicational relationships under a binary branching representation. The fact that the predicate is merged as a complement of the \text{RELATOR} in (15) will play an important role to block predicate fronting within the RP (see Chapter 4).\(^8\)

\(^8\) I adopt den Dikken’s (2006a) claim that a predicational structure is asymmetrical and that the specifier always c-commands and precedes the complement of the \text{RELATOR}. I depart from den Dikken in other details, however—especially on predicate fronting. Den Dikken argues that predicational relationships are non-directional so that a predicate may be merged in the specifier position of the \text{RELATOR} (i.e. reverse predication in (i)), as well as in complement position. He also argues that the predicate may appear to the left of the subject via ‘predicate inversion’ with the help of \text{LINKERS}. Though the evidence adduced in den Dikken (2006a) is convincing, it does not seem to extend to Korean and Japanese. As will be extensively shown in Ch. 4, predicate fronting from within small clauses is impossible in Korean and Japanese. In this work, I do not adopt the ‘reverse predication’ structure (i), and leave it for future research how to reconcile the lack of (i) in Korean and Japanese and the evidence for it in English and other languages that den Dikken cites.

(i) \([_{\text{RP}} \text{[XP Predicate]}_{_{\text{R'}} = \text{RELATOR}} [_{\text{VP Subject}}]]\); reverse predication (den Dikken 2006a: 13)
The ‘predicate’ in (15) is the syntactic constituent that expresses a property ascribed to the subject (see e.g. Adger and Ramchand 2003; Bowers 1993; Déchaîne 1993; Heycock 1991; 1994; Rothstein 1983 for theories of predication). Various types of category may function as a predicate—which include verbal predicates (transitive/intransitive), adjectival predicates, adverbial modifiers, nominal predicates, prepositional phrases, and sentences as a sentential predicate for Topic or Focus.

The term ‘subject’ is used to refer to the constituent that the predicate is a predicate of. It may refer to a thematic subject or an external argument within the primary predicational domain vP (Williams 1980). It can also be a grammatical subject in [Spec,TP]. Unaccusative predicates like fall or die have no external argument but do have a grammatical subject. It may also be a logical subject in Topic–Comment structures. The Topic is the logical subject of the following sentence (Comment), which denotes a property of the Topic. The term ‘subject’ does not necessarily imply presence of a verbal or Tense projection. In a noun phrase like a beautiful flower, flower is the subject of beautiful without support of a verbal projection. In small clauses, too, the subject may form a predicational relationship with a lexical category without the support of Tense.

Throughout this book, I assume the general predicational structure in (15) and show that Spell-out applies to the predicational unit. In Chapters 2 and 3 I will show that the primary predicational domain vP undergoes Spell-out and linearization, and that as a consequence of CL, the elements at the edges of a vP show rigid ordering restrictions, unlike the elements merged inside the vP. In Chapter 4, I argue that small-clause complements and infinitival clauses undergo Spell-out and linearization, and as a result, the subject of a small clause shows similar ordering restrictions to the subject in the primary predicational domain. I also provide some evidence that Sentential Predication undergoes Spell-out together with its logical subject (Major Subject in the sense of J. H.-S. Yoon 2007). In Chapter 5, I argue that secondary predicational domains including resultative phrases, depictive phrases, and decomposed VPs in Korean and Japanese undergo Spell-out and linearization.

1.3 Movement in language

The next issue to be addressed is the locality condition in movement which operates at the syntax proper. As will be shown in this book, it is crucial to understand what regulates movement in the syntax proper in order to predict possible linearization patterns at PF. This research is situated in the framework of Chomsky (2000; 2001), and specifically, I will argue for the probe-goal system, given as follows.

(23) Probe-goal system

Matching is a relation that holds of a probe P and a goal G. Not every matching pair induces Agree. To do so, G must (at least) be in the domain D(P) of P and
satisfy locality conditions. The simplest assumptions for the probe-goal system are shown [below:]

a. Matching is feature identity.
b. D(P) is the sister of P.
c. Locality reduces to ‘closest c-command’.

D(P) is the c-command domain of P, and a matching feature G is closest to P if there is no G’ in D(P) matching P such that G is in D(G’). (Chomsky 2000: 122)

Following Chomsky (2000), I assume that a syntactic derivation must satisfy Full Interpretation, which requires that any features of lexical items that are not interpretable at the interface must be deleted or converted into interface-interpretable form. An agreement relation removes the uninterpretable features from the narrow syntax, allowing derivations to converge at the interfaces. This erasure of uninterpretable features of probe and goal is the operation called Agree. As stated in (23), a probe with uninterpretable feature(s) seeks a goal with matching (non-distinct) interpretable feature(s). If matched, an Agree relation holds between probe and goal, and the uninterpretable feature of the probe deletes.

Under the probe-goal system, two different sources motivate overt movement in language. One type is driven by an EPP feature associated with a probe that undergoes Match and Agree. This refers to a situation in which Agree is followed by Move of the goal because the matching probe carries an additional EPP feature. In this case, agreement is a prerequisite for the movement of the goal to its target position. This EPP feature is a sub-feature associated with an uninterpretable feature that undergoes Agree (see Pesetsky and Torrego 2001 for discussion of sub-features). Once the Agree relationship between a probe and goal is established, subsequent movement becomes obligatory when EPP is associated. This constitutes a typical case of morphology-driven feature movement in syntax.

The other type of movement is triggered by a so-called Edge Feature (EF) (also called a generalized EPP, P(eripheral) Feature, or OCC (Occurrence) in Chomsky’s papers). An EF is correlated with new interpretive options provided by a phasal head. A phase-internal unit may move to the edge of a phase, driven by an EF assigned on the phasal head. This type of movement is understood to be optional, and can apply only if it has a visible effect on the interfaces. For instance, a wh-phrase merged within a complement domain may move to the edge of a phase and bypass the PIC due to the EF. This optional movement yields otherwise unexpected semantic interpretations such as new/old information, specificity-definiteness, focus, or topic (what Chomsky 2001 called the interpretive complex ‘Int’). Chomsky assumes that only the phasal heads, v* and C, may be assigned an EF to permit successive cyclic
movement, and argues that this captures discourse-driven optional movement in syntax (see Chomsky 2013 for a different interpretation of Move).9

Most importantly for this book, this system enforces a strict locality condition on probe-goal Agree: namely, a probe may search a goal only under strict c-command. A probe may agree with a goal only when the goal is located under its c-command domain. If Move is a consequence of Agree, movement may occur only when the probe c-commands the goal prior to Agree. If Move is (optionally) triggered by an EF, only the elements c-commanded by a phasal head may undergo movement to the edge. Thus, whether movement is obligatory or optional, the goal of the movement must be located within the c-command domain of a probe. (Cf. Béjar and Rezac 2009; Chomsky 1995; Koopman 2006; Rezac 2003; Richards 2004 for the possibility of Spec-head agreement.)10

This locality condition on probe-goal Agree in (23) imposes an intriguing restriction on movement at the syntax proper. As described in (24), if an element XP is

9 Chomsky (2013) presents a different view on movement from this. He argues that both External Merge and Internal Merge (Move) come free; both are exactly the same (cost-free) operation and they differ only in what counts as a search space for Merge. Chomsky further argues that there is no notion of specifiers, and discards the X-bar theoretic convention that structures are endocentric. This has the rather surprising consequence that some movement (previously viewed as a result of Agree) is analyzed as an effort to provide a proper label for syntactic structures. For instance, in the transitive verbal projection (i), β is of the form [XP, YP] (a set of two distinct non-minimal projections), and thus it cannot be labeled properly. If EA raises to surface subject [Spec,TP], then β will be labeled v*, as required, since the copy of EA in β is invisible to syntax. Therefore, EPP is forced in this particular case. The most general case is successive-cyclic movement, presented in (ii). The intermediate steps are of the form \{α, XP, YP\}, where XP is a wh-phrase with YP a CP. If XP raises, α will be labeled C, as required. Therefore XP must raise, and successive cyclic movement is forced. When NP and TP are merged, as in (iii), there is no hierarchical relation holding between NP and VP, but labeling is possible because NP and TP share prominent features, namely φ-features—which serve as a label for the projection α in (iii).

(i) T [β (EA) [v* [V IA]]]
(ii) they thought [α in which Texas city [C [JFK was assassinated]]]?
(iii) \[C [α NP TP]\]

I do not incorporate the labeling approach to movement in this book. It should be noted, however, that the main thrust of my arguments is not affected by this. Both Chomsky’s earlier work (2000) and Chomsky (2013) adopt the claim that minimal search in (23) holds: whether Move is driven by EPP/EF or labeling, the same constraint holds that the triggering head (probe) must be situated higher than the goal. This book concerns constraints on movement out of multiple edges, which have no obvious connection with labeling-driven movement discussed in Chomsky (2013).

10 Contra Chomsky (2000; 2001), some researchers argue that a head may agree with an element in its specifier domain (e.g. Béjar and Rezac 2009; Chomsky 1995; Koopman 2006; Rezac 2003; Richards 2004). On this view, Spec-head relationship serves as a legitimate configuration for local agreement and movement. In particular, Chomsky (1995) argues that movement must occur to make Spec-head agreement possible. Rezac (2003) and Béjar and Rezac (2009) argue that a head can search its own Spec if it fails to find a goal within its complement domain. Koopman (2006) argues that the data explained under the probe-goal theory can be reanalyzed by Spec-head agreement (e.g. long-distance agreement, double agreement, existential constructions, intervention effects). Richards (2004) argues that parts of a wh-phrase merged in [Spec,CP] may move to [Spec,CP] of the same head, based on data from Bulgarian multiple wh-questions. In this book, I will argue for the claim that Spec-head agreement is impossible. Thus, my evidence for the probe-goal system argues against the line of approaches that allows Spec-head agreement.
merged within a specifier domain of a head $\alpha$, XP cannot agree with the head $\alpha$. Since the search domain of the head $\alpha$ is confined to its c-command domain $\beta P$, XP cannot be probed by $\alpha$. If probe-goal Agree is a prerequisite for movement, as Chomsky (2000; 2001) argues, we predict that XP cannot undergo movement within $\alpha P$. The specifier $\gamma P$ or its sub-part XP cannot undergo optional EF-movement within $\alpha P$, either: they are already on the edge of a phase and a phasal head cannot search its own specifier domain. Thus, if the probe-goal system is on the right track, we predict that there would be no movement from an inner specifier to an outer specifier of the same head (cf. e.g. anti-locality approaches to movement by Abels 2003; Boeckx 2007; Bošković 1994; 2005; Grohmann 2003a; 2003b; Saito and Murasugi 1999).11

(24) **Illegal movement under the probe-goal system**

\[
\begin{array}{c}
\alpha P \\
\alpha’ \\
\gamma P \\
XP [IF] \\
[uF, EPP] \\
\beta P \\
\end{array}
\]

Search domain of $\alpha$

I show that this prediction is borne out and has important consequences for ordering patterns in syntactic edges. In particular, I show that a wide range of ordering puzzles concerning scrambling can be explained by the interaction between the probe-goal system (syntax proper) and the CL model (syntax–PF mapping).

### 1.4 Overall predictions

In this book I argue for three major hypotheses concerning cyclic syntax. First, I argue alongside Fox and Pesetsky (2005a; 2005b) that syntactic structures undergo cyclic Spell-out at the PF–syntax interface, and that as a result of cyclic Spell-out, syntactic units are cyclically linearized (section 1.1). Second, I argue for the thesis that a predicational structure in general undergoes cyclic Spell-out and linearization (1.2). Third, I defend the claim that movement in language is constrained by the probe-goal system (1.3). On the basis of these hypotheses, I explain various types of ordering

11 Note that this prediction does not follow from an anti-locality approach such as (i). (23) not only blocks movement of $\gamma P$ in (24), but also movement of an element dominated by $\gamma P$ in (24). The anti-locality approaches may rule out the former type of movement but not the latter. See Ch. 4 for further discussion on the role of anti-locality in linearization.

(i) Each chain link must be at least a length of 1, where a chain link from A to B is of length $n$ if there are $n$ XPs that dominate B but not A (Bošković 2005: 16).
restriction in multiple movement in language. In particular, I propose that the
rigidity of syntactic edges can be captured by the interactions between locality
conditions in movement and the monotonicity of linearization. For an overall
outlook, this section presents major predictions concerning syntactic edges that
will be argued for in this book.

The CL model argues that relative orderings among the units merged within the
same Spell-out domain are fixed once and for all after the domain undergoes Spell-
out. Crucially, however, the CL model in itself does not make any specific prediction
concerning possible orderings at the narrow syntax. As emphasized in the preceding
sections, the linear orderings are fixed under CL only after syntactic derivation
undergoes licit movement in the narrow syntax. Thus, it is crucial to understand
the constraints on domain-internal movement to predict possible and impossible
orderings under CL. Recall, for example, the derivations in (9), repeated here as (25).
The CL model predicts that the derivation (25b) would be ruled out because the
ordering at \( \alpha P \) (X < Y) conflicts with the ordering at \( \beta P \) (Y < X); there is no way of
determining the ordering between X and Y at PF.

\[
(25) \begin{align*}
\text{a. } & [\alpha P \ X \ [\alpha \ Y]]: X < \alpha < Y \\
\text{b. } & *[\beta P \ Y_1 \ Z \ [\alpha P \ X \ [\alpha \ t_1]]]: Y < \alpha < \alpha P \Rightarrow Y < \alpha < \alpha P < X \\
\text{c. } & \sqrt{[\beta P \ Y_1 \ Z \ [\alpha P \ t_1 \ X \ [\alpha \ t_1]]]}: Y < \alpha < \alpha P \Rightarrow Y < \alpha < \alpha P < X
\end{align*}
\]

It should be noted, however, that exactly the same ordering as (25b) could be
permitted under CL if Y undergoes domain-internal movement to the left of X, as
described in (25c). In (25c), the ordering at \( \alpha P \) (Y < X) is indeed consistent with the
ordering at \( \beta P \) (Y < X). In other words, we cannot predict legitimate ordering
patterns simply from the base structure in (25a). Only after it is determined whether
leftward movement of Y over X is licit at the syntax can we predict whether
Y may precede X (via movement) in the higher domains. If leftward movement of
Y to the edge of \( \alpha P \) is grammatical, we predict that further movement of Y would be
grammatical, as in (25c). If leftward movement of Y within \( \alpha P \) is ungrammatical, we
predict that further movement of Y would be ungrammatical, as well, as in (25b). To
put it more generally, the prediction regarding linear orderings under CL is crucially
dependent on which types of domain-internal movement are allowed in the narrow
syntax.

In this book, I claim that the probe-goal system provides us with a useful guideline
for predicting possible ordering patterns under CL. In particular, I propose that
movement is restricted by the probe-goal system at the narrow syntax, and the
consequence of the probe-goal system is preserved at the syntax–PF interface due
to CL. As discussed in section 1.3, if movement must be triggered by a probe which c-commands a goal, it follows that movement from an inner edge to an outer edge of the same head cannot occur (recall (24)). If the probe-goal system is combined with the CL model, we can make various types of prediction concerning multiple movement out of edges and complements.

The first set of predictions that I argue for in this book concerns the contrast between sub-extraction out of edges and complements—which are described in (26)–(30). In particular, I consider possible sub-extraction patterns out of the edge domain, and compare them with the sub-extraction patterns from the complement domain. The prediction concerning domain-internal movement out of edges is illustrated in (26). The formal description is given in (27), which I call the Edge Generalization (EG).

(26) Domain-internal movement out of a syntactic edge

\[
\begin{array}{c}
\alpha P \\
\downarrow \\
Z \\
\downarrow \\
\gamma P \\
\downarrow \\
X \\
\downarrow \\
\beta P \\
\downarrow \\
\alpha \\
\end{array}
\]

*[X ... Z ... Y]*

(27) Edge Generalization (EG)

If X and Y are dominated by a specifier \(\gamma P\) of a Spell-out domain \(\alpha P\), X and Y cannot be separated by an \(\alpha P\)-internal element Z that is not dominated by \(\gamma P\).

As described in (26), suppose that X and Y are dominated by a specifier \(\gamma P\) of a Spell-out domain \(\alpha P\). If the probe-goal theory of movement is correct, we expect that the specifier \(\gamma P\), or the elements dominated by \(\gamma P\), cannot undergo domain-internal movement within \(\alpha P\); they are not in the search domain of \(\alpha\). The domain-internal element Z in (26), on the other hand, may enjoy much freedom in terms of movement or linear ordering at \(\alpha P\). More specifically, Z may precede X and Y, or follow both of them. If Z stays in situ, Z would follow X and Y. If Z moves to the edge of \(\alpha P\), Z would precede X and Y.

Crucially, however, Z cannot intervene between X and Y within \(\alpha P\). Specifically, Z cannot move into \(\gamma P\) (since \(\gamma\) does not c-command Z) and neither X nor Y can...
move to the left of Z within αP under the probe-goal system. Thus, the domain-
internal element Z cannot intervene between X and Y on the edge. Given that the
linear ordering at a Spell-out domain αP must be preserved in the higher domains, it
is predicted that X and Y cannot be separated by Z in the higher domains, either. If
the CL model and the probe-goal system are on the right track, we predict that the
EG in (27) will hold in languages.

In this book, I propose that the Spell-out domain αP in (27) corresponds to what
den Dikken (2006a) calls a predicational structure, and argue that the prediction for
syntactic edges in (27) is indeed borne out. Specifically, in the next two chapters
I consider the consequences of CL for syntactic edges in primary predication
domains. In Chapter 2, I argue that otherwise surprising restrictions in subject
scrambling or (sub-)extraction out of subject position can be understood as instances
of the EG in (27), where αP in (26) corresponds to the primary predicational domain
vP. It is shown that the subject itself is mobile in syntax, but owing to the interaction
of the probe-goal system and CL, it is temporarily frozen at [Spec,vP], which results
in peculiar ordering restrictions for syntactic edges at vP.

In Chapter 3, I show that the presence and apparent violation of the EG are
systematically correlated with underlying constituency of syntactic edges. If two
elements are constituent-mates on the edge, their distributions are restricted by
the EG. By contrast, if two semantically associated elements are not merged as a
constituent, their distributions are not affected by the EG. I show this by closely
looking into two types of floating quantifier in Korean and Japanese. I propose that
some floating quantifiers are adnominal while others are adverbial, and show that
only the distribution of adnominal floating quantifiers is subject to the EG. Adverbial
floating quantifiers are merged as a focus operator on top of a predicational unit, so
that their distribution is not subject to the EG but constrained by other principles in
the grammar such as variable binding and predicate abstraction. Independent evi-
dence for the proposed dichotomy of floating quantifiers is adduced there as well.

In the following two chapters, I show that the EG extends to non-primary
predicational domains, where αP in (26) corresponds to a predicational domain
other than vPs. I show that otherwise unexpected restrictions in object scrambling
can receive a natural account as instances of the EG in (27). In Chapter 4, I argue that
this is the case for small-clause domains. Specifically, I argue that the object merged
on the edge of a small-clause complement shows exactly the same distributional
patterns as the subject on the edge of vPs. In Chapter 5, I show that the same is true of
an object merged on the edge of adjunct small clauses and hidden predicational
structures within VPs. I compare the syntax of an object merged as the subject of a
secondary predication with the syntax of an object merged as a direct argument of the
verb. I show that only the former is subject to the EG for a principled reason.

I also compare the prediction in (26) with the prediction for domain-external
movement out of multiple edges illustrated in (28)—which distinguishes the current
proposal from previous claims which argue that edges are islands for sub-extraction (cf. e.g. Boeckx 2003a; Chomsky 2008; Gallego 2007; Gallego and Uriagereka 2007; Jurka 2010; Lasnik and Saito 1992; Lohndal 2011; Müller 2010; Polinsky et al. 2013; Rizzi 2006; Stepanov 2007; Surányi 2009 for a general ban on extraction out of subject domains).

(28) Domain-external movement out of a syntactic edge

\[
\begin{align*}
&\text{LP} \\
&\quad \text{LP} \\
&\quad \text{M} \\
&\quad \alpha P \quad \text{L'} \\
&\quad \gamma P \quad \alpha' \\
&\quad t_1 \quad Y \quad \beta P \quad \alpha \\
&\quad Z
\end{align*}
\]

Since \(\alpha\) in (28) does not c-command the edge, \(X\) and \(Y\) cannot undergo movement within \(\alpha P\). Importantly, however, \(X\) and \(Y\) may undergo movement \textit{out of} \(\alpha P\). They can be a goal of a higher head that c-commands \(\gamma P\), say \(L\) in (28). If \(X\) moves to the left of the domain-external element \(M\), \(M\) will intervene between \(X\) and \(Y\), but the derivation causes no problem in PF; the ordering at \(\alpha P\) is consistent with the ordering at \(\text{LP}\). Thus, the elements merged on the edge of a Spell-out domain in (28) may in principle undergo domain-external movement (if allowed by the narrow syntax) and can be separated by a domain-external element.

Put differently, the elements on the edge cannot undergo domain-internal movement, as in (26), but they can certainly participate in Match, Agree, and Move and undergo domain-external movement, as in (28), when a higher head is introduced into the narrow syntax. I argue that the edge is not an opaque domain in itself but may be accessible to sub-extraction triggered by a higher probe (cf. Chomsky 2008 for subject islands).

In the following chapters, I provide evidence for sub-extraction out of edge domains. In Chapter 2, I show that sub-extraction out of a subject is indeed possible when the subject moves across a domain-external element. A general ban on extraction out of the subject, on the other hand, makes an incorrect prediction that the subject cannot strand a quantifier at all. In Chapter 3, I further claim that sub-extraction out of a subject position is possible when the subject undergoes A’-movement, and this results in an interesting convergence between my proposal for the EG and Fitzpatrick’s (2006) theory of floating quantification. In Chapters 4
and 5, I extend this claim to sub-extraction out of an object merged on the edge of a secondary predicational domain. Confirming the predictions in (26)–(28), I show that sub-extraction out of the edge is impossible when the trigger is its own head, but that such extraction becomes possible when it is triggered by a domain-external head.

The next pattern to be discussed in this book concerns sub-extraction out of a complement position, illustrated in (29) and (30). As shown in (29), Y in the complement domain βP may undergo domain-internal movement triggered by α. Thus, Y can be separated from its associate Z by a domain-internal element such as X. This contrasts with the prediction for edges in (26). The elements on the edge cannot be separated by their domain-mates, whereas elements merged in the complement domain can be separated by their domain-mates. If Y in the complement domain moves through the edge of αP, described in (30), Y may undergo further movement to the left of domain-external elements such as M without any ordering contradictions. Thus, it is expected that Y in the complement domain may move out of αP, and that domain-external elements may intervene between Y and its associate Z as well.

(29) **Domain-internal movement out of a complement**

```
\[
\begin{array}{c}
\text{αP} \\
\text{γP} \quad \text{α'} \\
\text{X} \\
\text{βP} \quad \text{α} \\
\text{t1} \quad \text{Z}
\end{array}
\]
```

(30) **Domain-external movement out of a complement**

```
\[
\begin{array}{c}
\text{LP} \\
\text{M} \\
\text{αP} \quad \text{L} \\
\text{t1} \\
\text{γP} \quad \text{α'} \\
\text{X} \\
\text{βP} \quad \text{α} \\
\text{t1} \quad \text{Z}
\end{array}
\]
In the following chapters, I show that the predictions in (29) and (30) are borne out, and argue that this explains why sub-extraction out of the edge is far more restricted than sub-extraction out of the complement domain. In Chapter 2, I show that a wide range of subject–object asymmetries in scrambling and sub-extraction are analyzed by the contrast between (26) and (29). In Chapters 4 and 5, the same logic explains the asymmetries between sub-extraction out of the object on the edge and the object merged as an internal argument of a verb. As described in (28) and (30), domain-external movement out of the edge and complement is equally possible. I show that this explains the fact that both the subject and the object allow sub-extraction when they target domain-external position.

Together with general predictions regarding sub-extraction presented in (26)–(30), this book investigates the various types of interaction between syntactic principles and CL, which include the role of a null argument in linearization. In Chapters 4 and 5, I show that the presence or absence of a null subject is crucial to understand linearization patterns in complement predication. Specifically, it is shown that when a null subject can be postulated, order-preservation effects expected for a complement domain can be obviated. Otherwise impossible predicate fronting or sub-extraction becomes possible when a null subject can be licensed.

A sample paradigm is given in (31). If a null category is merged on the edge of αP, Z may move over X (Z < X) without going through the edge of αP. If X may move to the left of Z at a later stage, Z may intervene between X and Y as well (X < Z < Y) (cf. (26)). I show that in configurations like (31) with a null edge, certain ordering restrictions can be lifted. Capitalizing on the role of a null argument in CL, I explain why certain types of small-clause domain allow sub-extraction while others do not.

(31) *Edges with null subjects*
This book also examines cases in which domain-internal movement of the complement is restricted for a principled reason at the syntax proper (cf. (29) and (30)). In particular, I investigate possible interactions between anti-locality and CL. As illustrated in (29) and (30), sub-extraction out of a complement domain is licit as long as it is licensed at the narrow syntax. Crucially, however, domain-internal movement of the complement itself is predicted to be illicit. Under the line of approaches for anti-locality, movement of a complement to its own specifier is generally banned (see e.g. Abels 2003; Boeckx 2007; Bošković 1994; 2005; Doggett 2004; Grohmann 2003a; 2003b; Lee 2004; Saito and Murasugi 1999). Such movement is considered too local; the complement has already been merged with its head, and thus there is no reason to merge it again with the same head (see Pesetsky and Torrego 2001). A sample derivation is illustrated in (32).

(32)  *Anti-locality and Cyclic Linearization*

\[
\begin{array}{c}
\alpha P \\
\alpha P \\
\gamma P \\
X \\
\beta P \\
\alpha'
\end{array}
\]

Specifically, \(\beta P\) in (32) is the complement of the head \(\alpha\), and according to the anti-locality approach, the complement \(\beta P\) cannot move into a specifier of its own head \(\alpha\): \(\beta P\) has already been merged with \(\alpha\), and there is no reason to merge \(\beta P\) with \(\alpha\) again. This means that domain-internal extraction of the complement itself is impossible. If \(\alpha P\) is a Spell-out domain, we predict that this restriction would hold throughout the derivation as a consequence of CL. I argue that this prediction is indeed borne out. In Chapters 4 and 5, in particular, I argue that a small clause predicate cannot precede its own subject due to the interaction between anti-locality and CL. I also show that a Sentential Predicate cannot precede its (Major) Subject for the same reason. Based on this argument, I also explain why the (im)possibility of predicate fronting out of a complement domain is correlated with a selectional property of the main verb.

With this much theoretical background, let us now move on to our main chapters on how cyclic syntax affects (re)ordering at syntactic edges in languages.
In this chapter, I investigate the consequences of Cyclic Linearization (CL) for syntactic edges in primary predicational domains, with special attention to subject scrambling and floating quantification. The chapter is organized as follows. In section 2.1, I discuss a well-known subject–object asymmetry in scrambling in Korean and Japanese, which cannot be explained by the common assumption that the subject cannot undergo scrambling. In section 2.2, I propose that the asymmetry arises from a combination of locality conditions on movement and linearization in the vP domain. In 2.3, I examine further predictions concerning asymmetries in the scrambling of external vs. internal arguments in Korean. In 2.4, I extend my proposal to scrambling paradigms in Japanese. In 2.5, I investigate ordering patterns in sub-extraction in Russian scrambling, and argue that they can be captured by the current proposal straightforwardly. Section 2.6 summarizes the chapter by commenting on how the ordering puzzles analyzed in this chapter can be understood under a general proposal on syntactic edges discussed in Chapter 1.

2.1 The Subject Puzzle

In Korean, the quantity of a noun is expressed by a Numeral Quantifier (NQ) followed by a Classifier (Cl.). An NQ can be separated from its host NP in various contexts.\(^1\) The paradigms in (1) and (2) illustrate a well-known subject–object asymmetry in floating NQ constructions. As illustrated in (1b), the subject may intervene between the object and an object-oriented NQ (NQ\(_{\text{OBJ}}\)). In contrast, the object cannot intervene between the subject and a subject-oriented NQ (NQ\(_{\text{SUB}}\)), as

\(^1\) Several types of NQ constructions exist in Korean. The NQ in (i,a,b) cannot be separated from its host NP, whereas the NQ in (ii,a,b) can. (The plural marker -tul is optionally attached to an animate plural NP.) Ch. 2 focuses primarily on type (ii,a) numerals. I turn to type (ii,b) in Ch. 3, where I discuss adverbial floating quantifiers in Korean and Japanese.
in (2b) (see e.g. Gill 2001; Han 1989; Kang 2002; Ko 2007; C. Lee 1989; Y.-S. Lee 1993; Park and Sohn 1993; Shi 2000; as will be discussed shortly, similar paradigms have been observed in Japanese).2

    John-NOM beer-ACC 3-Clbottle drink-PAST-DEC
    ‘John drank three bottles of beer.’

        beer-ACC John-NOM 3-Clbottle drink-PAST-DEC
        ‘John drank three bottles of beer.’ (Korean)

    student-PL-NOM 3-Clperson beer-ACC drink-PAST-DEC
    ‘Three students drank beer.’

        student-PL-NOM beer-ACC 3-Clperson drink-PAST-DEC
        ‘Three students drank beer.’ (Korean)

The grammaticality of (1b) naturally follows under the assumption that the object may scramble to the left of the subject and strand the NQ OBJ, which merged with the object to form a constituent prior to scrambling (e.g. Kuroda 1983; Sportiche 1988). It is not obvious, however, how the ungrammaticality of (2b) can be accounted for.

Having observed the same paradigms in Japanese (independently of Korean), as in (3), Miyagawa (1989) argues that a subject-oriented NQ cannot modify the subject across the internal argument (e.g. (3b)) due to a mutual c-command requirement, stated in (4).3

Japanese (Miyagawa 1989: 28–9)

(3) a. Tomodati-ga 2-ri Sinzyuku-de Tanaka-sensei-ni atta.
    friends-NOM 2-Cl Shinjuku-in Tanaka-Prof.-DAT met
    ‘Two friends met Professor Tanaka in Shinjuku.’

        friends-NOM Shinjuku-in Tanaka-Prof.-DAT 2-Cl met
        ‘Two friends met Professor Tanaka in Shinjuku.’

(4) Mutual c-command requirement (Miyagawa 1989, based on Williams 1980)

The NP or its trace and the predicate or its trace must c-command each other.

2 For clarification, if focus is imposed on sey-myeng ‘3-Cl.’ in (2b), or if (2b) is an answer to a question like ‘How many students drank beer?’, the grammaticality of (2b) improves (Kang 2002). This chapter deals with paradigms without focus on NQs (in an out-of-the-blue context). I return to the effect of focus for NQ constructions in Ch. 3 (see esp. 3.4.5).

3 Cf. e.g. Fujita (1994), Haig (1980), Kuroda (1983), and Saito (1985) for the same observations in Japanese. See sect. 2.4 for detailed discussion of Japanese paradigms, and Ch. 3 for judgement variations concerning the relevant paradigm.
In particular, Miyagawa assumes the structure in (5) for (3b), and argues that the numeral 2-ri in (3b) does not c-command either the subject or the trace of the subject, violating the mutual c-command requirement. In contrast, (3a) is grammatical because the structure in (6) is available for (3a).

(5) Structure for (3b) (Miyagawa 1989: 29)

(6) Structure for (3a) (Miyagawa 1989: 29)

The mutual c-command condition, however, is too weak to explain the paradigm. As pointed out by Saito (1985: 211–12), suppose that the subject may scramble over the scrambled object, as depicted in (7). The subject-oriented NQ would then c-command the trace of the subject, satisfying the mutual c-command condition. Hence, if (7) is allowed, there should be no reason to expect that the subject cannot be separated from its associate NQ by the object in (2b) or (3b).

(7)

To be more specific, it is mysterious why a derivation like (8) must be ruled out under Miyagawa’s account. Miyagawa (1989) mentioned the contrasts in (3) but did not discuss problematic derivations like (7) and (8). Saito (1985) implicitly assumed that an NQ must stand next to the subject or the trace of the subject, but did not explicitly discuss the implications of his arguments for the mutual c-command condition.

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4 Miyagawa (1989) excludes the postpositional phrase Sinzyuku-de ’in Shinjuku’ from the tree structure assuming that it has no bearing on his arguments. But see 2.4 for discussion of how locatives interact with floated NQs in Japanese.
Given the subject–object asymmetry presented above, Saito (1985) proposes that the subject cannot scramble at all and thus cannot move to the left of the object in (7) (cf. Hoji 1985). On this view, the ungrammaticality of (2b) and (3b) is a result of the general ban on subject scrambling.5

Contrary to Saito’s claim, however, there is evidence that the subject can indeed scramble (see e.g. Ko 2005b; Kurata 1991; Y.-S. Lee 1993; Sohn 1995). As illustrated in (9), an embedded subject may scramble over the matrix subject (with some parsing difficulty) (Sohn 1995; cf. Saito 1985 for ‘downgraded’ subjects). Furthermore, the embedded subject may also strand an NQ<sub>Subj</sub> across the matrix subject, as shown in (10). If the subject could not scramble at all, we would expect (9) and (10) to be ungrammatical, contrary to the facts.6

5 Assuming that the subject is base-generated in [Spec,IP], Saito (1985) argues that the subject cannot scramble because its trace cannot be lexically governed by the verb. Once we adopt the vP-internal subject hypothesis (e.g. Kitagawa 1986; Koopman and Sportiche 1991; Kuroda 1988), however, the subject may move to [Spec,IP] over the scrambled object, leaving its trace lexically governed by the verb (via m-command), as in (i). Therefore, if (i) is allowed, the nonexistence of the derivation in (7) remains puzzling. I thank Mamoru Saito (p.c.) for pointing this out to me. Hoji (1985) independently argues that the subject cannot undergo (string-vacuous) scrambling (see also Sabel 2005 for a general ban on string-vacuous scrambling). As in (i), if both the subject and the object undergo (string-vacuous) scrambling, Japanese should show scope ambiguity in SOV sentences, contrary to the facts. Notice, however, that this reasoning cannot extend to (7). In (7), the result of multiple scrambling is not string-vacuous, unlike (ii).

(i) [IP S<sub>Subj</sub> [vP O<sub>Obj</sub> [vP t<sub>1</sub> NQ<sub>Subj</sub> [vP t<sub>2</sub> V]]]]
(ii) [S O t<sub>obj</sub> v]

6 To avoid parsing difficulty, a topic-marked matrix subject is employed in (9) (see Sohn 1995 and references therein for parsing strategies in double nominative constructions). Saito (1985:188–9) argues that an embedded subject may precede a matrix (topic-marked) subject because the matrix subject is ‘downgraded’ (i.e. lowered) as a parenthetical expression into the embedded clause. Once downgrading is allowed, however, it is not clear why the scrambled object cannot downgrade between the subject and NQ<sub>Subj</sub>, which again leaves the subject–object asymmetry shown in (1)–(3) unexplained.
One might think that subject scrambling is allowed only clause-externally ((9) and (10)), so that we may maintain the claim that the subject cannot move to the left of the object in (7). This conjecture, however, is incorrect. The subject may also scramble clause-internally in certain contexts. For example, the subject may be separated from its NQ by vP-external (high) adverbs such as pwunmyengghi ‘evidently’ (11) and way ‘why’ (12) (Ko 2005b).7 (For convenience, I call vP-external adverbs high adverbs.) If the subject were unable to scramble (clause-internally), we would expect (11) and (12) to be ungrammatical, contrary to the facts.

Note that the data in (9)–(12) can be straightforwardly explained if we assume that the subject can indeed undergo scrambling, contra Saito (1985). This, however, leaves the original contrast between (1b) and (2b) (or (3) in Japanese) unexplained. In fact, the subject–object asymmetry is not limited to (1b) and (2b), which implies that we

7 In Ko (2005b), I argue that ‘why’ in wh-in-situ languages including Korean (way ‘why’), Japanese (naze ‘why’), and Chinese (weishenme ‘why’) is externally merged in [Spec,CP] as a CP modifier. (See also Ko 2004 for Turkish ‘why’ niye.) There, I provide various arguments that it is necessary to assume that the subject can scramble over ‘why’ in [Spec,CP]. In Ko (2006), I also argue that further evidence for this claim can be drawn from the acquisition of wh-questions in Korean (asymmetries between ‘why’-questions and ‘where’-questions).
cannot simply resort to a stipulation for (2b). The data in (13) and (14) further confirm the generalization that subject scrambling is impossible in certain contexts where the object also undergoes scrambling. As illustrated in (13), when the subject and the object scramble together over an adverb, the subject cannot strand the NQ_{SUBJ} to the right of the object and the adverb. In contrast, the object can strand the NQ_{OBJ} to the right of the subject and the adverb, as shown in (14).8

(13) \[ S_2 \quad O_1 \quad adv \quad t_2 \quad NQ_{SUBJ} \quad t_1 \quad V \]  
\*[Haksayng-tul-i\_2 maykcwu-lul\_1 pwunmyenghi \_2 \_t sey-myeng \_t \_1 masiessta.  
student-PL-NOM beer-ACC evidently \_3-C\_person drank  
‘Evidently, three students drank beer.’

(14) \[ O_1 \quad S_2 \quad adv \quad t_2 \quad t_1 \quad NQ_{OBJ} \quad V \]  
Maykcwu-lul\_1 haksayng-tul-i\_2 pwunmyenghi \_2 \_t \_1 sey-pyeng masiessta.  
beer-ACC student-PL-NOM evidently \_3-C\_bottle drank  
‘Evidently, students drank three bottles of beer.’

In sum, the floating NQ paradigms presented here provide us with the following puzzle concerning the distribution of the subject and its NQ, which I call the Subject Puzzle:

(15) **The Subject Puzzle**

It seems that the subject can in principle undergo scrambling ((9)–(12)). However, the subject cannot strand its associate NQ across the object ((2), (13)). In contrast, the object may strand its associate NQ across the subject ((1), (14)). Why does the subject–object asymmetry occur? May we derive the asymmetry from a general syntactic theory?

In the next section, I present a solution to this puzzle.

### 2.2 A solution to the Subject Puzzle

Contra Saito (1985), I propose that subject scrambling is in principle possible. I argue, however, that Saito’s original insight is correct in that subject scrambling is more severely restricted than object scrambling for some principled reasons. I argue that

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8 One might wonder whether (2b) and (13) can be explained by the assumption that the scrambled object triggers an intervention effect for subject scrambling (Noam Chomsky, p.c.). In Appendix 2A, I discuss various reasons why this suggestion is inadequate to explain the paradigms of subject scrambling.
scrambling is not free in that only a limited set of word order shifts is allowed due to the interaction of linearization and locality conditions on movement. Specifically, the restrictions on subject scrambling naturally follow from a general property of syntactic edges discussed in Chapter 1. In this section, I first present my arguments without mentioning the abstract properties of syntactic edges in order to demonstrate step-by-step derivations of multiple scrambling under CL. After establishing the specific facts that characterize subject scrambling in detail, I discuss how my initial proposal on subject scrambling in this section can be generalized into the overall theory of syntactic edges.

2.2.1 Theoretical assumptions

First, I agree with Fox and Pesetsky (2005a; 2005b) in assuming that syntactic structures undergo CL at each Spell-out. In particular, I extend this claim to constructions with scrambling, and propose that syntactic derivations with scrambling are filtered out if they yield contradictory ordering statements at PF. Adapting den Dikken’s (2007a) proposal, I claim that ‘predicational domains’ constitute Spell-out domains, which include a variety of predicational structures introduced in Chapter 1 (section 1.2.3). In this chapter I focus on the primary predicational domain, vP, and aim to show that vPs undergo linearization as a whole—whether it is transitive or intransitive (cf. Chomsky 2000 and its successors on weak phases). In addition to vPs, root CPs are also assumed to undergo Spell-out as the final stage of the derivation (see Chapter 4 for further discussion).

Second, I take scrambling to be a feature-driven movement. I argue that scrambling is an operation that moves a maximal projection to the Spec of a head that bears a triggering feature, and that locality conditions on movement restrict possible types of scrambling (see e.g. Grewendorf and Sabel 1999; Kitahara 2002; Miyagawa 1997; 2001; 2005; Sabel 2001; 2005, who derive parallels between scrambling and general movement in different frameworks). There might be a number of ways of implementing this idea under the current minimalism. To be concrete, however, I will adapt a feature system developed by Grewendorf and Sabel (1999) into Chomsky’s (2000; 2001) probe-goal theory of movement.

I call a feature that triggers scrambling an ‘uninterpretable Σ feature’ (uΣ), and call the feature that undergoes agreement with uΣ an ‘interpretable Σ feature’ (iΣ). Following Chomsky (2000; 2001), I argue that movement is preceded by syntactic agreement between a probe and a goal. On this view, scrambling is considered as a two-step process: Σ agreement and subsequent EPP movement of the goal. Specifically, after Σ agreement, an EPP feature triggers movement of a goal with iΣ to the Spec of the probe with uΣ. Grewendorf and Sabel (1999) argue that Σ features may be realized in AGR-heads, but I argue with Chomsky (2000) that the head of a cyclic node (i.e. the head of a Spell-out domain) acquires an uΣ feature with EPP and triggers
scrambling. Additionally, the head of the complement in a Spell-out domain may inherit an $u\Sigma$/EPP feature from the head of a Spell-out domain (see also Chomsky 2008; 2013 for feature inheritance). I assume that when multiple scrambling is triggered by one head, the relevant goals move to multiple Specs of the probe (following Ura 1996; 2000; Richards 1997; 2001).\footnote{This formal description is given for concreteness only. The proposal that an Edge Feature (EF) is assigned directly to a phasal head can also be made compatible with my proposals: namely, that an element may optionally scramble to the edge of a phase because the phasal head carries an Edge Feature, and this leads to a novel discourse-related interpretation (see 1.3). In fact, Miyagawa (2005) explores this idea and argues that scrambling is triggered by EPP on phase-heads (see also McGinnis 2001, who applied the idea to applicative constructions). As noted in sect. 1.3, EF movement obeys the same locality condition as other feature movement. Thus, my overall argument still holds if we assume that scrambling is EF-driven on the edge. In this work, the nature of the $\Sigma$ feature remains quite open. It has been suggested that scrambling is related to discourse factors like topic and focus (cf. e.g. H.-W. Choi 1999; Dayal 2003; Lee and Cho 2004; Miyagawa 2010; S.-H. Yoon 1997). One might reasonably attribute those discourse functions to the $\Sigma$ feature. In this work, however, I do not explore this issue in any depth (see Miyagawa 2005; 2010 for extensive discussion on the relevant issue). Rather, I focus on formal properties of scrambling after an $u\Sigma$ feature is assigned to a lexical item.}

On the surface, scrambling may seem to occur optionally, but I argue that this is because a head may optionally acquire an $u\Sigma$ feature in the discourse. In other words, assignment of an $u\Sigma$ feature to a lexical item is optional (determined in the Numeration), but the operation triggered by the $u\Sigma$ feature itself is obligatory (regulated by the narrow syntax). Once the $u\Sigma$ feature is assigned to a head, scrambling must occur to erase the uninterpretable feature. This is essentially the view on optional scrambling taken by Grewendorf and Sabel (1999) with slightly different assumptions, which I adopt under the probe-goal system (see e.g. Boeckx 2003b; Bošković and Takahashi 1998; Fukui 1986; 1993; Kuroda 1988; Miyagawa 1997; 2001; 2005; 2010; Ross 1967; Saito 1985; Saito and Fukui 1998; Tada 1993; Takano 1998; Yang 2005; Yang and Kim 2005 for diverse perspectives on the optionality of scrambling).

Finally, following Sportiche (1988), I assume that a floating NQ and its host noun are externally merged as a constituent in the base structure. I understand that this is certainly not an innocent assumption to adopt, and that the internal structure of floating quantifiers has been quite controversial. However, I defer my discussion on this issue to the next chapter, where I extensively investigate the implications of the structure of nominals for the syntax of edges. For the current chapter, it suffices to say that this assumption will play a role in blocking some illicit movement of an object to the edge (see n. 12 below, and also Chapter 3 for further discussion).

2.2.2 Analysis: scrambling and Cyclic Linearization

Assuming the theory of scrambling sketched above, let us consider the paradigms of object scrambling, subject scrambling, and multiple scrambling showing the
Subject Puzzle. Consider first the basic paradigm of object scrambling in (1) (repeated here as (16)).

When object scrambling occurs, the object first scrambles over the subject to the outer Spec of vP, as in (17) (cf. Kitahara 2002; Lee and Cho 2004). When the vP is spelled out, the elements of vP are linearized and the ordering at vP is established in PF.

After linearization of vP, new heads are introduced, as illustrated in (18). The syntax continues to merge and remerge elements. As in (18), the object in [Spec,vP] may scramble further to [Spec,TP]. When the higher domain CP is spelled out, the ordering statements at CP in (18) are established. Since the ordering statements at vP and CP are consistent, the derivation poses no problem for PF.

As in the object-scrambling paradigm, we have seen that the subject can scramble and license the NQ over an (high) adverb, as shown in (11) and (12). A representative example is repeated here as (19).

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10 It is argued in previous literature that the object may undergo A-scrambling to [Spec,TP] (see Mahajan 1990; Saito 1992; Sohn 1995). For current purposes, it does not matter whether the object must or may scramble to [Spec,TP] (cf. Miyagawa 1997). But in Ch. 3 I argue for Fitzpatrick’s (2006) proposal that the object must undergo A’-scrambling when it strands an associate adnominal quantifier. For clarification, it does not matter for my explanation of scrambling data in this chapter whether fully inflected words (e.g. mek-ess-ta ‘eat-PAST-DEC’) are inserted into the syntax, or bound morphemes (e.g. ess ‘PAST’, ta ‘Declarative’) are combined with their host via head movement or morphological merger, but see Chs 4 and 5 for relevant discussion concerning predicate fronting.
Haksayng-tul-i pwunmyenghi t1 sey-myeng maykwu-lul masessta.

'Evidently, three students drank beer.'

Under the CL model, (19) is derived as follows. When the vP structure of (19) is projected and spelled out, the ordering statements for the vP domain are established, as given in (20a). Given that high adverbs such as pwunmyenghi ‘evidently’ and way ‘why’ are externally merged outside vP, high adverbs do not participate in the linearization of vP (see 2.3 for low adverbs merged within vP). After a high adverb is merged in the CP domain, the subject moves to the left of the adverb and the CP is spelled out. After the Spell-out of CP, the ordering statements in the CP domain are established, as described in (20b). The linearization at CP adds new ordering statements (e.g. S < adv < NQSUBJ), but crucially there is no contradiction between the ordering in vP and the ordering in CP. Hence, the derivation poses no problem for PF. The analysis for (19) straightforwardly extends to examples like (10), where the matrix subject intervenes between the embedded subject and its NQ.

(19) [ S1 adv t1 NQSUBJ O V ]

(20) a. [vP [S NQSUBJ [vP O V ] v ]]

Linearize vP: S<NQSUBJO<V<v

b. [CP S1 adv [TP t1 [vP [t1 NQSUBJ [vP O V ] v ]] T] C]

Linearize CP: S<adv<vP<T<C

=> Ordering at CP: S<adv<NQSUBJ<O<V<v<T<C

Consider now the interaction of multiple scrambling and linearization under the current proposal. The ungrammatical paradigm of multiple scrambling is repeated here as (21).

(21) Illicit multiple scrambling

Given that scrambling may occur optionally within vP, we need to consider two logical possibilities: Case I, in which the object does not scramble in vP, and Case II, in which the object scrambles in vP. Crucially, given that the subject is externally
merged in [Spec, vP], the subject cannot scramble within vP; the subject is not in the search domain of v.

Let us start the discussion with Case I, demonstrated in (22).

(22) Case I: The object does not undergo scrambling in vP

a. 

```
(22) Case I: The object does not undergo scrambling in vP

a. 

```

```

\begin{center}
\begin{tikzpicture}
  \node (s) at (0,0) {S};
  \node (np) at (1,1) {nP};
  \node (nqs) at (2,1) {NQSUBJ};
  \node (vp) at (3,1) {VP};
  \node (v) at (4,1) {v};
  \node (o) at (4,0) {O};
  \node (v') at (1,2) {v'};
  \draw (s) -- (np);
  \draw (np) -- (nqs);
  \draw (nqs) -- (vp);
  \draw (vp) -- (v);
  \draw (v) -- (o);
\end{tikzpicture}
\end{center}
```

Ordering at vP: S<NQSUBJ<<O<<V<<v

b. 

```

\begin{center}
\begin{tikzpicture}
  \node (cp) at (0,0) {[CP};
  \node (s2) at (1,0) {S_2};
  \node (o1) at (2,0) {O_1};
  \node (adv) at (3,0) {adv};
  \node (vp) at (4,0) {[vP [ t_2 NQSUBJ] [VP t_1 V] v] T} C);11
  \draw (cp) -- (s2);
  \draw (s2) -- (o1);
  \draw (o1) -- (adv);
  \draw (adv) -- (vp);
\end{tikzpicture}
\end{center}
```

Ordering at CP: S<adv<<NQSUBJ<<V<<v<<T<<C [ordering contradiction!]

When the vP domain is spelled out in (22), the linear ordering in (22a) is established. Crucially, if the object does not undergo scrambling, the object follows both the subject and the NQSUBJ in the vP domain. After the Spell-out of vP, an adverb may be merged in the higher Spell-out domain. Suppose that the subject and the object undergo multiple scrambling over the adverb so that the object intervenes between the subject and NQSUBJ as in (22b). When the root CP is spelled out, the orderings at CP are established as given in (22b).

Notice that in (22b), the ordering statements in the CP domain are inconsistent with the orderings established in the vP domain. In particular, in the vP domain, the ordering statements indicate that NQSUBJ precedes O (NQSUBJ < O). In the CP domain, however, the ordering statements indicate that O precedes NQSUBJ (O < NQSUBJ). Hence, an ordering contradiction arises for the phonology and this derivation cannot be pronounced at PF.

Now turn to Case II, where the object does undergo scrambling at vP:

11 As discussed in Ch. 1, under Fox and Pesetsky (2005a; 2005b), elements in a non-edge position of a Spell-out domain may move to the higher domain as long as the movement yields no ordering contradiction at PF (cf. Chomsky 2001). Thus, the fact that the object in VP (a non-edge position) moves to the left of the adverb in (22b) is irrelevant in deciding the grammatical status of (22).
Case II: The object undergoes scrambling in vP

As illustrated in (23a), when the object undergoes scrambling to the left of the subject (moving to the outer Spec of vP), it also scrambles to the left of NQ_SUBJ. When the vP is spelled out, the ordering in (23a) is established. Note crucially that the scrambled object must precede both the subject and the NQ_SUBJ in the vP. After Spell-out of vP, the object may move further to the left of an adverb in the next Spell-out domain. Suppose that the subject moves over the scrambled object in such a way that the object intervenes between the subject and NQ_SUBJ, as described in (23b). When the CP is spelled out, the orderings in (23b) would then be established.

Notice that in (23b), the new orderings added in the CP domain are again inconsistent with the orderings established in the vP domain. In particular, in the vP domain, the ordering statements indicate that O precedes S (O < S). In the CP domain, however, the ordering statements indicate that S precedes O (S < O). Hence, an ordering contradiction arises for the phonology, and this structure cannot be pronounced at PF.

In short, whether the object undergoes vP-scrambling or not, the object cannot intervene between the subject and the NQ_SUBJ. If the object does not scramble in vP, it follows both the subject and the NQ_SUBJ in the vP domain, as in (22). If the object

12 If the subject and the NQ_SUBJ were not a constituent at vP, the object would move into a position between S and NQ_SUBJ in the vP domain, and the illicit order (S < O < NQ_SUBJ) would be incorrectly permitted. Hence, to the extent that my analysis is correct, it provides support for the view that the NP and NQ form a constituent in their base position. In Ch. 3, I show that this argument is further supported by the fact that floating quantifiers that plausibly do not form a constituent with their host NP indeed allow the linear ordering (S < O < FQ_SUBJ).
scrambles in vP, it precedes both the subject and the NQ_{SUBJ} in the vP domain, as in (23). Given that CL requires the ordering in the vP domain to be preserved in the higher domains, the object cannot intervene between the subject and the NQ_{SUBJ} in the higher domains, either.

One of the crucial premises of this analysis is that the subject is directly merged at [Spec, vP] and thus cannot vP-scramble. If the subject were able to scramble from the inner Spec to the outer Spec of v (to the left of the scrambled object within the vP), as in (24), the linear ordering in (21) would be incorrectly allowed.

(24) *Illicit scrambling: subject scrambling from [Spec, vP] to [Spec, vP]*

![Diagram](image)

*Linearize vP: S<O<NQ_{SUBJ}<V<v* [Impossible Movement!]

Under my proposal, (24) is ruled out by a consideration of what a possible probe-goal relationship is. Specifically, [Spec, vP] is not in the search space (c-command domain) of v. Hence, no scrambling is possible from [Spec, vP] to [Spec, vP]. (In section 2.3, it is shown that a subject that is not externally merged in [Spec, vP] behaves differently.) Thus, to the extent that my analysis is successful, it provides further support for the thesis that scrambling is driven by a head in a legitimate probe-goal configuration. More generally, my arguments provide further support for the line of approaches arguing that scrambling is a feature-driven movement (e.g. Miyagawa 1997; 2001; Grewendorf and Sabel 1999; Sabel 2001; Kitahara 2002; cf. the line of approaches arguing that scrambling occurs without an attractor: Fukui 1993).^13^ Under the present proposal, the crucial contrast between the subject and the object in (13) and (14) follows from the fact that the object is *not* externally merged in the Spec of the Spell-out domain head v. The object is in the search domain of v. Since

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^13^ To accommodate my arguments within an approach that does not assume a probe-goal relationship in scrambling, one needs to postulate an extra constraint to block (24). Note that it is unclear whether an anti-locality constraint (e.g. Bošković 1994; 2005; Grohmann 2003a; 2003b; Saito and Murasugi 1999) can capture (24). The anti-locality approach blocks movement of the entire NP from [Spec, vP] to [Spec, vP] in (24), but it does not block sub-extraction of the subject from inside NP to [Spec, vP] in (24) since there exists a maximal projection NP.
there is a head (i.e. \( v \)) that can attract the object over the subject in the \( vP \) domain, the object may scramble to the left of the subject before the Spell-out of \( vP \). Hence, the subject may intervene between the object and the \( \text{NQ}_{\text{obj}} \). This is demonstrated in (25) for (14) with licit multiple scrambling (cf. (21) with illicit multiple scrambling).

(25) **Licit multiple scrambling**

\[
\begin{align*}
a. \; [vP \; O_1 \; [vP \; S \; [vP \; t_1 \; \text{NQ}_{\text{obj}}] \; V] \; v]\bigg]
\end{align*}
\]

**Ordering at \( vP \):** \( O < S < \text{NQ}_{\text{obj}} < V < v \)

\[
\begin{align*}
b. \; [CP \; O_1 \; S_2 \; adv \; [vP \; t_1 \; [vP \; t_2 \; [vP \; t_1 \; \text{NQ}_{\text{obj}}] \; V] \; v]] \; T \; C \bigg]
\end{align*}
\]

**Ordering at \( CP \):** \( O < S < \text{adv} < \text{NQ}_{\text{obj}} < V < v < T < C \)

It is worth noting here that, in a sense, my arguments support Saito’s (1985) original insight. In particular, the current proposal argues that Saito was correct in arguing that subject movement is more restricted than object movement. My proposal suggests, however, that subject scrambling is more restricted only in a particular domain—namely, in the domain that the subject is externally merged. I derive the restriction on subject scrambling from the structural configuration in which the subject is placed, rather than from postulating a general ban on subject movement. (See Chapters 4 and 5 for implications of this approach for object scrambling.)

### 2.3 Further predictions

In the previous sections, I have shown that there is no general ban on subject scrambling. Rather, the subject–object asymmetry in scrambling follows from a probe-goal relationship established in movement and CL. In this section, I provide various further arguments supporting this account. In particular, I show that every element base-generated within \( vP \) behaves like an object in its syntactic distribution and linearization with respect to the subject and \( \text{NQ}_{\text{subj}} \). I demonstrate that this generalization is predicted by the CL approach to scrambling.

#### 2.3.1 Extension to \( vP \)-internal arguments and adjuncts

Thus far, I have argued that the subject does not undergo scrambling within \( vP \) because it is externally merged at the Spec of a Spell-out domain head \( v \). This argument makes the following prediction: no element that is base-generated in \( vP \) can intervene between the subject and its associate NQ. Consider (26) and (27) for detailed description.
As schematized in (26), if any non-subject element XP undergoes scrambling in vP, it must scramble to the left of both the subject and the NQ_{SUBJ}. If the non-subject element does not undergo scrambling, as in (27), it must follow both the subject and the NQ_{SUBJ}. The subject externally merged in [Spec,vP] cannot move within vP. Therefore, given CL, we predict that a non-subject element in vP cannot intervene between the subject and the NQ_{SUBJ}. The Subject Puzzle discussed above is just a particular instance of this prediction. In what follows, I show that this prediction is borne out by various tests.

As predicted, vP-internal arguments uniformly cannot split the subject and its associate NQ. This is illustrated by (28), where the relevant argument is an indirect object, and also by (29), where the relevant argument is a postpositional phrase (PP).14

14 As expected, sentences like (i) and (ii), where two vP-internal XPs intervene between S and NQ_{SUBJ}, are also ungrammatical. (The sentences in (28b) and (29b) are slightly less degraded than the sentences in (i) and (ii). I do not have an account of this contrast.)

   student-PL-NOM 3-CL Mary-DAT beer-ACC give-PAST-DEC
   'Three students gave Mary beer.'

(i) *Haksayng-tul-i Mary-eykey maykcwu-lul sey-myeng cwu-ess-ta.
   student-PL-NOM Mary-DAT beer-ACC 3-CL give-PAST-DEC
   'Three students gave Mary beer.'

    student-PL-NOM beer-ACC classroom-to 3-CL bring-PAST-DEC
    'Three students brought beer to the classroom.'
Further predictions

b. ³* Haksayng-tul-i Mary-eykey sey-myeng maykcwu-lul cwu-ess-ta.
    student-Pl-NOM Mary-Dat 3-Cl beer-ACC give-PAST-DEC
    ‘Three students gave Mary beer.’

    student-Pl-NOM 3-Cl beer-ACC classroom-to bring-PAST-DEC
    ‘Three students brought beer to the classroom.’

b. ³*Haksayng-tul-i kyosil-lo sey-myeng maykcwu-lul kacyewa-ss-ta.
    student-Pl-NOM classroom-to 3-Cl beer-ACC bring-PAST-DEC
    ‘Three students brought beer to the classroom.’

In the preceding section we saw that the subject and NQ$_{SUBJ}$ can be separated by a high adverbial merged outside vP ((11), (12)). A high adverb is not linearized with respect to the subject at the Spell-out of vP. The subject can move over the high adverb in the higher domain and add a new ordering statement that the subject precedes the high adverb without yielding any ordering contradictions.

Now let us consider a low adverbial merged within vP. Since the low adverb is introduced before the Spell-out of vP, the subject must be linearized with respect to the low adverbial at vP, as in the case of indirect object, direct object, and postpositional phrase arguments. We then predict that the subject and the NQ$_{SUBJ}$ cannot be separated by a low adverbial, in contrast to the paradigms with high adverbs. This prediction is borne out. As illustrated in (30a), a low adverb, such as ilpwule ‘deliberately’, cannot intervene between the subject and its NQ$_{SUBJ}$ in contrast to the high adverb pwunmyenghi ‘evidently’ in (30b).

    student-Pl-NOM deliberately 3-Cl ball-ACC receive-PAST-DEC
    ‘Three students received a ball deliberately.’

    student-Pl-NOM evidently 3-Cl ball-ACC receive-PAST-DEC
    ‘Evidently, three students received a ball.’

This high–low adjunct asymmetry is verified by testing other pairs of adverbs and PPs in (31).

---

15 David Pesetsky (p.c.) notes that deliberately in English can be ambiguous:

(i) The students deliberately took that test on Thursday.

On one reading, (i) means that the students made a deliberate decision, so that they took the test on Thursday. On the other reading, (i) means that someone else (e.g. an instructor) made a deliberate decision, so that the students took the test on Thursday. (But some English speakers get only the former reading.) Korean ilpwule ‘deliberately’ allows only the former reading where the subject is the agent of the deliberate decision.
Interestingly, the high–low adverb asymmetry with respect to an NQ_{Subj} in (30) and (31) disappears when we employ an object-oriented NQ_{Obj}, as demonstrated in (32).

ball-ACC student-PL-NOM deliberately 3-CLthing receive-PAST-DEC
‘Students received three balls deliberately.’

ball-ACC student-PL-NOM probably 3-CLthing receive-PAST-likely-COP
‘Probably, students received three balls.’

This fact is again predicted under the current proposal. Given that the object can undergo scrambling to the left of the low adverb within vP, the object in (32a) can be reordered with respect to the low adverb before the Spell-out of vP, as illustrated in (33a). Moreover, the object and the NQ_{Obj} can also be separated by a high adverb in (32b). In the CP domain, a new ordering statement is added, specifying that the object precedes the high adverb, but this does not yield any ordering contradictions between the vP domain and the CP domain, as illustrated in (33b). (In (33b), the subject additionally scrambles to the left of the high adverb.)

The arguments from the high–low adverb asymmetry provide us with another immediate prediction. If a certain adverb can be merged either in a high (vP-external) or low (vP-internal) position, the floating quantifier construction will disambiguate the syntactic position of the adverbal. Specifically, only the high adverbial reading...
will emerge when an ambiguous adverb intervenes between the subject and the NQ\textsubscript{SUBJ}. This prediction is borne out as well.

As illustrated in (34), subject-oriented adverbials (e.g. mwulyeyhakey ‘rudely’, yenglihakey ‘cleverly’) are ambiguous between the (high) evaluative reading and the (low) agent-oriented manner reading (see Jackendoff 1977 for the same paradigm in English).

    John-\text{NOM} rudely beer-\text{ACC} drink-\text{PAST}-\text{DEC}

‘It was rude that John drank beer.’ [but he drank in a polite manner] (high reading)

‘John drank beer in a rude manner.’ [*but he drank in a polite manner] (low reading)

As expected, the ambiguity in (34) disappears when mwulyeyhakey ‘rudely’ intervenes between the subject and the subject-oriented NQ\textsubscript{SUBJ}. As illustrated in (36), the intervening adverb retains only the high adverbial reading, in contrast to (35).\textsuperscript{16} The paradigm established here thus implies that the floating quantifier construction provides a useful diagnostic to test whether an adverbial is merged within or outside \textit{vP}.

    student-\text{PL-\text{NOM} 10-\text{CL}} rudely beer-\text{ACC} drink-\text{PAST}-\text{DEC}

(?)\textsuperscript{*} ‘It was rude that ten students drank beer.’

‘Ten students drank beer in a rude manner.’

    student-\text{PL-\text{NOM} 10-\text{CL}} rudely beer-\text{ACC} drink-\text{PAST}-\text{DEC}

‘It was rude that ten students drank beer.’

‘Ten students drank beer in a rude manner.’

In the next subsection, I provide further evidence for my account from asymmetries between an unaccusative/passive subject and an unergative subject in terms of linearization.

2.3.2 \textit{Unaccusative/passive vs. unergative subject}

I have argued that the subject and NQ\textsubscript{SUBJ} cannot be separated by a \textit{vP}-internal element because the subject is directly merged in [Spec,\textit{vP}] and thus cannot scramble

\textsuperscript{16} For reasons unclear to me, I strongly prefer the manner reading with mwulyeyhakey ‘rudely’ for (35). If mwulyeyhakey ‘rudely’ scrambles over the subject, as in (i), the manner and evaluative readings are equally possible.

(i) Mwulyeyhakey, haksayng-tul-i yel-myeng maykcwulul masessta.
    rudely student-\text{PL-\text{NOM} 10-\text{CL}} beer-\text{ACC} drank

‘It was rude that ten students drank beer’, ‘Ten students drank beer in a rude manner.’
within vP. This argument leads us to predict that if the subject is not externally merged at [Spec,vP], the subject and NQ_{SUBJ} may be separated by a vP-internal element. I argue that this prediction is upheld.

Miyagawa (1989) observes a contrast between the unaccusative/passive and unergative subject in Japanese: while the unaccusative and passive subject can be separated from its associate NQ_{SUBJ} by a (low) adjunct phrase or by an agentive by-phrase, the unergative subject cannot (see Miyagawa 1989: 38–44 for Japanese examples; cf. Kuno and Takami 2003 for different judgements).

As illustrated in (37)–(39), a similar paradigm is also observed in Korean (see Lee 1989 for other contrasts between the unaccusative and unergative paradigms).

(37) Ecey, catongcha-ka koyhan-eykey twu-tay pwuswu-eci-ess-ta. yesterday, car-NOM robber-by 2-CI break-PASS-PAST-DEC

‘Yesterday, two cars were vandalized by a robber.’ (passive, S < PP < NQ_{SUBJ})

(38) Koyangi-ka i pyeng-ulo sey-mali cwuk-ess-ta. cat-NOM this disease-by 3-CI die-PAST-DEC

‘Three cats died from this disease.’ (unaccusative, S < PP < NQ_{SUBJ})


‘Two students telephoned with their own money.’ (unergative, S < PP < NQ_{SUBJ})

In fact, this asymmetry between unaccusative/passive and unergative subjects is exactly what the current approach to scrambling predicts. Given the well-established hypothesis that the unaccusative/passive subject is derived from an internal argument position in VP (e.g. Belletti and Rizzi 1981; Burzio 1981; 1986; Miyagawa 1989; Perlmuter 1978), we expect that the derived subject may behave just like the object in terms of linearization. In particular, if the subject is externally merged within VP and undergoes movement to [Spec,vP], it is expected that the subject can indeed revise the word order with respect to the (low) adverb phrase before the Spell-out of vP, as demonstrated in (40). Furthermore, given the hypothesis that an unergative subject is base-generated in [Spec,vP], just like the subject in a transitive vP (e.g. Chomsky 1995; Hale and Keyser 1993), it is also predicted that low adjunct phrases

---

17 Lee (1989) judges (i) to be slightly better than (ii), and argues that an unaccusative subject allows an associate NQ more readily than an unergative subject. Note, however, that the contrast between (37, 38) and (39) is much stronger than the claimed subtle contrast between (i) and (ii).

(i) Haksayng-i sey-myeng tochakha-yess-ta.

student-NOM 3-CI arrive-PAST-DEC

‘Three students arrived.’


student-NOM 3-CI laugh-PAST-DEC

‘Three students laughed.’
such as caki-uy ton-ulo ‘with self’s money’ in (39) will not be able to intervene between the unergative subject and the NQ\textsubscript{SUBJ}. This is illustrated in (41).\textsuperscript{18}

(40) **Unaccusative/passive subject**

\[
\begin{align*}
\text{Linearize } vP: & S < L-XP < NQ\textsubscript{SUBJ} < V < v
\end{align*}
\]

(41) **Unergative subject**

\[
\begin{align*}
\text{Linearize } vP: & L-XP < S < NQ\textsubscript{SUBJ} < (L-XP) < V < v
\end{align*}
\]

Another prediction that follows from my analysis is that the asymmetry between the unaccusative/passive and unergative subjects seen in (39)–(41) will disappear if we test the paradigm with a high adverb. Since high adverbs are introduced after the

\textsuperscript{18} Chomsky (2001) argues that unaccusative/passive vPs are weak phases, which do not undergo Spell-out (see Legate 2003 for opposing arguments). Here, I argue that predicational structures, including unaccusative/passive vPs, must undergo Spell-out. Thus, I do not pursue Chomsky’s weak phase theory here. Note, however, that my arguments for (37) and (38) would remain intact even if we assumed that unaccusative or passive constructions lack \(v\) (or if intransitive vPs are not Spell-out domains following Chomsky 2001). If intransitive vPs do not undergo Spell-out, the subject in (37) and (38) may move to the left of low adjuncts and undergo linearization in the next predicational domain (TP or CP).
Spell-out of \( vP \), it does not matter for the purpose of the linearization of \( vP \) whether the subject is base-generated within \( VP \) or in \([\text{Spec}, vP]\). In both cases, the subject is able to undergo scrambling over the high adverb and add a new ordering statement (e.g. \( S < \text{H-adv} \)) in the higher domain. This prediction is borne out, as shown by the grammaticality of (42).\(^{19}\)

    student-\( \text{PL-NOM} \) probably arrive-PAST-likely-COP
    ‘Probably, three students arrived.’ [unaccusative, \( S < \text{H-adv} < \text{NQ}_{\text{SUBJ}} \])

    student-\( \text{PL-NOM} \) probably telephone-PAST-likely-COP
    ‘Probably, three students telephoned.’ [unergative, \( S < \text{H-adv} < \text{NQ}_{\text{SUBJ}} \])

### 2.4 Subject scrambling and NQ scrambling in Japanese

In the preceding sections, we have seen that a variety of asymmetries in Korean scrambling are predicted from the interaction of a probe-goal theory of movement and CL. In this section, I investigate possible parallels between Korean and Japanese in floating quantifier constructions. I start the discussion with the type of NQ in (43a), which Korean and Japanese clearly share. I then comment on the distribution of the type of NQ in (43b), which Korean lacks.\(^{20}\) (See e.g. Downing 1996; Fujita 1994;)

\(^{19}\) I assume that adverbs in Korean may also undergo scrambling, given the data in (i) and (ii), which show that a low adverb may precede a high adverb. As predicted, paradigms like (iii) are ungrammatical when low and high adverbs intervene between the subject and \( \text{NQ}_{\text{SUBJ}} \) together. I thank Maria Luisa Zubizarreta (p.c.) for clarifying this point.

(i) Amato John-i ilpwule Mary-lul tayli-ess-ta.
    probably John-\( \text{NOM} \) deliberately Mary-\( \text{ACC} \) hit-PAST-DEC
    ‘Probably, John hit Mary deliberately.’

(ii) Ilpwule amato John-i Mary-lul tayli-ess-ta.
    deliberately probably John-\( \text{NOM} \) Mary-\( \text{ACC} \) hit-PAST-DEC
    ‘Probably, John hit Mary deliberately.’

    students-\( \text{NOM} \) deliberately probably 3-\( \text{CL} \) John-\( \text{ACC} \) hit-PAST-likely-COP
    ‘Probably, three students hit John deliberately.’

\(^{20}\) The data in 2.4 were also reported in Ko (2008) with a more general description of Japanese classifier constructions. In Japanese, numeral quantifiers of the types (i.a) and (i.b) cannot be separated from their host NPs (the same fact holds in Korean: see n. 1 above), and thus examples like (i.a) and (i.b) will not be discussed in this section. Note also that Japanese lacks multiple Case NQ constructions such as (ii) found in Korean.

(i) a. John-wa hon san-satu-o katta.
    John-\( \text{TOP} \) book 3-\( \text{CL-ACC} \) bought
    ‘John bought three books.’

b. John-wa san-satu-no hon-o katta.
    John-\( \text{TOP} \) 3-\( \text{CL-GEN} \) book-\( \text{ACC} \) bought
    ‘John bought three books.’
If my account for the Subject Puzzle extends to Japanese, we expect that the asymmetries observed in Korean subject scrambling should also be observed in Japanese. My own survey and (at least some) previous observations support this expectation. Specifically, as observed with Korean paradigms, Japanese paradigms demonstrate that a subject and its associate NQ cannot be separated by a vP-internal element, unlike the paradigms with an object-oriented NQ. Representative examples are given in (44)–(50).

As briefly seen in section 2.1, the subject in Japanese cannot be separated from its associate NQ by the object, whereas the object can be separated from its associate NQ by the subject. The contrast is repeated here with (44) and (45) (see e.g. Fujita 1994; Haig 1980; Kuroda 1983; Miyagawa 1989; Saito 1985; Ueda 1990; see also section 2.1 for examples and introductory discussion, but also Chapter 3 for discussion of judgement variations regarding some floating NQ constructions in Japanese).

(44) *Subject < Object < NQ\textsubscript{Sub}

a. \textit{Gakusei-ga san-nin sake-o nonda.}
   student-NOM 3-Cl\textsubscript{people} sake-ACC drank
   ‘Three students drank sake.’

b. *\textit{Gakusei-ga sake-o san-nin nonda.}
   student-NOM sake-ACC 3-Cl\textsubscript{people} drank
   ‘Three students drank sake.’

(45) Object < Subject < NQ\textsubscript{Obj}

a. \textit{Gakusei-ga hon-o go-satu katta.}
   student-NOM book-ACC 5-Cl\textsubscript{book} bought
   ‘Students bought five books.’

(ii) *\textit{John-wa hon-o san-satu-o katta.}
   John-TOP book-ACC 3-Cl-ACC bought
   ‘John bought three books.’ (cf. Korean, n. 1 above)
b. Hon-o gakusei-ga go-satu katta.
   book-ACC student-NOM 5-Cl book bought
   ‘Students bought five books.’

The symmetry between (44b) and (46, 47) shows that not only the object but also other vP-internal arguments such as indirect object and PP arguments cannot intervene between the subject and a subject-oriented NQ.

(46) ?*Subject < Indirect Object < NQ_{Subj}
   ?*/Gakusei-ga Mary-ni san-nin biiru-o ageta.
   student-NOM Mary-DAT 3-Cl beer-ACC gave
   ‘Three students gave Mary beer.’ (N. Hasegawa, p.c.)

(47) ?*Subject < PP argument < NQ_{Subj}
   ?*/Gakusei-ga hako-ni san-nin koin-o ireta.
   student-NOM box-in 3-Cl coin-ACC put
   ‘Three students put a coin/coins in a box.’
   a.
   b. ?/Gakusei-ga zyaanaru-ni huta-ri ronbun-o toukousita.
      student-NOM journal-to 2-Cl paper-ACC submitted
      ‘Two students submitted papers to a journal.’ (Y. Endo, p.c.)

The facts in (48) and (49) further show that a low adjunct cannot intervene between the subject and a subject-oriented NQ, but may intervene between the object and an object-oriented NQ. (See e.g. Fujita 1994; Koizumi 1994; Miyagawa 1989 for the distribution of low adverbs like instrumental and manner adverbs with respect to a subject-oriented NQ.)

(48) ?* Subject < low adjunct < NQ_{Subj}
   a. Manner adverbs
      ?/Gakusei-ga gatugatu san-nin susi-o tabeta (koto)
      student-NOM greedily 3-Cl sushi-ACC ate (fact)
      ‘Three students ate sushi greedily.’ (Kawashima 1998, citing Miyagawa 1989)
   b. Instrumental adverbs
      *Gakusei-ga hanmaa-de san-nin kurumi-o watta.
      student-NOM hammer-with 3-Cl walnut-ACC cracked
      ‘Three students cracked walnuts with a hammer.’ (Koizumi 1994)

(49) Object < low adjunct < NQ_{Obj}
      John-NOM book-ACC quickly 3-Cl bought
      ‘John quickly bought three books.’ (Ishii 1998: 150)

21 N. Hasegawa (p.c.) judges the sentence in (47a) to be grammatical.
b. Gakusei-ga susi-o gatugatu mit-tu tabeta (koto)
student-NOM sushi-ACC greedily 3-CL ate (fact)
‘Students ate three pieces of sushi greedily.’ (K. Takezawa, p.c.)

c. Gakusei-ga kurumi-o hanmaa-de mit-tu watta/kowasita.
student-NOM walnut-ACC hammer-with 3-CL cracked/broke
‘Students cracked three walnuts with a hammer.’ (K. Takezawa, p.c.)

The data in (50), on the other hand, show that high adjuncts such as temporal and locative adverbs/PPs may intervene between the subject and a subject-oriented NQ, in contrast to the paradigms with low adverbs in (48) (see e.g. Fujita 1994; Miyagawa 1989; Ueda 1990 for the distribution of high adverbs with respect to a subject-oriented NQ).22

(50) Subject < high adjunct < NQ_{SUB}

a. Temporal adverbs
   Gakusei-ga kyoo san-nin hon-o katta.
   students-NOM today 3-CL book-ACC bought
   ‘Three students bought a book today.’ (Miyagawa 1989: 30, 44)

b. Locative adverbs (modifying the subject)
   Gakusei-ga tosyokan-de san-nin hon-o yondeita.
   student-NOM library-in 3-CL book-ACC reading
   ‘Three students were reading books in the library.’ (Ueda 1990: 84)

Given the parallels between the Japanese paradigms in (44)–(50) and the Korean paradigms in the preceding sections, I suggest that my analysis for Korean scrambling directly extends to the corresponding Japanese paradigms in (44)–(50). In particular, the subject cannot be separated from its NQ by a vP-internal element due to the conspiracy of probe-goal Search and CL. A vP-internal element must precede or follow the constituent that contains the subject and a subject-oriented NQ within the vP domain. This ordering restriction in the vP domain must be preserved in the higher domains to avoid ordering contradictions at PF.

The current analysis is further supported by the distribution of NQs in Control paradigms in Japanese. As shown in (51), a subject-oriented NQ may be associated with PRO in Control configurations. The object in the embedded clause in (51) may

22 Nakanishi (2003a; 2003b) claims that Japanese NQs cannot be separated from their host NP when the predicate denotes a (singular) telic event (e.g. ‘destroy John’s house’). Nakanishi (2004) presents a semantic mechanism where a floating NQ quantifies over events denoted by verbal predicates as well as individuals denoted by the host noun. Nakanishi’s arguments provide an interesting perspective on why judgements for floating NQs are affected by the choice of predicate. This, however, cannot be an alternative account for the asymmetries in scrambling observed here. In particular, it is not obvious how this proposal can account for the asymmetries between high and low adverbs in subject scrambling (48, 50), the lack of asymmetries between high and low adverbs in object scrambling (49), and the contrasts between unaccusative/passive and unergative subjects (37–39). We will also see other paradigms that are not straightforwardly accommodated under this proposal. See esp. Control paradigms in (52, 53), restrictions on object scrambling paradigms in Chs 4 and 5, and two types of NQ in Korean in Ch. 3.
scramble to the left of the subject-oriented NQ san-nin, as shown in (52a). Note crucially that (52a) and (52b) are equivalent in terms of their linear ordering among overt arguments. In both cases, the object intervenes between the subject and the subject-associated NQ. In sharp contrast with (52b), the sentence in (52a) is grammatical, however. The examples in (53) show the same point.

(51) Control paradigms in Japanese

\[
\text{Gakusei-ga} \quad \text{sono toki} \quad [[\text{PRO san-nin}] \quad [\text{sakana-o tabe}]]-\text{oe-ta.}
\]

student-NOM that time 3-Cl fish-ACC eat-finish-PAST

‘Three students finished eating fish at that time.’ (Ura 1996; N. Hasegawa, Y. Endo, p.c.)

(52) Control and subject-oriented NQ

a. \[
\text{Gakusei-ga} \quad [\text{sakana-o [PRO san-nin] [tabe]}}]-\text{oe-ta.}
\]

student-NOM fish-ACC 3-Cl eat-finish-PAST

‘Three students finished eating fish at that time.’ (Ura 1996; N. Hasegawa, Y. Endo, p.c.)

b. *\[
\text{Gakusei-ga} \quad \text{sakana-o san-nin} \quad \text{tabe-ta.}
\]

student-NOM fish-ACC 3-Cl eat-PAST

‘Three students ate fish.’ (N. Hasegawa, Y. Endo, p.c.)

(53) Control and subject-oriented NQ

a. \[
\text{Gakusei-ga} \quad [\text{sono ronbun-o [PRO san-nin] kopii-si]}]-\text{wasure-ta.}
\]

student-NOM that paper-ACC 3-Cl copy-do-forget-PAST

‘Three students forgot to copy that paper.’ (N. Hasegawa, Y. Endo, p.c.)

b. *\[
\text{Gakusei-ga} \quad \text{sono ronbun-o san-nin} \quad \text{kopii-si-ta.}
\]

student-NOM that paper-ACC 3-Cl copy-do-PAST

‘Three students copied that paper.’ (N. Hasegawa, Y. Endo, p.c.)

The contrast between Control paradigms and ordinary subject paradigms in (52) and (53) is predicted under the current analysis for the Subject Puzzle. Specifically, since the object sakana-o in (52a) is externally merged in a different clause from the matrix subject gakusei-ga, sakana-o may intervene between the subject gakusei-ga and san-nin without causing ordering contradictions at PF. The same point holds for (53).  

The data in (52) and (53) are particularly important to rule out an attempt to explain the Subject Puzzle by a parsing-based approach. In particular, the grammaticality of

\[\text{If the vP structures of (52, 53) are identical, the current analysis for (52, 53) is not compatible with a movement analysis of Control (e.g. Boeckx and Hornstein 2004; Hornstein 1999). If the matrix subject in (52, 53) has moved from the embedded clause, we expect no contrast between (a) examples and (b) examples in (52, 53). (I thank Danny Fox for raising this point.) To make the paradigms in (52, 53) compatible with the movement analysis of Control, it is necessary to assume that some extra head with a scrambling feature (merged higher than the head introducing the subject) may agree with a Control subject, so that the Control subject may move to the left of the object before the first Spell-out of the structure including vP (a suggestion due to Cedric Boeckx). It remains open whether we may find support for this assumption.}\]
(52a) and (53a) shows that it is not the case that the linear order $S < O < NQ_{SUBJ}$ is always impossible. Rather, the Subject Puzzle is observed only when the subject and the object are externally merged in the same Spell-out domain. This rules out an apparent alternative hypothesis for the Subject Puzzle that the order $S < O < NQ_{SUBJ}$ is impossible because the object must be parsed or processed together with a following NQ.24

Let us now turn to the type of NQs that precede their host NP in Japanese. An example is repeated here as (54).

(54) John-wa san-satu hon-o katta.
    John-Top 3-Cl book-Acc bought
    'John bought three books.'

Suppose that the NQ in (54) forms a constituent with its host NP and precedes the host NP by being left-adjoined to it within $nP$ (see section 3.3).25 We then predict that the distribution of NQ in (54) must be explained by the same principles that regulate subject scrambling in previous sections. In particular, we predict that a subject-oriented NQ may precede the subject, but that $vP$-internal elements may not intervene between the fronted NQ and its host NP. This prediction is corroborated by a series of observations by Miyagawa (1989).

Representative examples are given in (55)–(59) (all examples are taken from Miyagawa 1989: 50–51). As shown in (55), an object-oriented NQ may precede the object, and the subject may intervene between the object-oriented NQ and the object. By contrast, the $vP$-internal element cannot intervene between the scrambled subject-oriented NQ and the subject, as shown in (56)–(58). A $vP$-external element (e.g. the time adverb $kyou$ ‘today’), on the other hand, can intervene between a subject-oriented NQ and the subject, as illustrated in (59). My analysis for quantifier stranding in (44)–(50) directly extends to NQ scrambling in (55)–(59) if we assume that subject-oriented NQs are externally merged as a constituent with the subject (being left-adjoined) and undergo further leftward scrambling in the clause.

---

24 Miyagawa and Arikawa (2007) argue that the order $S < O < NQ_{SUBJ}$ is judged to be ungrammatical because the object tends to be parsed with the following NQ. It is not clear, however, how the contrasts in (52, 53) can be explained under this hypothesis. Note also that Miyagawa and Arikawa’s account does not straightforwardly extend to the ungrammatical paradigms in (46)–(48), where the object follows the NQ$_{SUBJ}$. In subsequent chapters, we will see other facts that do not follow from the parsing approach (see Appendix 3A).

25 Korean does not allow the type of NQ in (54). I leave it to further research as to why this contrast between Korean and Japanese holds. For the moment, I stipulate that Korean does not allow an NQ to be left-adjoined to its host. See e.g. Ko and Seo (2012), Park (2008), Seo (2009).
Edges of primary predication

(55) \[ \text{NQ}_{Obj} < \text{SUBJ} < \text{OBJ} \]

\[
\begin{array}{c}
\text{Huta-tu}_1, \ \text{kodomo-ga} \ [t_1 \ \text{kozutumi-o}] \ \text{okutta.} \\
2\text{-Cl} \ \text{child-Nom} \ \text{package-Acc} \ \text{sent}
\end{array}
\]

‘The child sent two packages.’ (also attributed to Katagiri 1983)

(56) \[ \text{NQ}_{SUBJ} < \text{OBJ} < \text{SUBJ} \]

\[
\begin{array}{c}
\text{?*Huta-ri}_1, \ \text{hon-o} \ [t_1 \ \text{gakusei-ga}] \ \kappa\text{utta.} \\
2\text{-Cl} \ \text{book-Acc} \ \text{student-Nom} \ \text{bought}
\end{array}
\]

‘Two students bought a book.’

(57) \[ \text{NQ}_{SUBJ} < \text{Indirect OBJ} < \text{SUBJ} \]

\[
\begin{array}{c}
\text{?*Huta-ri}_1, \ \text{Tanaka-san-ni} \ [t_1 \ \text{gakusei-ga}] \ \text{omiyage-o ageta.} \\
2\text{-Cl} \ \text{Tanaka-Mr.-Dat} \ \text{student-Nom} \ \text{present-Acc} \ \text{gave}
\end{array}
\]

‘Two students gave Mr. Tanaka a present.’

(58) \[ \text{NQ}_{SUBJ} < \text{Instrumental PP (low adjunct)} < \text{SUBJ} \]

\[
\begin{array}{c}
\text{?*Huta-ri}_1, \ \text{naihu-de}, \ [t_1 \ \text{kodomo-ga}] \ \text{roopu-o kitta.} \\
2\text{-Cl} \ \text{knife-by} \ \text{child-Nom} \ \text{rope-Acc} \ \text{cut}
\end{array}
\]

‘Two children cut the rope with a knife.’

(59) \[ \text{NQ}_{SUBJ} < \text{time adverb (high adjunct)} < \text{SUBJ} \]

\[
\begin{array}{c}
\text{Huta-ri}_1, \ \text{kyou}, \ [t_1 \ \text{gakusei-ga}] \ \text{nihongo-no hon-o katta.} \\
2\text{-Cl} \ \text{today} \ \text{student-NOM} \ \text{Japanese-GEN book-Acc bought}
\end{array}
\]

‘Today two students bought Japanese language books.’

Moreover, we predict that unaccusative and passive subjects may be separated from their associate NQs by a low adjunct, while an unergative subject cannot. This prediction is also upheld by Miyagawa’s (1989) observations. Some examples are given in (60)–(64). My accounts for unaccusative and unergative paradigms in (40) and (41) thus extend to (60)–(64).

(60) \[ \text{NQ}_{SUBJ} < \text{PP argument} < \text{Unaccusative SUBJ} \]

\[
\begin{array}{c}
\text{Huta-ri}_1, \ \text{ofisu-ni} \ [t_1 \ \text{gakusei-ga}] \ \text{kita.} \\
2\text{-Cl} \ \text{office-to} \ \text{student-Nom} \ \text{came}
\end{array}
\]

‘Two students came to my office.’
(61) \( NQ_{\text{Subj}} < \text{Instrumental PP} < \text{Unaccusative Subj} \)

\[
\text{Huta-tu}_1, \quad \text{kono kagi-de [t}_1 \quad \text{doa-ga}] \quad \text{aita.}
\]
\(2\text{-Cl. this key-with door-NOM opened} \)

‘Two doors opened with this key.’

(62) \( NQ_{\text{Subj}} < \text{PP argument} < \text{Passive Subj} \)

\[
\text{Yuube, ni-dai dorobou-ni [t}_1 \quad \text{kuruma-ga}] \quad \text{nusum-are-ta.}
\]
\(2\text{-Cl. thief-by car-NOM steal-Pass-Past} \)

‘Last night, two cars were stolen by a thief.’

(63) \(* NQ_{\text{Subj}} < \text{Instrumental PP} < \text{Unergative Subj} \)

\[
\text{*Huta-ri}_1, \quad \text{konpyuutaa-de [t}_1 \quad \text{gakusei-ga}] \quad \text{keisansita.}
\]
\(2\text{-Cl. computer-by student-NOM calculated} \)

‘Two students calculated with a computer.’

(64) \(* NQ_{\text{Subj}} < \text{manner adverb} < \text{Unergative Subj} \)

\[
\text{*Huta-ri}_1, \quad \text{geragerato [t}_1 \quad \text{kodomo-ga}] \quad \text{waratta.}
\]
\(2\text{-Cl. loudly child-NOM laughed} \)

‘Two children laughed loudly.’

Finally, the present analysis for NQ-scrambling in (55)–(64) has some interesting implications for constraints on \( np\)-internal movement as well. As illustrated in (65), an NQ \( \text{san-satu} \) cannot precede its host NP \( \text{hon-o} \) when a demonstrative \( \text{sono/ano} \) ‘those’ modifies the host NP. By contrast, when an adjective (e.g. \( \text{takai} \) ‘expensive’) modifies the host NP, as in (66), an NQ may precede its host NP.

(65) \( \text{NQ scrambling and demonstratives} \)

a. Hanako-ga \([\text{sono/ano hon-o san-satu}] \) katta (koto)
\(\text{Hanako-NOM those book-Acc 3-Cl bought fact} \)

‘Hanako bought those three books.’

b. \(* \text{Hanako-ga [san-satu sono/ano hon-o] katta (koto)} \)
\(\text{Hanako-NOM 3-Cl those book-Acc bought fact} \)

‘Hanako bought those three books.’

c. \(* \text{San-satu Hanako-ga [sono/ano hon-o] katta (koto)} \)
\(\text{3-Cl Hanako-NOM these book-Acc bought fact} \)

‘Hanako bought those three books.’ (S. Miyagawa, p.c.)
The ungrammaticality of (65b) and (65c) would follow from the current approach if we assume that an NQ cannot move to the left of a demonstrative within NP. If the nominal domain that contains the demonstrative is a Spell-out domain (see Bošković 2012), the linear ordering within NP will be preserved in the higher domains under CL. If san-satu cannot precede sono/ano within the first Spell-out domain NP, as in (65b), it is expected that san-satu cannot precede sono/ano in the higher CP domain either, as in (65c). The data in (66) further support this line of reasoning. If san-satu can precede an adjective takai within the first Spell-out domain NP, as in (66b), it can continue to precede the adjective takai in the CP domain, as in (66c).

(66)  

\begin{enumerate}
\item\textit{NQ scrambling and adjectives} 
\begin{enumerate}
\item Hanako-ga \textbf{[takai hon-o san-satu]} katta (koto)  
\textit{Hanako bought three expensive books.'} (cf. (65a))  
\item Hanako-ga \textbf{[san-satu takai hon-o]} katta (koto)  
\textit{Hanako bought three expensive books.'} (cf. (65b))  
\item San-satu Hanako-ga \textbf{[takai hon-o]} katta (koto)  
\textit{Hanako bought three expensive books.'} (cf. (65c), S. Miyagawa, p.c.)
\end{enumerate}
\end{enumerate}

\subsection*{2.5 Sub-extraction in Russian}

So far, I have shown that some restrictions in scrambling can be explained by the interactions of the probe-goal theory and cyclic Spell-out at the interface. The major evidence comes from the ordering restrictions in floating-quantifier constructions in Korean and Japanese. Note, however, that the scope of the proposal advanced in this chapter is not limited to a particular language or to a particular construction. If the current proposal is on the right track, we expect that the elements externally merged on the edge of a Spell-out domain will show the same patterns as the subject in floating quantifier constructions discussed above. In this section, I argue that this is indeed the case with sub-extraction in Russian, which is unrelated to floating quantification.

\footnote{This argument certainly awaits further research concerning why an NQ cannot move to the left of a demonstrative, but may move to (or be adjoined to) the left of an adjective within NP. At this moment, I do not have a good account of this. I tentatively suggest that a demonstrative and the NQ-fronting compete for the same position within NP. Adjectives, on the other hand, can adjoin below the demonstrative position so that an NQ may precede it in base structure. Furuya (2008) independently pursues this line of approach, and argues that (65c) is ungrammatical because the demonstrative occupies an escape hatch position for NQ-fronting. Furuya (2008), however, did not discuss examples such as (66). It would be interesting to further develop Furuya’s idea under the linearization approach proposed here. See Ko and Seo (2012) for some suggestions based on NP-ellipsis data in Japanese.}
In Russian, a nominal complex may be separated into two parts by overt movement. Stjepanović (1998), for instance, shows that Russian allows adjunct extraction out of a nominal phrase, as in (67). It has been suggested that the relatively high acceptability of sub-extraction indicates that Russian nominals lack DP layers, so that movement out of nominal domains is not blocked by the offending D head (see Bošković 2005 and Uriagereka 1988 for extensive discussion). I have no particular stance on whether languages like Russian have a D head or not, but my proposal developed in this chapter leads us to predict that sub-extraction in Russian should not be licensed freely, and that only a particular type of sub-extraction should be allowed.

(67) **Sub-extraction in Russian** (Stjepanović 1998, repeated from Bošković 2005)

\[
\text{Iz kakogo goroda\_i ty vstre\'cal [devu\'sek t\_i]?
from which city you met girls
‘From which city did you meet girls?’}
\]

Specifically, we predict that the split between the noun and the nominal adjunct (or nominal complement) in Russian will show the same distributional properties as the one between an argument and floating NQs in Korean and Japanese. If the nominal complex in Russian is merged on the edge of a vP, movement from within the nominal complex will be regulated by the same principle as floating NQs in Korean and Japanese. Put differently, sub-extraction in Russian should also be restricted with regard to the domain-internal movement of edge elements and cyclic Spell-out. In the following, I show that this is indeed the case.

Consider first the case where sub-extraction occurs out of a subject position, as described in (68). We then predict that the subject and its associate adjunct/complement cannot be split by a vP-internal element (recall the Subject Puzzle in Korean and Japanese floating NQ constructions). The ordering patterns in (69) show that this prediction is borne out. As illustrated in (69), the complex subject *studenty biologii ‘students of biology’* cannot be separated by its domain-mate object *eti cvety ‘these flowers’*. Since *biologii ‘of biology’* is a complement of the noun *studenty ‘students’*, they are constituent-mates in base structure. The ordering in (69) is restricted by the same principle as floating NQ constructions in Korean and Japanese. My proposal for subject scrambling in Korean and Japanese straightforwardly extends to (69).

(68) **Illicit sub-extraction from the subject complex within vP**

\[
\text{Illicit sub-extraction from the subject complex within vP}
\]

\[
\text{vP}
\]

\[
\text{vP}
\]

\[
\text{nP}
\]

\[
\text{vP}
\]

\[
\text{vP}
\]

\[
\text{YP}
\]

\[
\text{YP}
\]

\[
\text{Subj}
\]

\[
\text{XP\_SUBJ}
\]

\[
\text{v}
\]

\[
\text{VP}
\]

\[
\text{tYP}
\]

\[
\text{tYP}
\]
Illicit scrambling out of the subject position

a. Očevidno studenty biologii kupili eti cvety.
   obviously students of biology bought these flowers
   ‘Obviously, (the) students of biology bought these flowers.’

b. *Očevidno studenty eti cvety biologii kupili.
   obviously students these flowers of biology bought
   ‘Obviously, (the) students of biology bought these flowers.’

c. *Očevidno biologii eti cvety studenty kupili.
   obviously of biology these flowers students bought
   ‘Obviously, (the) students of biology bought these flowers.’

Crucially, too, it is not the case that the subject complex disallows sub-extraction altogether. As shown in (70), the subject studenty ‘students’ and biologii ‘of biology’ can be separated by a high adverb such as očevidno ‘obviously’. Though (70b) is somewhat degraded, speakers report that its grammaticality is considerably better than (69b) and (69c). Hence, one cannot attribute the ungrammaticality of (69b) and (69c) to an assumption that the subject complex does not allow sub-extraction at all.\textsuperscript{27}

Licit scrambling out of the subject position

a. Očevidno studenty biologii kupili eti cvety.
   obviously students of biology bought these flowers
   ‘Obviously, (the) students of biology bought these flowers.’

b. (?) Studenty očevidno biologii kupili eti cvety.
   students obviously of biology bought these flowers
   ‘Obviously, (the) students of biology bought these flowers.’

I assume that the subject complex can in principle undergo sub-extraction, just like other nominal phrases in Russian. The subject complex can be probed by a vP-external head as long as it does not contradict orderings established in vP, as described in (71). Hence, if we assume that sub-extraction in (71) is possible, we can explain that sub-extraction like that in (70b) is grammatical in Russian, in contrast to the examples in (69b) and (69c).

\textsuperscript{27} Jung and Ko (in progress) conducted a survey on judgements of the sentences in (69) and (70) with 15 native speakers of Russian. All the speakers informed us that (69b) and (69c) are worse than (69a). Twelve speakers reported that (70b) is relatively more acceptable than (69b) or (69c) (the other 3 speakers rejected (69b,c) and (70b) altogether). So, the overall pattern is as expected by my proposal, but the fact that (70b) is somewhat degraded cannot be explained by the current proposal. It is true that extraction out of the object position is in general much freer than extraction out of the subject position (Jung 2010 and references therein). Crucially, however, the subject complex does allow sub-extraction, as illustrated in (70b). Thus, one cannot attribute the asymmetries between (70b) and (69b,c) to a CED-type effect (Huang 1982) or a condition on subject movement in general (see Chomsky 2008 for subject extractions).
Consider next the case where sub-extraction occurs out of an object position. We expect that the object allows sub-extraction in the $vP$ domain as well as in the CP domain, since there is a domain-internal probe for object movement in both cases. We therefore predict that the object and its adjunct/complement can be split by a $vP$-internal or $vP$-external element. These predictions are illustrated in (72) and (73) (recall object scrambling out of $vP$ in Korean and Japanese).

(72) $\sqrt{\text{sub-extraction from the object complex within } vP}$

28 For now, I leave it open whether the subject in (71) targets an A-position or A'-position. The discussion in Ch. 3 (3.1), however, suggests that the subject in (71) undergoes A'-movement (given that it is generally assumed that sub-extraction cannot target an A-position). See n. 4 in Ch. 3 for relevant comments.
As described in (74) and (75), the predictions depicted in (72) and (73) are borne out. The object *mašinu inostrannoj marki* ‘a car of a foreign brand’ can be separated by the subject *oni* ‘they’ as in (74), or by a high adverb *očevidno* ‘obviously’ as in (75).29

(74)  
Licit scrambling out of the object position across the subject

a. Očevidno oni kupili *mašinu inostrannoj marki*.  
   ‘Obviously they bought a car of a foreign brand.’

b. *Očevidno mašinu oni inostrannoj marki* kupili.  
   ‘Obviously car they of foreign brand bought’

   ‘Obviously, they bought a car of a foreign brand.’

c. *Očevidno inostrannoj marki oni mašinu* kupili.  
   ‘Obviously of foreign brand they car bought’

   ‘Obviously, they bought a car of a foreign brand.’

(75)  

a. Očevidno oni kupili *mašinu inostrannoj marki*.  
   ‘Obviously they bought a car of a foreign brand’

   ‘Obviously, they bought a car of a foreign brand.’

---

29 The judgements of (74) and (75) are from a survey conducted by Jung and Ko (in progress) with 15 native speakers of Russian. Eight speakers reported that the acceptability of (74b,c) is comparable to the acceptability of (74a) (though the order in (74a) is most acceptable). Those speakers (6/15) who said that (74b,c) are somewhat degraded also reported that the contrast between (74a) and (74b,c) is significantly less than the one between (69a) and (69b,c). Ten speakers informed us that the acceptability of (75b) is comparable to that of (75a). Thus, the overall pattern is as expected by the present proposal, but five speakers rejected (75b) completely for reasons unclear to me.
In short, otherwise unexpected restrictions in sub-extraction in Russian can be explained by the same logic that explains ordering patterns in floating NQ constructions in Korean and Japanese. The overall pattern shows again that a constituent externally merged on the edge of vP cannot be split by its domain-mate, which is understood to be a consequence of a condition on domain-internal movement and cyclic Spell-out.

2.6 Conclusion: the Edge Generalization

In this chapter, we have seen various types of ordering restriction concerning the distribution of the subject and its associate NQ. In particular, we observed interactions among subject scrambling, object scrambling, multiple scrambling, the position of the subject, the position of adverbs, and NQ scrambling, and some extension to sub-extraction in Russian. Some important facts analyzed in this chapter are summarized in (76).

(76) Ordering restrictions in subject scrambling

- The subject may intervene between the object and its NQ, whereas the object may not intervene between the subject and its NQ.
- The indirect object, PP-arguments, and vP-internal adjuncts may not intervene between the subject and its NQ, whereas vP-external adverbs may.
- The object may be separated from its NQ either by vP-internal adjuncts or vP-external adjuncts, unlike the paradigms with a transitive subject.
- Unaccusative and passive subjects can be separated by vP-internal elements from their NQs whereas unergative subjects cannot.
- An unergative subject can be separated from its NQ by vP-external elements, just like unaccusative and passive subjects.
- A subject-oriented NQ may precede the subject in Japanese, but vP-internal elements cannot intervene between the subject-oriented NQ and the subject.
- Sub-extraction in Russian shows the same distributional property as that with floating NQ constructions in Korean and Japanese.

I have argued that the paradigms presented in (76) cannot be explained by the analyses that rely on the mutual c-command condition or on a general ban on subject scrambling. Instead, the paradigms described above can receive a unified account as a consequence of the interaction between formal properties of movement and

b. (%)? Mašinu očvidno inostrannoj marki oni kupili.
   car obviously of.foreign brand they bought
   ‘Obviously, they bought a car of a foreign brand.’
CL. Specifically, due to a probe-goal relationship and underlying constituency, a \( vP \)-
internal element cannot intervene between the subject and its NQ in the \( vP \) domain. Given CL, this ordering restriction is preserved in the higher domains. On this view,
\( vP \)-external elements may intervene between the subject and NQ because they do not participate in the linearization of \( vP \) and add new orderings only in \( vP \)-external domains. The object can be separated from its NQ by a \( vP \)-internal element because the object may undergo \( vP \)-internal scrambling.

My account of the ordering patterns in (76) in fact follows from a more general prediction concerning the interaction of domain-internal movement and CL, the Edge Generalization (EG), which I introduced from a more abstract perspective in Chapter 1. A formal description is given here as (77) and (78).

(77) **The Edge Generalization**

(78) **Edge Generalization (EG)**

As described in (78), interactions of a probe-goal Search in the narrow syntax and CL lead us to predict a particular ordering restriction for elements merged on syntactic edges. In particular, the elements merged on the edge of a Spell-out domain as a constituent cannot be separated by a domain-internal element.

More specifically, if the domain-internal element Z in (77) stays in situ, Z would follow both X and Y. If Z moves to the edge of \( \alpha P \), Z would precede both X and Y. The edge elements X or Y cannot move within \( \alpha P \) under the probe-goal system. Hence, Z cannot intervene between X and Y within \( \alpha P \). (As noted earlier, underlying constituency between X and Y matters. If X and Y were merged as non-constituent, Z may move into a position between X and Y. See Chapter 3 for extensive discussion.
on this issue.) Given that the linear ordering at a Spell-out domain αP must be preserved in higher domains, it is predicted that X and Y cannot be separated by Z.

On my account, the restrictions on subject scrambling observed in this chapter are in fact instances of the EG presented in (77) and (78). The paradigms summarized in (76) instantiate cases where αP in (77) corresponds to vP. In other words, there is nothing inherent about the subject that blocks its movement out of vP. The subject appears to obey special ordering restrictions, in contrast to internal arguments, because it is externally merged on the edge of a Spell-out domain vP. The subject on the edge of vP is only temporarily immobile within vP but may in principle undergo vP-external movement if a proper probe agrees with it. Due to cyclic Spell-out of vP, however, we observe the ordering pattern such that the lack of subject movement within vP affects ordering possibilities in higher domains as well.

I have considered cases where two associates, X and Y, form a constituent in base structure, which are subject to the EG described in (78). I have argued that floating NQ constructions in Korean and Japanese and sub-extraction data in Russian support my proposal for the EG. In the next chapter, I will examine the opposite case where two associates, X and Y, do not form a constituent in base structure. I show that when the two associates are not constituent-mates in base structure, the EG does not hold for a principled reason. In the next chapter, I argue for the hypothesis that floating quantification is not a uniform phenomenon, and that the syntax and semantics of adverbial floating quantification are radically different from that of adnominal floating quantification. I then closely examine how types of floating quantification interact with scrambling and linearization under the CL framework.

Appendix 2A Challenges to the PIC approach

In Chapter 2, I have shown that the elements merged on the edge of vP show peculiar ordering patterns. I argued that the ordering properties can be explained by the interaction of a syntactic constraint on domain-internal movement and linearization. In this appendix, I examine whether the evidence for my arguments presented in Chapter 2 can be properly accommodated under the PIC approach (Chomsky 2000; 2001 and their successors).

As discussed in Chapter 1, ‘edge zones’ in the PIC approach are designated escape hatches for movement. There is nothing inherent in the phase system that might force multiple movement out of edge zones to result in a particular order. Therefore, to explain the ordering restrictions observed in syntactic edges under the PIC approach, some additional mechanisms are needed. Though there might be other alternatives, I examine the extant proposals by Chomsky (2001) and Kitahara (2002) concerning object movement in the vP domain.

Chomsky (2001) employed ‘apparently countercyclic’ Match (and Agree) to resolve a problem concerning A’-movement under the PIC system. Specifically, Chomsky argues that the object must move beyond the edge of vP to avoid certain intervention effects when it undergoes A’-movement (especially, in languages that disallow Object Shift such as English and the Romance languages).
To be specific, consider the derivation of *wh*-object movement in English under the PIC system. If the *wh*-object undergoes movement to the edge of vP (due to the PIC), as in (1), the *wh*-object in [Spec,vP] acts as an intervener for probe-goal agreement between T and the subject. Thus, the *wh*-object would block the necessary movement of the subject to [Spec,TP]. We would then incorrectly expect that (1) is ungrammatical due to the EPP requirement of T in English.

(1) 
\[
\begin{array}{c}
\text{[CP What} \quad \text{[TP T} \quad \text{vP t1] John [vP buy t1]]} \\
\end{array}
\]

What did John buy?

To avoid this problem, Chomsky assumes that a *wh*-object in [Spec,vP] must undergo movement to [Spec,CP] before T searches for its goal in the vP-domain. Assuming that an inactive trace (void of phonological content) does not act as an intervener for Match (and Agree), the trace of the *wh*-object does not act as an intervener for probe-goal agreement between T and the subject. T can then bypass the trace of the object in [Spec,vP] when it probes the subject.

Kitahara (2002) notes that the same issue arises for object scrambling in Japanese. In particular, Kitahara claims that when an object undergoes scrambling to a position outside vP, it must scramble over the subject on the edge of vP, as described in (2). If the object stays in the complement position within VP, the object is invisible to the operations in the higher domain due to the PIC. Consequently, the object cannot move to the higher domain.

(2) 
\[
\begin{array}{c}
\text{[TP [vP OBJ [vP SUBJ [vP tOBJ V] v]] T]} \\
\end{array}
\] (Kitahara 2002: 171)

If the object stays in [Spec,vP] in (2), however, it blocks a necessary agreement between the subject and T (for Case and EPP). To avoid this intervention effect, Kitahara argues that the object in [Spec,vP] must move to a position higher than the landing site of subject movement so that the object does not block a necessary agreement between T and the subject. T can then bypass the trace of the object in [Spec,vP] when it probes the subject. For convenience, I call the condition that motivates this (apparently) countercyclic Match and subsequent Agree and Move the ‘Matching Condition’. The statement in (3) is taken from Kitahara (2002: 171).

(3) **Matching Condition** (Kitahara 2002: 171, based on Chomsky 2000; 2001)

For the structure \( \alpha > \beta > \gamma \) (where \( \alpha \) means c-command; \( \beta \) and \( \gamma \) match the probe \( \alpha \)), the first matching \( \beta \) prevents Match of \( \alpha \) and \( \gamma \) only if \( \beta \) has phonological content.

One might attempt to pursue Kitahara’s approach to object scrambling to accommodate the Subject Puzzle under the PIC approach and extend it to other instances of the Edge Generalization. Suppose that whenever the object undergoes vP-external scrambling, the object must move to a position higher than the landing site of subject movement so that the object does not

---

30 Chomsky (2001) argues that this derivation should not be considered countercyclic because the Minimal Link Condition (a locality condition on Match/Agree) is evaluated at the end of a strong phase after it is known that the outer edge of vP becomes a trace. Chomsky (2008) suggests that object movement to [Spec,CP] and subject movement to [Spec,TP] may occur simultaneously, so that the object in [Spec,vP] may not act as an intervener for subject movement to [Spec,TP].
act as an intervener. In terms of linear ordering, it would then appear that the object must precede the subject in the higher domains if the object has undergone vP-internal movement over the subject.\footnote{Under this approach, if the object may scramble to the right of T, it is possible to have O < S order at vP and S < O order at CP. In contrast, Cyclic Linearization predicts that this is impossible. I have no evidence that favors one prediction over the other.} Moreover, if we assume that the subject and a subject-oriented NQ form a constituent in [Spec,vP], it seems to follow that the scrambled object must precede both the subject and a subject-oriented NQ in the higher domains.

Upon closer inspection, however, the alternative approach based on the Matching Condition is inadequate to capture the Subject Puzzle. First, it is unclear how the derivation in (4) can be ruled out.

\[(\text{4}) \quad \begin{array}{llllllllll}
\text{[CP} & \text{S} & \text{(adv)} & \text{[TP} & \text{t}_5 & \text{(adv)} & \text{[vP} & \text{t}_0 & \text{[t}_5 & \text{NQ}_{\text{SUBJ}}] & \text{[vP} & \text{t}_0 & \text{V]} & \text{v]} & \text{T} & \text{C} & \text{]} \\
\end{array} \]

In (4), the object undergoes scrambling from [Spec,vP] to [Spec,CP] so that the subject may scramble from the inner Spec of v to [Spec,TP] (note that this is not countercyclic under Chomsky’s approach to (1); cf. Miyagawa 2001 who disallows such a derivation). The subject later undergoes movement from [Spec,TP] to [Spec,CP]. Under Chomsky (2000; 2001), the object in [Spec,CP] does not trigger an intervention effect for subject scrambling from [Spec,TP] to the outer Spec of C. Thus, the derivation in (4) is expected to be grammatical, contrary to the facts examined in Chapter 2, repeated here with (5).\footnote{Even if we adopt the fine structure of the left periphery of CP proposed by Rizzi (1997), the point for (4) still holds. If the object may move to a Spec of some head a above T in the left periphery, the subject may move to the outer Spec of a (above the object in the lower Spec of a). Since the object in [Spec,aP] is not in the search domain of a, the object in [Spec,aP] cannot act as an intervener for movement of the subject to [Spec,aP]. I thank Cedric Boeckx for helpful discussion of this point.}

\[(\text{5}) \quad \text{\#S} < \text{O} < \text{vP-external adverb} < \text{NQ}_{\text{SUBJ}} \]

a. \text{'I wonder why three students drank beer.'}

b. \text{'Evidently, three students drank beer.'}

As a response to this criticism, one might argue that a strong version of Tucking-In approach is needed for multiple scrambling (cf. Richards 1997; 2001). Specifically, if the subject in [Spec,TP] must get tucked-in below the object in [Spec,CP], as in (6), the incorrect derivation in (4) would be blocked. In particular, one might hypothesize that whenever the object and the subject undergo multiple movement to [Spec,CP], they must also land at [Spec, TP] prior to the movement to the Spec of C, as in (6). It would be then expected that the O < S order in vP must be preserved in the TP and CP domain.

This crucially assumes Richards’s (1997) Tucking-In generalization in a very strong way: two elements attracted by the same head must preserve their (hierarchical) order established prior...
to movement, and tucking-in happens at every step of scrambling: two elements land at the Spec of every maximal projection placed between the probe and goal. Otherwise, it is hard to ensure that the two elements preserve their relative orderings established at vP under the PIC approach. To explain the Subject Puzzle under this stringent version of the Tucking-In approach, it seems necessary to assume that (6) is the only available derivation for multiple scrambling.

\[
(6) \quad \begin{array}{c}
\text{[CP O S (adv) [TP} \begin{array}{c} t_0 \quad t_1 \quad (adv) \quad [vP \begin{array}{c} t_0 \quad [t_3 \quad \text{NQ}_{\text{SUBJ}}]\quad [vP \begin{array}{c} t_0 \quad V]\quad V]\quad T]\quad C]
\end{array}
\end{array}
\end{array}
\]

If arguing that the derivation in (6) is the only available derivation for multiple scrambling, however, it is crucial to ask whether independent evidence can be found for the constraint that multiple scrambling is always triggered by the same head in every step of the movement (but see Richards 2001 for evidence that some multiple scrambling is not triggered by the same head). Moreover, further arguments are needed to explain why multiple movement in other languages (e.g. English (1), repeated here as (7)) is not subject to such a constraint.

\[
(7) \quad \begin{array}{c}
\text{[CP What} \begin{array}{c} t_1 \quad \text{T} \quad [vP \begin{array}{c} t_1 \quad \text{John}\quad [vP \begin{array}{c} \text{buy}\quad t_1]]\quad ]\quad ]\quad ]
\end{array}
\end{array}
\end{array}
\]

In particular, if the wh-object what must stop at every maximal projection that lies between the probe C and the goal, as in (7), it is expected that the wh-object occupies [Spec,TP] and receives the nominative Case from T while the subject John stays in [Spec,vP]. To block such a derivation, one could assume that a feature triggering wh-movement is imposed only on phase heads (v and C) so that what in (7) never touches down at [Spec,TP]. But then the initial question emerges again why the object in (6) (not only can but also) must stop at [Spec,TP] whenever multiple scrambling occurs.

Note also that the derivation in (6) raises the question of why the object must ‘tuck-out’ above the subject in the vP domain in the first place. Under the PIC approach, as long as the object is merged on the edge of vP, it is visible for movement outside the vP domain. Hence, there is no reason to expect that the object must land at the outer specifier of vP when it undergoes vP-external scrambling (cf. Kitahara’s derivation in (2)). Hence, precisely speaking, the fact that the object has undergone vP-internal scrambling does not lead us to any prediction on the relative ordering between the object and the subject at the edge of vP.

The ultimate goal would be to derive a generalization that elements may change their relative ordering only in the smallest Spell-out domain in which they are externally merged—which is what the CL approach exactly predicts. Since the PIC system guarantees that edges are spelled out separately from complements, it is unclear how the ordering between elements at the edges and those at the complement domain can be systematically regulated under the PIC approach, however.
3

Syntactic edges and two types of floating quantification

This chapter investigates the relationship between underlying constituency and orderings at syntactic edges. Developing the theory of floating quantification proposed by Fitzpatrick (2006), I argue for a hybrid approach to floating quantifiers: some floating quantifiers are adnominal in base structure while other floating quantifiers are adverbial. I argue that adverbial quantifiers show different distributions from adnominal quantifiers at syntactic edges, and their apparent violation of the EG can be explained by the hybrid approach. I also discuss how the two types of floating quantification can be systematically correlated with the theory of exhaustive focus proposed by É. Kiss (2010). I argue that adverbial floating quantifiers carry an exhaustive reading because they are externally merged in a focus projection outside the verbal domain and bind a variable inside the vP. On the basis of this proposal, I analyze how and why adverbial quantifiers behave differently from adnominal quantifiers under the CL framework.

This chapter is organized as follows. In section 3.1, I introduce the theory of floating quantification proposed by Fitzpatrick (2006), which I develop further with some modification. In 3.2, I discuss how exhaustive focus can be projected in syntax based on É. Kiss’s (2010) proposal on Hungarian. In 3.3, I propose a hybrid approach to floating quantification in Korean and Japanese. I argue that adverbial floating quantifiers are merged in a focus projection and receive identificational focus, like preverbal focus in Hungarian. Adnominal floating quantifiers, in contrast, are adjoined to their host directly in base structure. In 3.4, I present detailed discussion on how my proposal captures the syntax and semantics of adverbial floating quantifiers, which diverge from those of adnominal floating quantifiers. In 3.5, I conclude the chapter with a summary of my proposal. Appendix 3A presents some arguments against a recent processing approach to floating quantification.

Before I start the main discussion, I would like to make a note on some of the terminology that I adopt in this chapter and hereafter. I use the terms ‘adverbial floating quantifiers’ or ‘adverbial floating quantification’ interchangeably to mean that a quantificational element is externally merged outside a verbal projection,
separately from its associate noun. The adverbial quantifier and the associate noun are not related to each other by syntactic movement but indirectly linked to each other by variable binding in semantics. The terms ‘adnominal floating quantifiers’ or ‘adnominal floating quantification’ are used to refer to the quantifier adjoined to its host noun directly. The adnominal quantifier and its host form a constituent in base structure. As will be discussed later, however, adverbial floating quantification contains a null pronoun pro to which a quantifier is adjoined (see (50)). Despite the fact that adverbial floating quantification contains a quantifier which in itself is adnominal to pro, I continue to call it ‘adverbial’ because the distribution of the whole quantificational complex is basically that of adverbials.

In the preceding chapter, I called a numeral quantifier an NQ. In this chapter, we will see that floating numeral quantifiers are in fact divided into two types. An NQ with morphological marking such as Case and focus particles (e.g. sey-myeng-i ’3-Cl-Nom’, sey-myeng-man ’3-Cl-only’ in Korean) belongs to the adverbial type, whereas an NQ without overt morphological marking (e.g. sey-myeng ’3-Cl’ in Korean) belongs to the adnominal type. All the NQs that we saw in Chapter 2 are adnominal ones.

To make a proper distinction between the two types of numeral, I name the former an NQ with its morphological marking. For instance, an NQ suffixed with Case marking is called a ‘Case-marked NQ’ and an NQ with focus marking, a ‘focus-marked NQ’. An NQ without overt morphological marking is referred to as a ‘bare NQ’, or an NQ. This, however, does not mean that a bare NQ may appear without any morphological support. The NQs employed here, whichever type they are, must be accompanied by a classifier to be properly associated with its host (cf. Choi (2011) for ‘classifier-less’ NQs). The term ‘bare’ is employed here to emphasize the fact that the ‘bare’ NQ is not supported by overt morphological marking such as Case and focus markers, external to its classifier projection.

3.1 Two types of floating quantification

The non-local dependency between a noun and its associate quantifier (Q) has been widely discussed in the literature. The details may differ, but the formal analyses of floating Qs can be divided into three schools of research. One is an adnominal

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1 As discussed in Choi (2011), not all nouns require a classifier when occurring with a numeral in Korean. Nouns (typically [+human]) such as haksayng ‘student’ and yeca ‘woman’ can co-occur with a numeral without a classifier in certain contexts, as shown in (i) (see also Shi 2000). In this book, I do not deal with the distribution of numerals without a classifier. Refer to Choi (2011) for the syntax of this type of truly ‘bare’ numeral.

(i) Ipen ciphoy-ey haksayng-i seys chamyehay-ss-ta.
this meeting-Loc student-Nom three participate-Past-Dec
‘Three students participated in this meeting.’
approach, which argues that the noun and its associate Q are externally merged together (at some point in the derivation), and that the noun has undergone leftward movement in a later derivation (e.g. Bošković 2004; Cinque 1999; Déprez 1989; Giusti 1990; Kamio 1983; Kitahara 1993b; Kuroda 1983; McCloskey 2000; Merchant 1996; Shlonsky 1991; Sportiche 1988; Ueda 1990). Another is an adverbial approach, which claims that the Q modifies the event structure of a verb phrase, and that the noun and its associate Q are not related to each other by movement (e.g. Baltin 1995; Bobaljik 1995; Bobaljik 2003; Brisson 1998; Doetjes 1992, 1997; Dowty and Brodie 1984; Fujita 1994; Fukushima 1991; Kayne 1975; J.-B. Kim 2013; S.-Y. Kim 2002; Kobuchi-Philip 2003; Miyagawa 1989; Nakanishi 2004; Torrego 1996; Williams 1982). The other is a hybrid approach (e.g. Benmamoun 1999; Fitzpatrick 2006; Ishii 1998; Kang 2002; Ko 2005a; 2007; Ko and Oh 2012) which argues that some floating Qs are adnominals while others are adverbials.

The three major approaches to floating quantification have different predictions and implications. On the adnominal approach, a floating Q construction is transformationally related to a corresponding non-floating Q construction. For instance, the base structures for (1a) and (1b) are one and the same: *all the students* in (1a) and (1b) is externally merged in a predicate-internal position (see Bošković 2004 for a slightly different view).2 If *all the students* moves to [Spec,TP], we obtain non-floating quantification, as in (1a). If *the students* undergoes leftward movement stranding *all*, a floating Q construction such as (1b) is obtained. The relevant derivations are described in (2).3

(1) a. [All the students] have had lunch.
   b. [The students] have all had lunch.

(2) Floating quantification under the adnominal approach
   a. \[TP \quad [DP all the students]_{1} \quad [t' \quad have \quad [VP \quad t_{1} \quad had \quad lunch]]] \]: (1a)
   b. \[TP \quad [DP The \quad students]_{1} \quad [t' \quad have \quad [VP \quad [DP \quad all \quad t_{1}] \quad had \quad lunch]]] \]: (1b)

2 Bošković (2004) argues that floating quantifiers (including *all* in English) are adnominal, and that they cannot be adjoined to an argument in theta position because they interfere with theta role assignment (following Chomsky 1986). On this view, *all* in (ib) must be adjoined to *the students* at some point in the derivation, but be merged higher than the theta position of *the students*. Thus, strictly speaking, the base structures of (1a) and (1b) are not the same for Bošković (2004). Fitzpatrick (2006) argues against this proposal, and shows that *all* in English patterns with a certain class of adverbs in terms of its distribution (see (24) in sect. 3.1.2).

3 Strictly speaking, *all* is ‘stranded’ in its base position rather than ‘floated’ in an arbitrary place under the adnominal approach. For the sake of simplicity, however, I use the term ‘floated’ here theory-neutrally to denote a non-local dependency between a noun and its associate Q.
This approach has some advantages in explaining the close relationship between floating and non-floating Q constructions—their similarities in the syntax and semantics, in particular. The semantic similarities between (1a) and (1b) straightforwardly follow from the claim that they share a base structure. If floating and non-floating Qs share the same structure, we have every reason to believe that they share the same logical meaning derived from the same syntactic structure. It is also assumed that floating Qs participate in agreement with their host noun in the same way as non-floating Qs in the base structure. Thus, when a floating Q shows the same agreement pattern as a non-floating Q, this can be taken as evidence for the adnominal approach (e.g. Merchant 1996; Shlonsky 1991).

The adnominal approach also explains the fact that floating Qs may appear in the original or intermediate position of their host (e.g. Bošković 2004; McCloskey 2000). If Qs are ‘stranded’ after movement of their host, it is indeed expected that floating Qs may appear in the position in which nominal movement (even just temporarily) stops. Floating Qs have also been taken as evidence for the predicate-internal subject hypothesis when a subject-oriented Q is pronounced in low position below the surface subject (e.g. Sportiche 1988; see Fitzpatrick 2006: ch. 1 for an excellent summary).

Under the adverbial approach, on the other hand, floating Qs modify the event structure of a verb phrase, and crucially, the noun and its associate Q are not related to each other by movement. For instance, (1a) and (1b) are not related to each other by the syntax. Instead, the apparent ability of the adjunct Q to modify the noun is derived indirectly by the semantics. Due to its lexical meaning, all ‘maximizes’ the external argument of the verbal phrase, as stated in (3b) (Dowty and Brodie 1984, adopted by Bobaljik 1995). In (3a), all maximizes the interpretation of the definite plural the students and eliminates exceptions to the universal quantification provided by the plural. This leads to the semantics such that all modifies the noun the students in (1b) without involving any syntactic movement.

(3)  
   a. The students have [VP $\lambda_{VP}$ all [VP had lunch]].  
   b. all ‘maximizes’ the external argument of the VP.  
      $[[\text{all}]] = \lambda P < e, t >. \lambda x. P(\text{max}(x))$.

The adverbial approach takes syntactic and semantic differences between non-floating Qs and floating Qs as empirical evidence for the proposal. Especially when a floating Q appears in a position that is not related to NP movement, the adverbial approach claims to best explain the distribution of the floating Q. If floating Qs are simply an overt trace of NP movement, there is no reason to expect floating Qs to show up in non-argumental adjunct positions. Moreover, semantic differences between floating and non-floating Qs, if any, may be considered as supporting evidence for the adverbial approach (see a detailed discussion by e.g. Bobaljik 1995;
2003; Fitzpatrick 2006; Kim 2013). In fact, lack of such semantic differences would be surprising under the adverbial approach.

Lastly, the hybrid approach argues that both adnominal and adverbial approaches are basically on the right track. It argues that in languages, some floating Qs are adnominal while some are adverbial, and that the two types of floating Q show different semantic and syntactic properties. For instance, Ishii (1998) argues that floating Qs are ambiguous between a stranded Q and an adverbial Q, and that systematic counterexamples to the adnominal Q approach are limited to cases in which floating Qs bear a distributive reading, which should be analyzed as adverbial. Kang (2002) argues that floating Qs in Korean can be used as a verbal modifier in special contexts—where quantificational information is in focus (see 3.4.5 for examples). Fitzpatrick (2006) proposes that the split between the two types of floating Q exists not only between languages (e.g. Japanese vs. English), but also within a single language (e.g. Korean, West Ulster English). Fitzpatrick (2006) shows that exhaustivity is systematically correlated with the Q type, in such a way that adverbial Qs bear the semantics of exhaustivity. Fitzpatrick (2006) also argues that adverbial floating Qs are characterized by A-movement of the associate noun, whereas adnominal floating Qs are diagnosed by A'-movement of the host noun.

I argue here for a hybrid approach, especially the one developed by Fitzpatrick (2006). In particular, I show that the distribution of adverbial vs. adnominal Qs can be diagnosed by the theory of floating quantification proposed by Fitzpatrick (2006, building on Déprez 1989 and Doetjes 1997). I also argue that only adnominal Qs, but not adverbial Qs, obey the EG for a principled reason. To set the baseline for my arguments, I introduce Fitzpatrick’s (2006) theory in the following subsections.

3.1.1 Adnominal floating quantification

Fitzpatrick (2006) argues that floating quantification in languages can be divided into two types and each type shows correlated syntactic and semantic characteristics. The overall proposals for adnominal floating quantification are summarized in (4) and (5). Syntactically, adnominal floating Qs are stranded by movement of their host noun, as in (4), and thus they are a good NP-trace indicator, as stated in (5a).

(4) \[
\begin{array}{c}
DP_1 \ldots [XP \ldots [DP \; t_1 \; FQ] \ldots ] \\
\end{array}
\]

\[\text{A’-movement}\]

(5) Characteristics of adnominal floating quantification

a. They are a trace indicator for nominal movement.
b. The host noun may undergo A’-movement, but not A-movement.
c. They are subject to constraints for sub-extraction in general.
d. The floated adnominal Qs are non-exhaustive (e.g. quantifiers with existen-
tial, non-universal, and partitive meanings).
Fitzpatrick (2006) proposes that the distinction between A-movement and A’-movement is tied to fundamental differences between the two types of floating quantification. Extraction of an NP/DP from within another NP/DP is strictly banned under A-movement, and thus cases like (6) are universally impossible. By contrast, sub-extraction is quite common in the case of A’-movement, as shown in (7). Building on the claim that sub-extraction for A-positions is generally banned, Fitzpatrick argues that the host noun in adnominal quantification may undergo A’-movement, but cannot undergo A-movement.4

(6) *[DP The major] arrived [DP a friend of _]: sub-extraction for A-position

A-movement

(7) [DP Which student] did you see [DP a picture of _]?: sub-extraction for A’-position

A’-movement

Fitzpatrick (2006) further argues that adnominal Qs are semantically non-exhaustive. Specifically, floating quantifiers with existential, non-universal, and partitive meanings belong to this type. The representative examples of non-exhaustive Qs include bare NQs in Korean and Japanese and some existential/non-universal quantifiers in Russian (e.g. para ‘a pair’, kuča ‘a lot’, malo ‘a little/a few’, neskol’ko ‘some’).

Note that Fitzpatrick’s typology of floating Qs is in perfect harmony with my proposal advanced in Chapter 2. I argued that bare NQs in Korean and Japanese are externally merged to their host noun, and thus that their distribution must obey the EG. Fitzpatrick provides independent evidence for this claim by establishing the fact that floating bare NQs in Korean and Japanese show the syntactic properties listed in (5a–c). The examples in (8)–(16) are taken from Fitzpatrick (2006).

In the previous chapter, we have seen a number of examples which show that a bare NQ in Korean and Japanese may appear in the base position of its host noun.

4 Fitzpatrick (2006) suggests that A’-movement is feature-dependent while A-movement is structure-dependent. On this view, a [+wh] phrase is probed for movement even in a context where a DP that contains [+wh] is embedded under another DP. Thus, sub-extraction of an A’-type such as (7) is permitted. A-movement, on the other hand, is structure-dependent. If a category requires a specifier, the closest available phrase must be moved to its specifier position. Thus, A-movement is susceptible to the A-over-A constraint, and thus sub-extraction of an A-type such as (6) is banned. Fitzpatrick (2006) argues that floating quantifier constructions in Russian support the prediction (5c), and that adnominal Qs cannot be stranded from the subject because of the condition on sub-extraction (see Madariaga 2007 for discussion on two types of Russian floating quantifiers). If this proposal is correct, it implies that sub-extraction in Russian seen in Ch. 2 belongs to A’-type movement. I leave it to future research whether this consequence can be validated by independent evidence.
For instance, *huta-ri ‘2-C1’* in Japanese may be stranded in an internal argument position in passive and unaccusative constructions, as in (8) and (9), but may not appear in the same position in unergative constructions, as in (10) (Miyagawa 1989; see also (37)–(39) for Korean and (62)–(64) for Japanese NQ-scrambling in Chapter 2). In Chapter 2, I have argued that this asymmetry is an instantiation of the EG within the vP domain: namely, that the unergative subject and its NQ cannot undergo domain-internal movement and thus may not be separated by their domain-mate (e.g. vP-internal low adverbial). Fitzpatrick (2006) also takes this asymmetry as evidence for the claim that bare NQs in Korean and Japanese are adnominals in base structure.

**Diagnostic 1: Unaccusative vs. unergative predicates in Japanese**

(8) **Gakusei-ga anootoko-ni huta-ri korosareta.**

  student-Nom that.man-by 2-C1 were.killed.

  ‘Two students were killed by that man.’

  (passive)

(9) **Gakusei-ga ofi-su-ni huta-ri kita.**

  student-Nom office-to 2-C1 came

  ‘Two students came to the office.’

  (unaccusative)

(10) **Gakusei-ga geragerato huta-ri waratta.**

  student-Nom loudly 2-C1 laughed

  Intended: ‘Two students laughed loudly.’

  (unergative)

Moreover, Fitzpatrick (2006) shows that the host noun in floating NQ constructions exhibits various types of A’-effect, unlike standard scrambling. As illustrated in (11), A-movement feeds a new binding relationship. *John* in (11a) may bind *himself* after A-movement to [Spec,TP]. In contrast, A’-movement does not create a new binding relationship. For instance, *who* in (11b) cannot bind *himself* when it undergoes A’-movement to [Spec,CP].

**Diagnostic 2: Anaphor binding**

(11) a. John seems to himself [ _ to be intelligent].

   (A-movement)

b. *Who does it seem to himself [ that Mary likes _ ]?*

   (A’-movement)

A similar type of asymmetry has been observed for scrambling (e.g. Mahajan 1990; Saito 1992). As illustrated in (12b), when *gakusei-o ‘student-Acc’* undergoes scrambling over the subject, it may function as a local binder for *otagai-no sensei ‘each other’s teacher’*. The literature takes this as evidence for the claim that clause-internal object scrambling in Japanese may in principle be A-scrambling, which feeds a new binding relationship, just like (11a).
Crucially, Fitzpatrick (2006) notes that the same type of binding is impossible when the object strands a bare NQ in low position (an observation due to Bošković and Takahashi 1998; see also Yamashita 2002 for reconstruction effects in floating NQ constructions). As illustrated in (13a), it is in principle possible for *gakusei-o huta-ri ‘two students’ to bind into the subject *otagai-no sensei ‘each other’s teacher’ after object scrambling. Surprisingly, however, when the object *gakusei-o strands its NQ huta-ri, the new binding relationship no longer holds, as demonstrated in (13b).

Given this pattern, Fitzpatrick (2006) argues that the host noun of NQ in Japanese cannot undergo A-scrambling (unlike standard scrambling), but must undergo A’-scrambling. If sub-extraction of an NP cannot target A-position, it follows that the object must undergo A’-scrambling when it is sub-extracted from a nominal complex, stranding an adnominal NQ. On this view, the object *gakusei-o in (13b) undergoes A’-scrambling when it strands an associate NQ, and thus a new binding relationship cannot be formed in (13b), just as in (11b).

Fitzpatrick (2006) provides further evidence for the generalization (5b) from the interaction between Weak Cross-Over (WCO) effects and floating quantification in Japanese. It is well documented that WCO effects arise only under A’-movement. For instance, the question in (14a) cannot mean ‘for which x, is it the case that x’s mother saw x?’; this contrasts with (14b), in which such meaning can be readily obtained as a consequence of A-movement.

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5 Fitzpatrick (2006) presents further evidence for this claim from the binding possibilities of the subject-oriented reflexive *zibun in Japanese and *sero ‘each other’ in Korean: these anaphors may be locally bound by a scrambled object, but such binding is impossible when the scrambled object strands its NQ in low position.
Diagnostic 3: Evidence for A’-movement (Weak Cross-Over)

(14) a. *Who, did his, mother see t? (A’-movement)
    b. John, seems to his, mother [t, to be smart]. (A-movement)

In Japanese, WCO effects are obtained in in situ questions such as (15a) (Saito and Hoji 1983). The wh-phrase dare in (15a) cannot undergo covert raising to the left of the null pronoun due to the WCO effects. Thus, dare and pro cannot co-refer with each other. By contrast, overt scrambling of a wh-phrase may eliminate the WCO effect, as in (15b). In (15b), dare undergoes clause-internal scrambling, and dare may co-refer with the pronoun that precedes its trace. This contrast between (15a) and (15b) indicates that standard object scrambling in Japanese such as (15b) may in principle be A-movement, which obviates WCO effects, just like English (14b).

(15) a. *[pro, osieta sensei]-ga dare-o, yatou no?
    pro taught teacher-NOM who-ACC hire QUES
    Intended: ‘Who, will the teacher who taught (him,) hire _ ?’ [WCO effects]
    b. Dare-o, rainen [pro, osieta sensei]-ga t, yatou no?
    who-ACC next.year pro taught teacher-NOM hire QUES
    ‘Who, will the teacher who taught (him,) hire _ next year?’ [no WCO effects]

Against this background, Fitzpatrick (2006) shows that floating NQs in Japanese play an important role in potential WCO configurations. As shown in (16a), object scrambling of donna gakusei-o san-nin ‘which three students’ obviates WCO effects, which suggests that the wh-phrase may undergo A-movement, just like John in (14b) and dare-o ‘who-ACC’ in (15b). Notably, however, when an NQ is stranded, as in (16b), such obviation is impossible and the WCO effect returns. In (16b), the scrambled object donna gakusei-o cannot co-refer with pro.

(16) a. [Donna gakusei-o san-nin], rainen [pro, osieta sensei]-ga t, yatou no?
    which student-Acc 3-Cl next.year [pro taught teacher]-Nom hire QUES
    ‘Which three students, will the teacher who taught them, hire _ next year?’
    b. *'[Donna gakusei-o], rainen [pro, osieta sensei]-ga t, san-nin yatou no?
    which student-Acc next.year [pro taught teacher]-Nom 3-Cl hire QUES
    ‘Which three students, will the teacher who taught them, hire _ next year?’

Given this asymmetry, Fitzpatrick (2006) argues that donna gakusei-o in (16b) must undergo A’-scrambling when it strands an adnominal NQ san-nin. On this view, (16b) is ungrammatical for the same reason as (14a) and (15a)—all of them are ruled out due to the WCO effects associated with A’-movement.
3.1.2 Adverbial floating quantification

Fitzpatrick (2006) presents a wide range of evidence which suggests that adverbial floating quantification exists in languages, apart from adnominal floating quantification. The key idea for adverbial floating Qs is schematized in (17). Most notably, Fitzpatrick expands on Doetjes’ (1997) proposal that adverbial floating quantification contains a null pronominal element pro (see Kobuchi-Philip 2003; 2007 for a different application of this idea to Japanese and English floating quantifiers). As depicted in (17), Fitzpatrick (2006) maintains that a quantificational complex may be adjoined in an adverbial position that is non-local to its associate noun. The pronominal element pro in (17) is semantically related to the associate nominal (later, I argue that this relationship is operator-variable binding).

(17) \[ [\begin{array}{l} \mathbf{XP} \\ \mathbf{DP}_1 \end{array} \!] \quad \begin{array}{c} \quad \begin{array}{c} \mathbf{DP} \\ \mathbf{FQ} \end{array} \quad \begin{array}{c} \mathbf{pro} \end{array} \quad [\begin{array}{l} \mathbf{VP} \\ \mathbf{t}_1 \end{array} \!]] \quad \text{A-movement} \]

On this approach, floating quantifiers like all in English contain a null pronoun, which co-refers with the associate noun, as illustrated in (18). Specifically, the quantifier all and its associate noun the students are not related to each other by movement in syntax, but indirectly related to each other by the semantics of all and the co-reference relationship between pro and the students. Semantically, (18) has roughly the same meaning structure as (19) (see Doetjes 1997 for further discussion).

(18) \[ [\begin{array}{l} \mathbf{TP} \\ \mathbf{DP} \end{array} \! \!] \quad \begin{array}{c} \quad \begin{array}{c} \mathbf{The \, \, students}_1 \end{array} \quad \begin{array}{c} \mathbf{have} \end{array} \quad [\begin{array}{l} \mathbf{VP} \\ \mathbf{all} \quad \mathbf{pro}_1 \quad \mathbf{t}_1 \quad \mathbf{had \, \, lunch} \quad \!]] \quad \text{(Doetjes 1997)} \]

(19) The students, have, all of them„ had lunch.

Fitzpatrick (2006) proposes that adverbial floating quantification such as (18) can be diagnosed by the characteristics listed in (20).

(20) Characteristics of adverbial floating quantification

a. Floating Qs show the distribution of a certain type of adverbial.
b. The associate noun may undergo A-movement, but not A'-movement.
c. They are not subject to restrictions on sub-extraction out of NP/DP.
d. Floated adverbial Qs carry an exhaustive reading (e.g. all, both, each in English, tous ‘all’ and chacun ‘each’ in French, kol ‘all’ in Hebrew, minna/ subete ‘all’ in Japanese).

First, adverbial Qs are externally merged in a non-argumental adjunct position, and thus they are not an indicator of NP traces. Instead, we predict that their distribution patterns with certain types of adverb. Second, we expect that the noun associated with a floating Q may undergo A-movement, but not A'-movement. This is due to cross-over effects obtained with A'-movement. As seen above, A'-movement
of a phrase that binds a pronoun cannot cross over the pronoun. For instance, which students that binds them in (21) cannot cross over all of them. If adverbial floating quantification contains pro and if pro co-refers with the associate noun, as in (17), we are led to expect the movement of the associate noun to be A-movement. A’-movement would be ruled out by a general constraint that blocks cross-over such as (21).

(21) *Which students, did [all of them,] see t,? [cross-over violations]

Third, adverbial floating quantification has nothing to do with sub-extraction. Thus, there is no reason to expect that the grammaticality of the construction should ever be contingent on constraints on sub-extraction. Lastly, Fitzpatrick argues that adverbial floating Qs are semantically exhaustive, and exhaustive adverbial floating quantifiers include all, both, each in English, tous ‘all’ and chacun ‘each’ in French, and kol ‘all’ in Hebrew.

Fitzpatrick’s points in (20) can be demonstrated with one of the most widely discussed floating quantifiers in the literature, English all. Consider first the claim in (20a) that adverbial Qs are not an indicator of NP traces, but show the distribution of adverbs. As exemplified in (22), certain intransitives in English may contain a postverbal subject. Passive and unaccusative verbs such as be arrested and arrive allow a postverbal subject while unergatives like dance do not.

(22) a. There were arrested over five hundred protesters. (passive)
   b. There arrived a letter for you today. (unaccusative)
   c. *There danced many students on the floor. (unergative)

If English all were an adnominal Q, we would expect all to be able to appear in a postverbal position in passive or unaccusative constructions, but not in unergative constructions (recall the arguments for (8)–(10) from Japanese adnominal NQs). As illustrated in (23), however, there is no such asymmetry observed between the two types of construction. Whether we take a passive/unaccusative or unergative verb, English all cannot appear in a postverbal subject position. The lack of asymmetry in (23) presents a challenge to the stranding theory of all. Given the fact that bare NQs in Japanese and Korean do exhibit the expected contrast, the lack of such differences in (23) strongly suggests that English all is a different type of quantifier from the bare NQs in Japanese and Korean seen in Chapter 2.

(23) a. *The suspects have been arrested all. (passive)
   b. The suspects have all been arrested.
   c. *The students have arrived all. (unaccusative)
   d. The students have all arrived
   e. *The finalists have danced all. (unergative)
   f. The finalists have all danced.
The examples in (24) illustrate a similar point with complex auxiliary verbs. English *all* can appear only in the highest three positions when a full complement of auxiliary elements is employed in a sentence (Fitzpatrick 2006: 41). If the associate noun *the vegetables* had moved from positions that are local to its predicate via successive cyclic A-movement, stranding *all*, the degraded status of (24d) and (24e) would simply be a mystery.6

(24) a. The vegetables *all* will have been being roasted for an hour by the time you arrive.
    b. The vegetables will *all* have been being roasted for an hour by the time you arrive.
    c. The vegetables will have *all* been being roasted for an hour by the time you arrive.
    d. ?*The vegetables will have been *all* being roasted for an hour by the time you arrive.
    e. ?*The vegetables will have been being *all* roasted for an hour by the time you arrive.

Fitzpatrick (2006) further argues that the distribution of *all* is restricted in the same way as the distribution of modal adverbs such as *easily* in English (see also Bobaljik 1995; Brisson 2000; cf. Baltin 1995 for the claim that the distribution of *all* is identical to that of *ever* in English). Just like *all*, the modal adverb *easily* may be adjoined to the highest three auxiliary projections only, as illustrated in (25).

(25) The veggies (*easily*) will (*easily*) have (*easily*) been (*easily*) being (*easily*) roasted.

English *all* also interacts with adverbs much as other adverbs do. Adverbs in English are hierarchically organized so that a higher type of adverb must precede a lower type of adverb. For instance, the speaker-oriented adverb *allegedly* must precede the subject-oriented adverb *willingly*. The reverse order is ungrammatical:

(26) a. The children have allegedly willingly been being tricked.
    b. *The children have willingly allegedly been being tricked.

The distribution of English *all* may restrict the distribution of other adverbs in a similar way. As reported in Fitzpatrick (2006), the adverb *bravely* is ambiguous between a subject-oriented reading (paraphrased as ‘it is brave that X did Y’) and a manner reading (paraphrased as ‘X did Y in a brave manner’). When *all* precedes *bravely*, both readings are available, as in (27). Importantly, however, when *bravely*

---

6 There seem to be judgement variations on (24), however. Fitzpatrick (2006) notes that speakers can differ on the distribution allowed to particular adverbs or classes of adverbs.
precedes all, only the subject-oriented reading is obtained, as in (28). Fitzpatrick argues that floating all must be externally merged higher than the manner adverb (e.g. (24a–c)) and thus that all cannot follow the manner adverb bravely. Overall, these data again support the idea that English all is a type of adverb. If it were a stranded adnominal Q, there would be no obvious reason to expect that the existence of all (with an NP-trace) would block a certain type of interpretation for bravely in (28).

(27) The gladiators all bravely fought the lions.
    (bravely: subject-oriented, manner)

(28) The gladiators bravely all fought the lions.
    (bravely: subject-oriented, *manner)

The distribution of English all also provides support for the claim that the associate noun of a floating adverbial Q must undergo A-movement. As mentioned above, if adverbial floating quantification contains a null pronoun, as in (29), it is predicted that the associate noun would not be able to undergo A’-movement due to the cross-over effect, just like (30).

(29) [DP The students], will have [VP [all pro=them][VP t, had lunch]]

(30) *Which student, did [all of them,] see t,? (cross-over effect)

This prediction is indeed borne out. It has long been noted that all in English is incompatible with A’-movement (Déprez 1989). As shown in (31), floated all cannot appear related to an A’-moved element. A floated all cannot be associated with a wh-phrase (31a), a relativized noun phrase (31b), or a topicalized element (31c).

(31) a. *[What] did you all buy? (wh-question)
    b. *[The students] [that John has all met] are quite smart. (relative clause)
    c. *[These students], John has all met. (topicalization)

English all also conforms to Fitzpatrick’s (2006) generalization in that its meaning is exhaustive. For instance, (32a) is acceptable even though there are some exceptions to the statement. Even if one or two of the fifth-graders are in a different class, it is still acceptable to use the definite plural in (32a) (see Brisson 1998). By contrast,

---

7 Fitzpatrick (2006: ch. 4) argues that all in general English is exhaustive. All in wh-all split constructions in West Ulster English (i), however, is a stranded adnominal and has a non-exhaustive meaning as a semantic pluralizer (McCloskey 2000). The discussion in this section is limited to floating all in standard English.

(i) a. What all did he say that he wanted?
    b. What did he say that he wanted all?
    c. What did he say all that he wanted?
(32b) is not acceptable in such contexts. If someone utters (32b), the speaker asserts that all of the fifth-graders are in fact in gym class without a single exception.

(32)   a. The fifth-graders are in gym class.
       b. All of the fifth-graders are in gym class.

The contrast between all of (the) Xs and three of (the) Xs in (33) provides further support for the exhaustivity of all. The semantic notion of partitivity involves the presupposition that the speaker is not making a claim about the full set in question. Thus, we expect that a partitive context would be incompatible with exhaustive quantifiers. The examples in (33) show that this is the case. The partitive phrase three of John’s students is compatible with a continuation which confesses the speaker’s ignorance of the full set. By contrast, quantifiers such as all, both, and each reject such a continuation. Under Fitzpatrick (2006), the quantifiers in (33b) are exhaustive and thus cannot be made compatible with a partitive context.

(33)   a. Three of John’s students were there, but I have no idea whether he has others that will come later.
       b. #All/both/each of John’s students were there, but I have no idea whether he has others that will come later.

The examples in (34) demonstrate the same effect with the opposite context. The partitive phrase three of his students in (34a) is not felicitous with the context where knowledge of the full set is explicitly professed. In contrast, the same context is perfectly grammatical with both of his students, which is exhaustive.

(34)   a. #John has exactly three students. I saw three of his students yesterday.
       b. John has exactly two students. I saw both of his students yesterday.

Lastly, Fitzpatrick (2006) links semantic exhaustivity with a particular type of syntactic structure. Specifically, it is argued that an exhaustive Q is merged as a modifier on a full DP, as in (35a) or (35b), whereas a non-exhaustive (partitive) Q functions as the head of the structure and takes an NP as its complement, as illustrated in (36). Under the structures in (35) and (36), of in exhaustive Q constructions is optional as a modifier, but of in non-exhaustive Q constructions is obligatory as the head of the PP. The contrast between (37a) and (37b) supports this hypothesis.

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8 Fitzpatrick did not make a distinction between the adjunction structure (35a) and the specifier structure (35b). For concreteness, I will adopt the adjunction structure (35a) in this book, but (35b) is certainly compatible with my proposal. In adopting (35a) for Korean and Japanese, I use the term nP instead of DP to indicate my lack of commitment as to whether the DP layer is projected in the nominal projections in Korean and Japanese.
(35) Exhaustive Qs are modifiers
   a. Adjoined structure:
      \[
      \text{DP} \xrightarrow{\text{all (of)}} \text{DP} \xrightarrow{\text{the students/pro}}
      \]
   b. Specifier structure:
      \[
      \text{DP} \xrightarrow{\text{all (of)}} \text{D'} \xrightarrow{\text{the students/pro}}
      \]

(36) Non-exhaustive (partitive) Qs are heads
   \[
   \text{DP} \xrightarrow{\text{three}} \text{NP} \xrightarrow{\text{N}} \text{PP} \xrightarrow{\text{P = of}} \text{DP} \xrightarrow{\text{the students}}
   \]

(37) a. All (of) the students went home.
    b. Several *(of) the students went home.

3.1.3 Summary: a hybrid approach
In this section, we have reviewed Fitzpatrick’s (2006) hybrid approach to floating quantification. The major results are summarized in (38).

(38) Two types of floating quantification (see Fitzpatrick 2006: 32)

<table>
<thead>
<tr>
<th></th>
<th>Adnominal floating quantification</th>
<th>Adverbial floating quantification</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Distribution</td>
<td>NP/DP positions</td>
<td>adverbal</td>
</tr>
<tr>
<td>b. Movement correlation</td>
<td>\text{A'}-movement</td>
<td>A-movement</td>
</tr>
<tr>
<td>c. Origin</td>
<td>Stranded</td>
<td>Not stranded</td>
</tr>
<tr>
<td>d. Semantics</td>
<td>Non-exhaustive</td>
<td>Exhaustive</td>
</tr>
</tbody>
</table>
I adopt Fitzpatrick’s classification of the types of floating quantification. I agree with him in arguing that floating quantification is not a uniform phenomenon, and that the two types of floating quantification systematically differ from each other in their syntax and semantics, as reviewed in this section. I also follow Doetjes (1997) and Fitzpatrick (2006) in assuming that adverbial floating quantification contains a null pronoun co-indexed with its associate noun.

As will be shown shortly, however, I further develop Fitzpatrick’s proposal by incorporating the theory of exhaustive focus into the theory of floating quantification. In particular, I propose that adverbial quantifications are not just vP-adjuncts, but are projected in a special type of focus projection which assigns an exhaustive reading to the quantifier and binds a variable inside vP. In this way, we can explain how and why adverbial Qs are affected by the existence of (exhaustive) focus and show different distributions from adnominal Qs. In the next section, I introduce É. Kiss’s (2010) proposal on exhaustivity and structural focus in Hungarian, which I adopt for adverbial floating quantification in Korean and Japanese.

3.2 Exhaustivity and structural focus

É. Kiss (2010) argues that exhaustivity in Hungarian is assigned to a structurally determined focus slot in the left periphery. Specifically, the preverbal focus position in Hungarian is associated with a [+exhaustive] feature, and exhaustive focus must be distinguished from other types of focus such as new information, narrow focus, and prosodic focus. The basic paradigm is illustrated with the data in (39) and (40).

As shown in (39), focusless, neutral predicational phrases in Hungarian usually begin with a particle which marks the telicity of a sentence as in (39a), or with a bare nominal complement as in (39b). (The logical predicate of such neutral sentences has been referred to as a PredP subsuming a split VP, following e.g. Csirmaz 2004 and É. Kiss 2008.)

\[
\begin{align*}
(39) & \quad \text{a. Péter} \ [\text{PredP} \text{ meg vette Kertész könyvét}]. \\
& \quad \text{Peter} \text{ bought Kertész’s book.} \\
& \quad \text{‘Peter bought Kertész’s book.’} \\
& \quad \text{b. Péter} \ [\text{PredP} \text{ könyvet vett}]. \\
& \quad \text{Peter} \text{ bought some book(s).} \quad \text{(Hungarian)}
\end{align*}
\]

In focus constructions, however, the predicate part of the sentence begins with a focused element, which is immediately followed by the verb, as in (40a) and (40b). In neutral and focus constructions alike, the main stress falls on the left edge of the logical predicate, and the post-focus section of the focus construction is de-stressed.
É. Kiss (2010) argues that the focus constituents in (40a) and (40b) occupy the specifier of a designated functional projection called FocP (following Brody 1991), and assumes that the verb moves across the verbal particle or bare nominal into a head position below FocP, called Non-Neutral Phrase (NNP). É. Kiss (2010) reports that Hungarian speakers share the intuition that the neutral sentences in (39) and focused sentences in (40) have different truth conditions. (39a) is true in every situation in which Peter bought a set of objects including Kertész’s book. By contrast, (40a) is true only in a situation in which the set of books bought by Peter consists of Kertész’s book and nothing else. Likewise, (39b) is true if the set of persons who bought books includes Peter, but (40b) is true if Peter is the only person who bought books.

É. Kiss (2010) proposes that this intuition concerning the foci in (40) can be formalized with the concept of exhaustivity in semantics. As stated in Szabolcsi’s formula (41), focus in a preverbal position provides an exhaustive listing of the referents of which the sentence is true (see Szabolcsi 1981a; 1981b; 1983). Under É. Kiss (2010), preverbal focus represents the value of an exhaustive operator. Specifically, the focus operator operates on the set of contextually determined elements for which the predicate can potentially hold, and the focus operator exhaustively identifies the proper subset of this set for which the predicate actually holds, excluding the complementary subset.

É. Kiss (2010) emphasizes the fact that the preverbal focus associated with exhaustivity is semantically distinct from a narrow focus which conveys new information (see also É. Kiss 1998 for the contrast between identificational vs. information focus). In Hungarian, in particular, a constituent conveying new information can appear in the postverbal or preverbal part of the sentence. For instance, both (42b) and (42c) can be a felicitous answer for the question (42a). Crucially, however, the preverbal focus in (42b) carries an exhaustive reading so that Peter and Paul are the only ones that I invited. On the other hand, the postverbal constituent in (42c) lacks such an exhaustive reading. In (42c), the invited people may include people other than Peter and Paul.
(42) a. [\text{FocP} KIKET [hívtál meg ma estére]]?
who-Pl-ACC invited-you PRT today evening-for
‘Who did you invite for tonight?’

b. [\text{FocP} PÉTERT és PÁLT (hívtam meg)].
Peter and Paul invited PRT
‘It is Peter and Paul (that I invited).’

c. Meg hívtam PÉTERT és PÁLT.
PRT invited Peter and Paul
‘I invited Peter and Paul (possibly among others).’

The structural focus illustrated in (42b) is called identificational focus and is argued to be obligatorily associated with an exhaustive reading. The prosodic focus in (42c) is a general information focus. It is mere pragmatic-prosodic information, expressing new information in the discourse. The English equivalents of the Hungarian identificational focus are the cleft and pseudo-cleft constituents (É. Kiss 1998; 2006a; 2006b; Higgins 1973). The prosodic focus of English is information focus.9

Most relevant to the current discussion of floating quantification, É. Kiss (2010) argues that exhaustivity associated with identificational focus enforces a special meaning for numerals. Numerals are scalar elements in nature, and they are typically interpretable as ‘at least $n$’ out of focus. Importantly, however, numerals can only mean ‘exactly $n$’ in the preverbal focus slot in Hungarian, which involves the exclusion of all alternatives but that denoted by the focused $n$. This is demonstrated with the examples in (43) and (44).

(43) a. Aki [\text{PredP} fel-nevelt két gyerek], az 15\% nyugdíjemelésre jogosult.
who up.brought two children (s)he 15\% pension.raise.to entitled.is
‘Who[ever] brought up (at least) two children is entitled to a 15\% pension raise.’

b. Aki [\text{TopP} két gyerek [\text{PredP} fel-nevelt]], az 15\% nyugdíjemelésre jogosult.
who two children up.brought (s)he 15\% pension.raise.to entitled.is
‘Who[ever] brought up (at least) two children is entitled to a 15\% pension raise.’

c. Aki [\text{DistP} két gyerek is [\text{PredP} fel-nevelt]], az 15\% nyugdíjemelésre jogosult.
who two children even up.brought (s)he 15\% pension.raise.to entitled.is
‘Who[ever] brought up (at least) two children is entitled to a 15\% pension raise.’

9 É. Kiss (1998; 2010) extensively argues that identificational focus must be distinguished from information focus. The former expresses a quantification-like operation which takes scope and binds a variable, whereas the latter conveys merely non-presupposed information which does not take scope. Information focus is present in every sentence but not every sentence contains identificational focus. In languages like Hungarian, the two types of focus are associated with different syntactic positions, as discussed above. In English, identificational focus is marked by a cleft construction, whereas information focus is marked by prosody.
Aki [FocP KÉTGYEREKET [PredP nevelt fel]], az 15%-nyugdíjemelésre jogosult.

who two children brought up (s)he is entitled to a 15% pension raise.

Who[ever] brought up [exactly] two children is entitled to a 15% pension raise.

As shown in the examples in (43) and (44), expressions containing a numerical modifier n can be interpreted as ‘at least n or more’ in every sentence position but [Spec,FocP]. When no scalar implicature is induced, the phrase két gyereket ‘two children’ can be interpreted as ‘at least two children’ in predicate-internal position (43a), in topic position (43b), and in distributive quantifier position with is ‘even’ (43c). By contrast, két gyereket in preverbal focus position in (44) is interpreted as ‘exactly two children’ no matter what the pragmatic conditions are.

É. Kiss (2010) argues that the reason a focused numeral n cannot be interpreted as ‘at least n’ is due to the [+exhaustive] feature of identificational focus. Exhaustive identification excludes the alternatives except that denoted by the focused n. Thus the upward extension of the focused numeral will be blocked, resulting in an ‘at least n’ and at most n’ reading, which corresponds to the ‘exactly n’ reading. On this approach, the ‘exactly n’ reading assigned to structural foci is not a weak pragmatic implicature, but a semantic entailment. Thus, the ‘exactly n’ reading of numerals is not sensitive to pragmatic or contextual conditions.

É. Kiss (2010) shows that the preverbal focus position in Hungarian blocks the ‘at least n’ reading irrespective of pragmatic conditions. As illustrated in (45), when a ‘how many’ question is asked with a preverbal focus structure, it is expected that the answer is given with a focused numeral which entails an ‘exactly n’ reading. The answer would be infelicitous if the meaning of the sentence were extended along the numerical scale. For instance, when the answer to the question (45A) is given with a numeral, négy könyvet ‘four books’, as in (45B), it entails an ‘exactly four’ reading. When the answer is extended past the value of ‘four’ (suggesting that négy könyvet means ‘at least four books’), the sentence becomes infelicitous as an answer for (45A).

A: [FocP HáNY KÖNYVET [vett Harry]]?
   how many book-ACC bought Harry
   ‘How many books did Harry buy?’

B: [FocP NÉGY könyvet], # valójában hetet is.
   four book-ACC in fact seven-ACC even
   ‘Four books, in fact, seven.’

The claim that preverbal focus on numerals blocks upward extension can be further strengthened with the data in (46) and (47). The background context in (46) and (47) provides the hearer with the information that if Harry bought four books in this shop, he would get one free. The question in (46) can be expressed with a numeral in postverbal position. In this case, the numeral négy ‘four’ means ‘at least four’ both in the question and in the answer. Therefore, the answer for the polar
question in (46) can be extended along the numerical scale past the value of négy ‘four’ and continued with the further comment that ‘in fact, he bought seven’.

(46) [Did Harry get a free book in this shop? If he bought four books, he got one.]  
A: VETT Harry négy könyvet?  
   ‘Did Harry buy four books?’  
B: Igen, VETT négy könyvet. Valójában hetet is.  
   ‘Yes, he bought four books. In fact, he bought seven.’

The background context is the same for (46) and (47). In (47), however, the question is asked with the *wh*-phrase hány könyvet ‘how many books’, which requires the corresponding numeral to be placed in an exhaustive focus position. In this case, the numeral in the answer must be interpreted at face value. Thus, in (47), the speaker must provide the exact number of the books that he bought; otherwise, s/he is not telling the truth. The fact that only the ‘exactly *n*’ reading is acceptable in (47) strongly suggests that exhaustivity associated with a numeral in (47) is a semantic entailment, not a weak pragmatic implicature.

(47) [Did Harry get a free book in this shop? If he bought four books, he got one.]  
A: [FocP HÁNY KÖNYVET [vett]]?  
   ‘How many books did he buy?’  
B: [FocP HÉT KÖNYVET].  
   ‘Seven books.’  
B’: #[FocP NÉGY KÖNYVET].  
   ‘Four books.’

With this much background on exhaustivity and focus, let us return to floating quantification in Korean and Japanese. Fitzpatrick (2006) argues that adverbial floating Qs are characterized by semantic exhaustivity, but does not discuss why they should be tied to such a semantic property. I argue, in the next section, that adverbial floating quantifiers are exhaustive in nature because they are externally merged in a structural focus position on which identificational focus falls, as in the case of preverbal focus in Hungarian.

### 3.3 Proposal

In section 3.1, we reviewed how adnominal floating quantification differs from adverbial floating quantification, based on the hybrid approach implemented by Fitzpatrick (2006). I adopt the hybrid approach for the analysis of floating quantification in Korean and Japanese. In particular, I propose that two types of floating quantification exist in Korean and Japanese, and that each type shows the distinct
syntactic and semantic characteristics that support Fitzpatrick’s (2006) overall classification.

More importantly, I further develop Fitzpatrick’s (2006) theory by incorporating É. Kiss’s (2010) perspectives on exhaustive focus into the current proposal. Specifically, I concur with Fitzpatrick that adverbial floating quantifiers are exhaustive in nature, in contrast to adnominal Qs with partitive interpretation. Crucially, however, I argue that this link between semantic exhaustivity and Q types comes from the structure to which adverbial Qs are adjoined in the syntax. I propose that adverbial floating Qs are not just vP-adjuncts, but merged into a focus position which É. Kiss designates as a slot on which exhaustive focus falls. In particular, I claim that adverbial floating Qs are externally merged in [Spec,FocP], to which identificational focus is assigned. I argue that in this way we can capture the semantics of adverbial floating Qs as well as their syntactic distribution—neither of which is explicable under Fitzpatrick’s tacit assumption that adverbial Qs are just vP-adjuncts.

To be more specific, I propose that adverbial floating quantifiers are merged in an identificational focus position above a verbal projection, as illustrated in (48). If pro inside the floating quantifier is associated with the subject, as in (48a), the quantifier provides an exhaustive listing of the subject for which the statement expressed by the sentence is true. If pro co-refers with the object, as in (48b), the quantifier provides an exhaustive listing of the object.10

(48) Structure of adverbial floating quantification

a. \[\text{TP} \quad \text{[FocP \ [nP FQ \ pro_1] \ [vP S \ O \ V]]} \]
   \[\text{A-movement} \]

b. \[\text{TP} \quad \text{[vP \ S \ [FocP \ [nP FQ \ pro_1] \ [VP \ O \ V]]]} \]
   \[\text{A-movement} \]

As will be discussed in the next section, an adverbial floating quantifier must bind a variable to function as a focus operator, and thus it must c-command (and precede) the trace of the argument it is associated with. We will see that this leads to the rather interesting generalization that adverbial quantifiers do not obey the EG, but rather that they must follow the noun they are associated with (cf. discussion of L-tous in section 3.4.4). I assume with Fitzpatrick (2006) that adverbial floating quantifiers

10 In (48b), I assume that the object-oriented adverbial FQ is merged to VP instead of vP. This explains the fact that the object-oriented adverbial FQ cannot intervene between the subject and subject-oriented adnominal Q (as an instance of the EG). This is perfectly compatible with É. Kiss’s (1998) proposal on identificational focus. É. Kiss argues that the functional projection that hosts the [+exhaustive] focus may take an open predicate as its sister, which includes various predicational categories such as vP, VP, and CP. See n. 22 below.
show a cluster of characteristics repeated here as (49), and provide further evidence for this from adverbial floating Qs in Korean and Japanese.

(49) **Characteristics of adverbial floating quantification**

a. Floating Qs show the distribution of a certain type of adverbial.
b. The associate noun may undergo A-movement, but not A'-movement.
c. They are not subject to restrictions on sub-extraction out of NP/DP.
d. Floated adverbial Qs carry an exhaustive reading (e.g. *all, both, each* in English, *tous ‘all’ and chacun ‘each’* in French, *kol ‘all’* in Hebrew, *minna/subete ‘all’* in Japanese).

Specifically, I adopt Fitzpatrick’s (2006) claim that a quantifier with exhaustive readings is adjoined to a null pronoun *pro*, as described in (50) (see Kim 2002 and Shi 2000 for similar proposals, which assume that NQs in Korean are merged with PRO in an adjunct small clause). The *nP* that contains the quantifier and *pro* in (50) functions as an operator by merging into a focus projection above *vP*. I assume that quantifiers with a non-exhaustive reading, on the other hand, are merged as an adjunct to a non-specific noun, as illustrated in (51). The internal structure in (51) is adopted from Saito et al. (2008). Under the structure in (51), adnominal floating quantifiers carry a non-specific, partitive, numerical reading.¹¹ (See e.g. Ahn 1990; Saito et al. (2008) propose that NQs in Japanese are an adjunct of an NP, as depicted in (51), whereas NQs in Chinese select an NP as their argument. Based on this proposal, Saito et al. explain some puzzling contrasts between Japanese and Chinese in NP-ellipsis and NQ-fronting. As shown in (i) and (ii), an NQ in Japanese may not be stranded after NP-ellipsis while an NQ in Chinese may. Saito et al. argue that the adjunct *go-satu* cannot undergo movement to [Spec,DP], which is necessary for NP-ellipsis in (i). In contrast, *ben* in (ii) takes the NP *shu* as its complement and *wu* as its specifier, and in such a configuration, NP-ellipsis is possible (adapting Lobeck 1990). Saito et al. (2008) also show that a numeral and a classifier *san-satu* in Japanese form a constituent and they can undergo movement as a constituent, as in (iii). By contrast, a numeral and a classifier like *san-ben* in Chinese do not form a constituent, so they cannot undergo movement, as in (iv). In this work, I adopt Saito et al.’s claim for Japanese and extend it to Korean. Note, however, my proposal for adnominal floating quantification can be made compatible with other frameworks (e.g. Choi 2011; Park 2009; Watanabe 2006) if it is assumed that a bare NQ and its host noun form a constituent in base structure. Given that an NQ may precede its host in Japanese, as in (iii), I assume that the CIP in (51) may be left-adjointed or right-adjointed to NP (see Ch. 2 for leftward NQ-scrambling in Japanese).

(i) *Taroo-wa [san-satu no hon]-o katta-ga, Hanako-wa [go-satu no han]-o katta.*
    Taroo-TOp 3-Cl GEN book-Acc bought-but, Hanako-TOp 5-Cl GEN book-Acc bought
    ‘Taroo bought three books, but Hanako bought five.’ (Japanese)

(ii) *Suiran Zhangsan mai-le [san-ben shu], dan Lisi mai-le [wu-ben shu].
    though Zhangsan buy-PERF 3-Cl book but Lisi buy-PERF 5-Cl book
    ‘Zhangsan bought three books, but Lisi bought five.’ (Chinese)

(iii) *[San-satu], Taroo-wa [ti, hon]-o katta.*
    3-Cl Taroo-TOp book-ACC bought
    ‘Taroo bought three books.’ (Japanese)

(iv) *[San-ben], Zhangsan mai-le [ti, shu].
    3-Cl Zhangsan buy-PERF book
    ‘Zhangsan bought three books.’ (Chinese)

Note that in some sense, both types of Q are ‘adnominal’ on this approach because they are externally merged to a nominal expression in base structure. However, I continue to call the former the adverbial type and the latter the adnominal type because the distribution of the entire nP in (50) is understood to be that of adverbials, whereas the distribution of the nP in (51) is that of nominals in nature.12

(50) Internal structure of adverbial floating Qs (cf. Doetjes 1997; Fitzpatrick 2006)

![Diagram](NP QP nP pro)

(51) Internal structure of adnominal floating Qs (Saito et al. 2008)

![Diagram](NP nP CLP NumP Cl)

In Chapter 2, I argued that bare NQs in Korean and Japanese are externally merged with their host as a constituent and obey the EG. In this chapter, I show that bare NQs (out of focus) in Korean and Japanese are semantically non-exhaustive and show the syntax of adnominals. Moreover, I argue that there are other types of quantifier in Korean and Japanese which express the semantics of exhaustivity, and that they are the ones that show the syntax of adverbial floating quantifiers, stated in (49) and (50). Specifically, I argue that quantifiers such as motwu ‘all’, amwuto ‘anyone’, and exhaustive focus-marked NQs (e.g. -man ‘only’), and Case-marked NQs in Korean belong to the adverbial type. In Japanese, quantifiers like minna ‘all’,

12 Note that this approach has some advantages in explaining long-distance agreement between an adverbial Q and its associate noun (e.g. classifier agreement between Q and its host). The long-distance agreement between Q and its associate can be understood as a consequence of local agreement between an adverbial Q and pro within nP. Suppose that the QP undergoes agreement with pro within nP, and that pro binds a variable related to its overt associate. It is expected, then, that the QP and the overt associate share syntactic and semantic properties through the mediation of pro (cf. Park 2009 who posits pro next to Case-marked floating NQs in Korean, assuming that pro functions as an argument of the verb). Fitzpatrick (2006) explains some apparent long-distance agreement between an adverbial Q and its associate noun along these lines. See esp. Fitzpatrick’s argument for Russian floating quantifier constructions (Fitzpatrick 2006: sect. 4.3). See also Kim (2002), who pursues this line of reasoning, assuming that the relevant pronoun is PRO instead of pro.
zen’in ‘all’, and exhaustive focus-marked NQs (e.g. -dake ‘only’, -sika ‘only’) belong to the adverbial type. In the following section, I present empirical evidence for this claim.

3.4 Adverbial floating quantification in Korean and Japanese

In this section, I discuss how my proposal captures the syntax and semantics of two types of floating quantification in Korean and Japanese. First, I show that the semantics of adverbial floating Qs is distinct from that of adnominal floating Qs (3.4.1). I then argue that the syntax of adverbial floating Qs differs from that of adnominal Qs (3.4.2). I also show that adverbial floating Qs are not subject to the EG because they behave like a high adverbial (3.4.3). In section 3.4.4 I argue that an adverbial floating Q must bind a variable to be properly interpreted. Finally, in 3.4.5, I consider cases in which identificational focus falls on a bare NQ. I argue that in exactly those contexts where a bare NQ receives identificational focus, it behaves in the same ways as adverbial floating Qs.

3.4.1 Semantically exhaustive quantifiers

Consider first the prototypical maximizer ‘all’ in Korean and Japanese. Fitzpatrick (2006) argues that the semantic maximizer all in English is not compatible with a partitive context, which signals that the set indicated by all is not complete. In contrast, numerals such as three are compatible with such partitive contexts. Recall the contrasts in (52) and (53).

(52) #All of John’s students were there, but I have no idea whether he has others that will come later.

(53) Three of John’s students were there, but I have no idea whether he has others that will come later.

A similar contrast can be replicated with the Korean examples in (54) and (55). As described in (54), motwu ‘all’ in Korean is not compatible with a comment which professes the speaker’s ignorance of the full set to which ‘all’ applies. When the speaker asserts that ‘all of Mina’s friends came to the party’ as in (54a), the sentence cannot be continued with a further comment such as ‘I don’t know whether Mina’s other friends will come later’, which would suggest that the speaker does not have complete knowledge regarding the full set of Mina’s friends.13

13 The group-denoting semantic maximizer motwu ‘all’ in (54) differs from universal quantifiers such as Hungarian minden or English every. É. Kiss (1998) shows that universal quantifiers cannot occupy preverbal focus in Hungarian (i) or a cleft focus position in English (ii) because they are not compatible with ‘exclusive identification’. A universal quantifier performs identification without exclusion. I assume that motwu ‘all’ is a group-denoting quantifier with a [+exhaustive] feature, whereas nwukwuna ‘every’ in Korean has a [+distributive] feature and functions as a universal quantifier.
(54) a. Mina-uy chinkwutul-i motwu phathi-ey oassta.
   Mina-Gen friends-Nom all party-Loc came
   ‘All of Mina’s friends came to the party.’
   b. #Haciman, Mina-uy chinkwutul-i te olci molukeyssta.
      But, Mina-Gen friends-Nom more will come not know.
      ‘But I don’t know whether Mina’s (other) friends will come (later).’

Bare NQs, on the other hand, can be used in a partitive context, as illustrated in (55). When the speaker asserts that ‘three of Mina’s friends came to the party’, as in (55a), it is possible to continue the sentence with a further comment such as the one in (55b). This suggests that motwu ‘all’ in Korean has an exhaustive reading, just like English all, whereas bare NQs such as sey-myeng ‘3-Cl’ in Korean can be made compatible with a non-exhaustive, partitive reading, like English three in (53).

   Mina-Gen friends-Nom 3-Cl party-Loc came
   ‘Three of Mina’s friends came to the party.’
   b. Haciman, Mina-uy chinkwutul-i te olci molukeyssta.
      But, Mina-Gen friends-Nom more will come not know.
      ‘But I don’t know whether Mina’s (other) friends will come (later).’

The claim that bare NQs in Korean are compatible with a non-exhaustive ‘at least n’ reading is further supported by the question–answer pair exemplified in (57). As illustrated with the Hungarian example (46), repeated here as (56), some question contexts are compatible with, and even favor, the ‘at least n’ reading of numerals. In (56), for instance, the context suggests that if Harry buys at least four books, he would get a free book. In this context, the question ‘did Harry buy four books?’ can be answered with ‘yes’ if he bought four books or more. In fact, the yes–no question that contains the numeral négy könyvet ‘four books’ may be answered with a comment which suggests that négy means ‘at least four’.

(56) [Did Harry get a free book in this shop? If he bought four books, he got one.]
   A: VETT Harry négy könyvet?
      bought Harry four book-Acc
      ‘Did Harry buy four books?’
   B: Igen, VETT négy könyvet. Valójában hetet is.
      yes bought he four book in fact seven-Acc even
      ‘Yes, he bought four books. In fact, he bought seven.’

(i) * Mari minden kalapot nézett ki magának.
   Mary every hat.Acc picked out herself.DAT
   Intended: ‘It was every hat that Mary picked for herself.’ (Hungarian)
(ii) *It was every hat that Mary picked for herself. (É. Kiss 1998: 252)
Similar to (56), the bare NQ *ney-kwen* ‘4-Cl’ in (57) can be used in the ‘at least’ context, and the answer can be extended along the numerical scale past the value of ‘four’. Thus, the data in (57) further confirm the hypothesis that bare NQs in Korean carry a non-exhaustive reading (out of focus).

(57) [If Mina buys four books in this shop, she may get one for free.]

A: Kulayse Mina-ka chayk-ul ney-kwen sass-ni?
so Mina-Nom book.Acc 4-Cl bought.Ques
‘So, did Mina buy four books?’

B: Ung sasse, sasil ilkop-kwen sasse.
yes bought in fact 7-Cl bought
‘Yes, (she) bought (four books). In fact, (she) bought seven books.’

Notably, exhaustively focused NQs such as *ney-kwen-man* ‘four books only’ cannot be used in the ‘at least’ contexts such as (56) and (57). As illustrated in (58), even though the pragmatic context is fully compatible with the ‘at least four’ reading of numerals, the answer cannot be extended along the numerical scale. This is due to the lexical meaning of *-man* ‘only’, which requires the numeral expression to be interpreted as an exhaustive answer. É. Kiss (1998) argues that the *only* phrase is a special type of identificational focus, which carries an evaluative presupposition. Unlike information focus, the *only* phrase must be placed in preverbal focus position in Hungarian. It is an evaluative scalar modifier expressing that the scalar degree it modifies represents the lowest degree on the given scale, and semantically it represents the exhaustivity feature of the focus that falls on the numeral (but see Wee 2002 for differences between the presupposed exhaustivity expressed by a focus and the assertive exhaustivity with ‘only’).

(58) [If Mina buys four books in this shop, she may get one for free.]

A: Kulayse Mina-ka chayk-ul ney-kwen-man sass-ni?
so Mina-Nom book.Acc 4-Cl-only bought.Ques
‘So, did Mina buy only four books?’

B: # Ung sasse, sasil ilkop-kwen sasse.
yes bought in fact 7-Cl bought
‘Yes, (she) bought (only four books). In fact, (she) bought seven books.’

I further extend the proposal for focus-marked NQs in (58) to Case-marked NQs in Korean. As shown in (59) and (60), NQs in Korean can be Case-marked, independently of their host (cf. Japanese, which lacks this type of numeral quantifier). The host and its associate NQ typically share the same Case marking (cf. Ko 2005a; 2009b for a possibility in which an NQ takes a different Case marking than its host in raising and passive constructions). As will be shown shortly, Case-marked NQs show a radically different distribution from that of the bare NQs seen in Chapter 2.
I propose that in contrast to bare NQs, Case-marked NQs are externally merged in
a focus position, just like exhaustively focus-marked NQs in (58), and that their syntax and semantics are regulated by the same mechanism as exhaustively focus-
marked NQs.14

    student-Pl-Nom yesterday 3-Cl-Nom beer-Acc drink-PAST-DEC
    ‘Three students drank beer yesterday.’

(60) Haksayng-tul-i maykcwu-lul ecey sey-pyeng-ul masi-ess-ta.
    student-Pl-Nom beer-Acc yesterday 3-Cl-Acc drink-PAST-DEC
    ‘Students drank three bottles of beer yesterday.’

One initial piece of evidence can be found in the contrast between (61) and (62). As
shown in (61), bare NQs can be used in non-specific contexts. Example (61), with
chenye-ka han-myeng ‘a girl’, simply means that there lived one warm-hearted girl
in a village a long time ago. Chenye-ka han-myeng ‘a girl’ in (61) has a purely
numerical, non-exhaustive, non-specific reading. By contrast, in (62) the NQ ‘one’
is Case-marked along with the host noun. In (62), chenye-ka han-myeng-i strongly
suggests that there is a specific girl that the speaker wants to refer to, and that this
girl is likely to be the lone warm-hearted girl in that village. In other words, the
Case-marked NQ in (62) is interpreted as exhaustive, specific one, in contrast to the
bare NQ in (61).15

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14 Unless mentioned otherwise, I develop my proposal by assuming that a bare NQ is used in neutral
contexts—in the context where a non-exhaustive ‘at least’ reading can be assigned to the numeral. When
identificational focus falls on a bare NQ, however, it receives an exhaustive reading and shows different
distributions from bare NQs with a non-exhaustive reading. I reserve the final section (3.4.5) for detailed
discussion on this issue.

15 It is noteworthy that bare NQs in Korean and Japanese cannot appear in non-anaphoric contexts
where their host is omitted, as in (i) and (ii). This fact can be naturally explained under the current
proposal. First, adnominal Qs such as san-nin and sey-myeng as in (i) and (ii) must be adjoined to a non-
specific nominal in base structure. Since there is no host noun in (i,ii), it is impossible to license the
adnominal NQs. The Case-marked NQ sey-myeng-i in (iii) cannot be licensed either. It must be adjoined to
a definite pronoun pro to be interpreted as an exhaustive quantifier. Given that pro cannot appear in a non-
anaphoric context such as (iii), it follows that sey-myeng-i cannot be licensed either.

(i) *Mukasi-mukasi aru tokoro-ni san-nin sumimasita
   Past-Past some place-in three-CI lived
   ‘(A) long, long time ago, there lived three (men) in some place.’ (Japanese) (Downing 1986)

(ii) *Yeysnal, yeysnal-ey etten kos-ey sey-myeng salassta.
    Past, past-at some place-Loc three-CI lived
    ‘(A) long, long time ago, three (men) lived in some place.’ (Korean)

(iii) *Yeysnal, yeysnal-ey etten kos-ey sey-myeng-i salassta.
    Past, past-at some place-Loc three-Cl-Nom lived
    ‘(A) long, long time ago, three (men) lived in some place.’ (Korean)
Long time ago, a warm-hearted girl lived in a village.

Another noticeable contrast between a bare NQ and a Case-marked NQ is illustrated with (63) and (64). As shown in (63), a bare NQ (out of focus) cannot appear in a sentence when its host noun is omitted. A Case-marked NQ, on the other hand, may be used in the same context without an overt associate noun, as in (64). The behavior of the Case-marked NQ in (64) is the same as other exhaustive quantifiers. As presented in (65) and (66), exhaustive quantifiers such as motwu ‘all’ and amwuto ‘anyone’ may stand alone without an overt associate noun, just like the Case-marked NQ semyeong-i in (64).

(63) *Sey-myeng Mary-lul manna-ss-e.
   3-Cl Mary-ACC meet-PAST-DEC
   ‘Three (people) met Mary.’

(64) Sey-myeng-i Mary-lul manna-ss-e.
    3-Cl-NOM Mary-ACC meet-PAST-DEC
    ‘Three (people) met Mary.’

(65) Motwu Mary-lul manna-ss-e.
    all Mary-ACC meet-PAST-DEC
    ‘All (of them) met Mary.’

(66) Amwuto Mary-lul mos-manna-ss-e.
    anyone Mary-ACC not-meet-PAST-DEC
    ‘No one (none of them) met Mary.’

I take the contrast between (63) and (64)–(66) as evidence for the hypothesis that Case-marked NQs in Korean belong to adverbial exhaustive quantifiers, in contrast to bare NQs. In the preceding section, I have proposed that exhaustive floating quantification in Korean contains a definite pro, whereas adnominal quantifiers such as bare NQs are directly attached to a non-specific noun (recall the proposal in (50) and (51)). The adnominal bare NQ in (63) cannot be licensed since there is no non-specific nominal expression to which it may be adjoined. The adverbial exhaustive quantifiers in (64)–(66), on the other hand, may be licensed even if there is no overt associate.
Specifically, as long as pro can be properly interpreted, adverbial floating quantifiers can be licensed. If an associate noun coexists with an exhaustive quantifier in the same sentence, as in (59) or (62), pro is forced to refer to the preceding noun, because it is the closest and most salient antecedent in the discourse (I will return to the relationship between pro and its associate in section 3.4.4 with more cross-linguistic data). If the associate noun is absent, as in (64)–(66), pro would be interpreted as generic people or a salient group of people in the preceding discourse.16 On this view, exhaustive quantifier constructions such as (64)–(66) are analyzed in a similar way as the left dislocation construction in English in (67). The null pronouns in (64)–(66) are understood to be covert counterparts to ‘of them’ in (67).

(67) a. Students, three of them, came.
   b. Students, all of them, came.

Though judgements are admittedly rather subtle, it is certain that Case-marked NQs are interpreted differently from bare NQs in the ‘at least’ context as well. In (57), we saw that a bare NQ is fully compatible with an ‘at least n’ reading, and can be extended past the denoted value if the background context favors it. Case-marked NQs, however, resist such upward extension. When a question is asked with a Case-marked NQ such as ney-kwen-ul ‘4-Cl.-Acc’, as in (68), it is infelicitous if the answer is continued with a comment which suggests that the numeral means ‘at least four’. This fact would naturally follow if we assume that the Case-marked NQ is interpreted as an exhaustive numeral, meaning ‘exactly n’, unlike bare NQs. The question (68A) asks whether Mina bought exactly four books, and if the answer is ‘yes’, it suggests that the speaker believes that Mina bought four books and no more. Thus, further continuation such as (68B) is judged unacceptable.17

16 See also Furukawa (2007), who argues that negative-polarity items in Japanese are associated with a phonologically null antecedent.
17 Ishii (1998) proposes that floating NQs in Japanese are structurally ambiguous between VP-adverbs and NP-modifiers, and that the former usage is licensed only when a distributive or cumulative reading is available. This generalization does not extend to Case-marked NQs in Korean. As shown in (i,ii), both distributive and collective readings are available with Case-marked NQs in Korean, depending on the plausibility of the possible scenarios. Nakanishi (2008) also points out that there seems no strict correlation between syntactic locality and semantic distributivity of floating NQs in Japanese, contra Ishii (1998).

    student-Pl-NOM piano-Acc student-NOM together lift-PAST-DEC
    ‘Three students lifted a piano together.’ (*collective reading, *distributive reading)

    student-Pl-NOM cigarette-Acc student-NOM smoke-PAST-DEC
    ‘Three students smoked a cigarette.’ (*collective reading, distributive reading)
If Mina buys four books in this shop, she may get one for free.

A: Kulayse Mina-ka chayk-ul ney-kwen-ul sass-ni?
   so Mina-NOM book-ACC 4-CL-ACC bought-QUEST
   ‘So, did Mina buy four books?’

B: # Ung (ney-kwen-ul) sasse, sasil ilkop-kwen(-ul) sasse.
   yes 4-CL-ACC bought in fact 7-CL(-ACC) bought
   ‘Yes, (she) bought (four books). In fact, (she) bought seven books.’

In sum, the data in (54)–(68) indicate that quantifiers such as motwu ‘all’, amwuto ‘anyone’, focus-marked NQs (e.g. -man ‘only’), and Case-marked NQs in Korean have different semantic properties from bare NQs (out of focus). They are interpreted as exhaustive operators, which block upward extension on the numerical scale. In contrast, a bare NQ (out of focus) readily allows upward extension on the scale once the context supports such interpretation.

I assume that semantically exhaustive quantifiers belong to the adverbial type, and hereafter call them adverbial floating quantifiers (advFQ). As for non-exhaustive quantifiers, I refer to them as adnominal floating quantifiers (adnFQ). In the next section, I discuss how the syntax of advFQs differs from that of adnFQs, and how the two types of floating Qs interact with the CL model.

3.4.2 Syntactically adverbial floating quantifiers

Adopting É. Kiss’s (2010) theory of focus introduced in section 3.2, I propose that exhaustively focused quantifiers are externally merged in [Spec,FocP] above the verbal projection, as described in (69). By contrast, adnFQs (e.g. bare NQs in Korean and Japanese) are externally merged to their host noun and may be stranded if the host undergoes movement, as depicted in (70).

18 It is noteworthy that unlike -man ‘only’, additive focus markers such as -to ‘even’ cannot be used in advFQ constructions in Korean. As shown in (i), -to ‘even’ cannot be attached to the NQ sey-myeng ‘3-Cl’.

This fact is in harmony with É. Kiss’s (1998; 2010) theory of focus. É. Kiss (1998) shows that identificational focus is not available for quantifiers which are incompatible with ‘exclusion by identification’ (Kenesei 1986). Due to their inherent lexical meaning, the additive phrases ‘also’ and ‘even’ are not compatible with ‘exclusive’ meanings. Additive phrases identify individuals for whom the predicate holds without excluding any members for whom it does not hold. É. Kiss (1998) shows that additive phrases cannot appear in preverbal focus in Hungarian or cleft constructions in English. If advFQs receive exhaustive focus in Korean, as proposed here, it is indeed expected that additive phrases such as -to ‘also’ cannot appear in a floating context such as in (i).

(i) *Haksayng-tul-i ecey sey-myeng-to ku chayk-ul sassta.
   student-PIG-NOM yesterday 3-CL-even that book-ACC bought
   ‘Even three students bought that book.’ (Korean)
(69) **Adverbial floating quantification**

a. [TP [FocP [nF Q pro] [vP S1 O V]]]  

A-movement

b. [TP [FocP [vP S [vP [nF Q pro] O1 V]]]]  

A-movement

(70) **Adnominal floating quantification**

a. [CP [vP [nP S1 NQ] O V]]  

A’-movement

b. [CP [vP S [vP [nP O1 NQ] V]]]  

A’-movement

Given Fitzpatrick’s (2006) arguments, we predict that the associate noun in (69) would undergo A-movement, whereas the host noun in (70) would undergo A’-movement. Furthermore, given that advFQs are merged in a different Spell-out domain from adnFQs, we expect advFQs as in (69) to show distinct ordering patterns from adnFQs. In this section, I argue that these predictions are borne out. Fitzpatrick (2006) presents some data that support the generalizations in (69) (mostly from Japanese). I further confirm his hypothesis with a range of data that he did not discuss, and discuss how the current proposal may explain various other ordering puzzles in Korean and Japanese.

Let us first consider the claim that the associate noun of an advFQ in (69) undergoes A-movement, whereas the host noun of an adnFQ in (70) undergoes A’-movement. In section 3.1 we saw some evidence for (70) from Fitzpatrick (2006) (recall the data in (6)–(16)). Here, I add further evidence for (69) from anaphor binding and WCO effects in Korean and Japanese. The relevant data are illustrated in (71)–(76).

The Korean examples in (71) pattern with the anaphor binding data in Japanese seen in (13). When the object undergoes scrambling together with its bare NQ, A-binding into the subject is possible. In (71a), *haksayngtul-ul twu-myeng* ‘two students’ may bind into the subject *sero-uy sensayngnim-i* ‘each other’s teacher’ after object scrambling. In contrast, if the NQ is stranded as in (71b), such A-binding becomes impossible. This contrast supports the hypothesis that the host *haksayngtul-ul* in (71b) undergoes A’-movement when it strands an NQ.
Importantly, advFQs behave differently from the bare NQs in (71). As shown in (72b), when the exhaustive quantifier *motwu ‘all’ is floated to the left of the subject ‘each other’s teacher’, the sentence remains acceptable (in varying degrees), in contrast to (71b), which is utterly ungrammatical. The data in (73) demonstrate the same pattern with *amwuto ‘anyone’. This suggests that the associate noun in (72b) and (73b) may undergo A-movement and license the anaphor even if it is separated from *motwu ‘all’ and *amwuto ‘anyone’. This is exactly what we expect from Fitzpatrick’s (2006) theory of floating quantification. The noun associated with advFQs cannot undergo A’-movement due to the WCO effect (triggered by pro inside advFQs), but it may undergo A-movement. If *motwu ‘all’ and *amwuto ‘anyone’ are advFQs, it is predicted that scrambling of their associate noun may feed A-binding, as in (72b) and (73b).\(^\text{19}\) See also (74), which shows that the same pattern holds with *minna ‘all’ and *zen’in ‘all’ in Japanese.

\(^{19}\) Though Fitzpatrick (2006) does not extensively discuss Korean data, the arguments for (72, 73) are inspired by Fitzpatrick’s argument for Japanese exhaustive quantifiers, *minna ‘all’ and *zen’in ‘all’. Fitzpatrick, however, suggests that Korean advFQs behave like mostly in English under Doetjes’s (1997) typology of quantifiers, which are semantically different from exhaustive Qs such as English ‘all’. I argue against his claim on Korean and propose that Korean advFQs are exhaustive Qs like English *all* and Japanese *minna* ‘all’. See also Choi (2011), who argues that *amwut* ‘any’ in Korean is adjoined to pro [+human] in base structure and shows the same distribution as floating quantifiers. I assume with Choi (2011) that *amwut* ‘any’ is externally merged to pro, but I depart from Choi’s premise that *amwut* is an advFQ attached to an overt host in base structure.
(74) a. [Gakusei-o], [otagai-no sensei]-ga minna sikatta.  
   student-ACC [each.other-GEN teacher]-Nom all scolded  
   ‘Each other’s teacher scolded all the students,’

   b. [Gakusei-o], [otagai-no sensei]-ga zen’in sikatta.  
   student-ACC [each.other-GEN teacher]-Nom all scolded  
   ‘Each other’s teacher scolded all the students,’ (Fitzpatrick 2006: 135)

In (16), repeated here as (75), we see that WCO effects emerge in Japanese when the object undergoes scrambling stranding an NQ. Fitzpatrick (2006) takes this as evidence for the hypothesis that the host noun donna gakusei-o in (75b) undergoes A’-scrambling, unlike the one in (75a). If the current proposal is on the right track, however, we expect that the WCO effects would not be obtained if the object were associated with an advFQ and underwent A-scrambling. This prediction is tested with motwu ‘all’ in Korean. As illustrated in (76), the object ‘which employee’ may co-refer with pro, in contrast to (75b). This supports the hypothesis that the object associated with motwu ‘all’ undergoes A-scrambling and that WCO effects are obviated.

(75) a. [Donna gakusei-o san-nin], rainen [pro, osieta sensei]-ga t, yatou no?  
   which student-ACC 3-CL next.year [pro taught teacher]-Nom will-hire QUES  
   ‘Which three students, will the teacher who taught them, hire _ next year?’

   b. *[Donna gakusei-o], rainen [pro, osieta sensei]-ga t, san-nin yatou no?  
   which student-ACC next.year [pro taught teacher]-Nom 3-CL will-hire QUES  
   ‘Which three students, will the teacher who taught them, hire _ next year?’

(76) [Etten cikwen-ul], [pro, haykohan hoysa]-ka motwu t, caykoyonghayss-ni?  
   which employee-ACC fired company-Nom all re.hired-QUES  
   ‘Which employee, did the company which fired them, previously hire (all of them) again?’

One cautionary note is in order. The data here strongly suggest that the associate noun of some advFQs undergoes A-movement and feeds A-binding, in contrast to the noun associated with an adnFQ. It is also true, however, that not all advFQs pass the A-binding test, potentially for some independent reasons. To provide a complete picture for advFQs, I examined anaphor binding and WCO effects with focus-marked NQs and Case-marked NQs in Korean. The relevant data are given in (77)–(80). Unlike motwu ‘all’ and amwuto ‘anyone’ in (72) and (73), judgements for (77) are extremely unstable among speakers. It seems generally true, however, that A-binding in (77a) and (77b) is not as acceptable as in (72) and (73).
As in (78)–(80), sentences with *wh*-phrases in Korean are ungrammatical when they are associated with a focus-marked or Case-marked NQ (cf. grammaticality of (76) with *motwu ‘all’). This pattern holds whether the *wh*-phrase and advFQ (e.g. *twu-myeng-man, twu-myeng-i*) are adjacent to each other, as in (78) and (81), or separated by other material, as in (79) and (80).


students-ACC each.other-GEN teacher-NOM 2-CL-only scolded
‘Each other’s teacher scolded [only two students],’


students-ACC each.other-GEN teacher-NOM 2-CL-ACC scolded
‘Each other’s teacher scolded [(exactly) two students],’

The lack of A-effect in (77)–(80) in itself is an interesting issue, and leads us to further investigation on how the subtypes of advFQs differ from each other. I will not look into this question any further here, but refer the reader to Doetjes’s (1997)
typology of adverbial quantification for future reference. It is instructive to note, however, that a rather degraded status of (77)–(80) does not harm the overall argument for advFQs in Korean and Japanese. It is certainly the case that there is a type of advFQ in Korean and Japanese which may maintain A-binding effects, in contrast to a bare NQ, as shown in (72)–(76). This is not expected under the across-the-board adnominal or adverbial approach. It strongly suggests that the current hybrid approach to floating quantification is on the right track.

3.4.3 Types of floating quantification and the Edge Generalization

The syntactic differences between advFQs and adnFQs also have some interesting implications for ordering patterns in syntactic edges. In Chapter 2, I showed that a subject-oriented bare NQ cannot be separated from its host by their domain-mates, and proposed that this ordering restriction is an instantiation of the general ordering restriction that holds in syntactic edges, the Edge Generalization (EG). The pictorial description is repeated here as (82): the subject and its associate NQ cannot be separated by a domain-internal element Z under the probe-goal theory of movement and the CL model.

(82) Orderings with adnominal floating Qs

![Diagram](image)

(83) Edge Generalization (EG)

If X and Y are dominated by a specifier γP of a Spell-out domain αP, X and Y cannot be separated by an αP-internal element Z that is not dominated by γP.

One crucial ingredient for the EG is that the subject and its associate NQ are externally merged as a constituent. If they were merged in separate domains, we would predict that the subject and associate quantifier could be separated from each other rather freely (e.g. by vP-internal elements). I propose that this is indeed the case with exhaustive quantifiers in Korean and Japanese. More specifically, under the assumption that exhaustive quantifiers are merged in [Spec,FocP] above vP (following É. Kiss 2010), as depicted in (84), we predict that the subject and its advFQ may be separated by vP-domain-mates. On this approach, advFQs are externally merged.
in a separate Spell-out domain from the subject, and thus we predict that the distribution of advFQs would be equivalent to that of high adverbials, which are also merged outside vP.

(84) **Orderings with (subject-oriented) adverbial floating Qs**

```
    FocP
     /  \
[FQ+pro]_1 Foc'
     /  \
    Foc vP
     /  \  \
    S_1 v'  \
      /   \  \
    VP   Z   v
```

The data in (85)–(99) support this prediction. First, consider the contrast represented by (85) and (86). As shown in (85), the subject and its associate NQ cannot be separated by their vP-domain-mate such as the object. In contrast to this, however, exhaustive quantifiers in (86) (e.g. *motwu* ‘all’, *amwuto* ‘anyone’, focus-marked NQs like *sey-myeng-man* ‘3-Cl-only’, and Case-marked NQs like *twu-myeng-i* ‘2-Cl-Nom’) can be separated from their associate noun by vP-internal elements.

I argue that the sharp contrast between (85) and (86) straightforwardly follows from the current hybrid approach.

(85)  *Subject < Object < Subject-oriented NQ*

student-Pl-Nom apple-Acc 2-Cl  eat-PAST-DEC  
‘Two students ate apples.’

(86)  *Subject < Object < Subject-oriented advFQ*

student-Pl-Nom apple-Acc all  eat-PAST-DEC  
‘All the students ate apples.’

student-Pl-Nom apple-Acc anyone  eat-CI-not-PAST-DEC  
‘No students ate apples.’

student-Pl-Nom apple-Acc 3-Cl-only eat-PAST-DEC  
‘Only three students ate apples.’

student-Pl-Nom apple-Acc 2-Cl-Nom eat-PAST-DEC  
‘Two students ate apples.’
I have argued in Chapter 2 that the subject and its associate bare NQ are externally merged as a constituent. Since the subject is merged on the edge of vP, it cannot undergo any further movement within vP. Thus, vP-internal elements such as the object cannot linearly intervene between the subject and its NQ within vP. This ordering restriction is preserved under the CL model. This is an instance of the EG obtained in the vP domain. Now compare the prediction for the advFQ (a bare NQ) with the prediction for the advFQ schematized in (87).

(87) \[ [\text{TP} \ S \ O \ [\text{FocP} \ [nP \ FQ \ pro_1] \ [vP \ t_1 \ t_2 \ V]]] \]

If an FQ is externally merged in [Spec,FocP] above vP, it is spelled out separately from the elements within vP. In particular, when the vP is linearized, we may obtain the linearization information concerning the subject and the object, but there is no ordering information concerning the subject and the FQ in [Spec,FocP]. Thus, the subject (and the object) may undergo further movement to the left of the FQ in the next Spell-out domain (CP, in the case of (86)), and add a new ordering statement in which the subject and the object precede the FQ. Therefore, in contrast to (85), it is perfectly grammatical for the object to intervene between the subject and its associate FQ as in (86). Note that on this approach, the prediction for the (subject-oriented) advFQ in (86) is the same as the prediction for a high adverb as seen in Chapter 2, repeated here as (88).20

(88) **Haksayng-tul-i pwunmyenghi sey-myeng kong-ul patassta.**

*student-Pt-NOM evidently 3-Cl ball-Acc received*

'Evidently, three students received a ball.' (Chapter 2, ex.(30b))

In Chapter 2 we saw that low adjuncts merged within vP cannot intervene between a subject and its associate NQ, as repeated here in (89). Under the current proposal for advFQs, we predict that a low adjunct may intervene between the subject and associate quantifier if the quantifier is an advFQ type, merged in [Spec,FocP]. The facts reported in (90) support this prediction. The advFQs can be separated from the associate subject by a low adjunct, in contrast to the bare NQ in (89).

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20 The object-oriented advFQ, on the other hand, cannot intervene between the subject and the subject-oriented adnominal Q, as shown in (i):

(i) **Maykwu-lul haksayng-tul-i twu-pyeng-ul/man sey-myeng masiessta.**

*beer-Acc student-Pt-NOM 2-Cl-Acc/only 3-Cl drank*

'Three students drank (only) two bottles of beer.' \([O < S < \text{advFQ}_{\text{O}} < \text{NQ}_{\text{man}}]\).

This is expected under the proposal that the object-oriented advFQ \(\text{twu-pyeng-ul}\) takes the VP as its sister. Since \(\text{twu-pyeng-ul}\) is merged within the vP domain, it cannot intervene between the subject and its NQ at the edge of vP. This can be understood as an instance of the EG in the vP domain.
(89) "Haksayng-tul-i ilpule sey-myeng kong-ul patassta.
student-Pl-Nom deliberately 3-Cl ball-Acc received
‘Three students received a ball deliberately.’ (Chapter 2, ex. (30a))

(90) **Subject < Low adverb < Subject-oriented advFQ**

a. **Haksayng-tul-i yelsimhi motwu kong-ul cha-ss-ta.**
student-Pl-Nom diligently all ball-Acc kick-PAST-DEC
‘All the students kicked a ball diligently.’

b. (?) **Haksayng-tul-i yelsimhi amwuto kong-ul cha-ci-anh-ass-ta.**
student-Pl-Nom diligently anyone ball-Acc kick-Cl-NEG-PAST-DEC
‘No students kicked a ball diligently.’

c. (?) **Haksayng-tul-i yelsimhi sey-myeng-man kong-ul cha-ss-ta.**
student-Pl-Nom diligently 3-Cl-only ball-Acc kick-PAST-DEC
‘Only three students kicked a ball diligently.’

d. **Haksayng-tul-i yelsimhi twu myeng-i kong-ul cha-ss-ta.**
student-Pl-Nom diligently 2-Cl-people-Nom ball-Acc kick-PAST-DEC
‘Two students kicked a ball diligently.’

Not surprisingly, the subject and its subject-oriented advFQ may also be separated by a vP-external element. This is illustrated in (91). If the subject undergoes movement to the left of the high adverb above the focus projection, as in (92), the ordering in (91) can be obtained without any conflicts at PF.

(91) **Subject < High adverb < Subject-oriented advFQ**

a. **Haksayng-tul-i pwunmyenghi motwu kong-ul pat-ass-ta.**
student-Pl-Nom evidently all ball-Acc receive-PAST-DEC
‘Evidently, all the students received a ball.’

b. (?) **Haksayng-tul-i pwunmyenghi amwuto**
student-Pl-Nom evidently anyone
kong-ul pat-ci-mos-hay-ss-ta.
ball-Acc receive-Cl-NEG-do-PAST-DEC
‘Evidently, no students were able to receive a ball.’

c. **Haksayng-tul-i pwunmyenghi sey-myeng-man kong-ul pat-ass-ta.**
student-Pl-Nom evidently 3-Cl-only ball-Acc receive-PAST-DEC
‘Evidently, only three students received a ball.’

d. **Haksayng-tul-i pwunmyenghi sey-myeng-i kong-ul pat-ass-ta.**
student-Pl-Nom evidently 3-Cl-Nom ball-Acc receive-PAST-DEC
‘Evidently, three students received a ball.’

(92) [TP S H-adv [FocP [nP FQ pro1] [vP t1 O V]]]
Note also that the asymmetry between unaccusative and unergative verbs seen in
Chapter 2 disappears when an advFQ is used in the same context. This is demon-
strated with the data in (93)–(96). As repeated here as (93) and (94), the unaccusative
subject can be separated from its NQ by a vP-domain-mate, whereas the unergative
subject cannot. This asymmetry disappears when a Case-marked NQ is employed.

(93) Koyangi-ka i pyeng-ulö sey-mali cwuk-ess-ta.
cat-Nom this disease-by three-Cl die-PAST-DEC
‘Three cats died from this disease.’ (unaccusative, S < PP < NQ_{SUB})

(94) ?*Haksayng-tul-i caki-uy ton-ulö twu-myeng cenhwa-yess-ta.
student-Pl-Nom self-Gen money-by three-Cl telephone-PAST-DEC
‘Two students telephoned with their own money.’ (unergative, S < PP < NQ_{SUB})

As in (95) and (96), a Case-marked NQ can be separated from its associate noun
whether the verb is unaccusative (95) or unergative (96). This pattern is expected
under the proposal that a Case-marked NQ is merged separately from the associate
noun as an advFQ.

(95) Koyangi-ka i pyeng-ulö sey-mali-ka cwuk-ess-ta.
cat-Nom this disease-by 3-Cl-Nom die-PAST-DEC
‘Three cats died from this disease.’ (unaccusative, S < PP < FQ_{SUB})

student-Pl-Nom self-Gen money-by 2-Cl-Nom telephone-PAST-DEC
‘Two students telephoned with their own money.’ (unergative, S < PP < FQ_{SUB})

Japanese speakers also find the same contrast between bare NQs vs. exhaustive
quantifiers. As illustrated in (97), the subject and its associate NQ cannot be separ-
ated by the object. By contrast, this ordering restriction disappears when we employ
exhaustive quantifiers such as zen’in ‘all (people)’, minna ‘all (things)’, subete ‘all
(things)’, and exhaustive focus-marked NQs such as huta-ri-sika ‘2-Cl-only’, as
shown in (98) and (99). Given the symmetry between Korean and Japanese para-
digms, I extend my proposal for Korean advFQs to Japanese counterparts.

(97) *Gakusei ga sake-o san-nin nonda.
student-Nom sake-Acc 3-Cl people drank
‘Three students drank sake.’ (Chapter 2, ex. (44b))

(98) Gakusei ga ringo-o zen’in/minna/subete tabeta.
student-Nom apple-Acc all ate
‘All the students ate apples.’ (Kawahima 1998)
In short, the distribution of advFQs is not subject to the EG because advFQs are merged in a different Spell-out domain from that of the subject and the object, unlike adnFQs.\textsuperscript{21} In the next section I turn to the ordering restrictions that apply to advFQs, but not to adnFQs. I show that advFQs do not appear randomly but can be licensed only when a legitimate variable-binding configuration can be established.

3.4.4 Variable binding in adverbial floating quantification

In this section, I discuss how the distribution of advFQs is constrained in the syntax. It is shown that advFQs must bind a variable in their c-command domain; otherwise, it cannot be licensed as a floating Q. It is shown that this is true of English, French, and Hebrew, adopting previous arguments by Fitzpatrick (2006) and Doetjes (1997). I extend this claim to Korean and Japanese and argue that advFQs must bind a variable, either a trace or a pronominal, to function as a focus operator.

Let me first summarize Fitzpatrick’s arguments on the distribution of English all. As illustrated in (100), English all cannot be associated with an in situ object which does not undergo (A-)movement in the overt syntax. Under the analysis of Fitzpatrick (2006), English all is adjoined to pro, and behaves essentially like the full quantifier phrase all of them in semantics. This means that [all pro] must bind a variable in its c-command domain which it can quantify over (see Doetjes 1997 for original insight). Lack of such a variable in (100) leads to ungrammaticality.

(100) a. *John all bought [the books/them].
   b. *John has all met [the students/them].

Specifically, to be properly interpreted in the semantics, the quantificational phrase [all pro] requires predicate abstraction, as described in (101a) (see also Baltin 1995 for the claim that FQs are ‘pre-verbs’ which occur in the specifier position of an unsaturated predicate projection). For this to happen, [all pro] must first be adjoined to an open formula, as in (101b). (101b) results in a saturated sentence in which the variable is bound.

\textsuperscript{21} É. Kiss (1998) argues that the verb moves to the Foc head in Hungarian, but I leave it open how verb movement interacts with focus in advFQ constructions in Korean and Japanese. If the verb moves to Foc and if phase extension applies to advFQ constructions, one might argue that the EG does not hold in advFQ constructions because the Spell-out domain is extended from vP to FocP. On this view, the subject and advFQ are included in the same Spell-out domain due to phase extension, but the subject may move to [Spec,FocP], stranding the subject-oriented advFQ because the subject could be probed by Foc. This is a viable alternative for (92). I leave it for future research as to which proposal is further supported by empirical data.
argument is maximal and contains a pronominal, as in (101c). The surface subject must trigger abstraction once again via movement and provide a binder for the pronominal, as in (101d). On this view, [all pro] in (101) binds a variable which is created by movement of the associate noun. This approach explains why all in English cannot be associated with a non-moved element such as the object in (100). Since there is no trace of the object that crosses over the quantifier [all pro] in (100), the object cannot bind the pronominal inside [all pro] either.

(101)  The students have all arrived.
   a. [The students] λ₂ have [[all pro]₂ λ₁ [arrived t₁]]
   b. λx. [[[arrived x]] ([[all pro]])
   c. arrived (max [[pro]])
   d. λx₂. arrive (max [[pro]₂])([[The students]])

This approach explains why all cannot be linked to an argument in a higher clause whose trace all cannot c-command, as in (102). Simply put, there is no predicate abstraction to connect all in the lower clause and the students in the higher clause. Similarly, an argument whose trace is embedded under other phrases, as in (103), cannot be associated with all either. What crosses over all in (103) is not the embedded phrase the students, but the embedding phrase a friend. Therefore, in (103), a friend would incorrectly bind the pronominal adjoined to all after predicate abstraction, and all would be unable to be linked to the students, which does not leave a trace of its own.²²

(102)  *[The students], said that John has [all pro], come.
(103)  *[A friend of [the students],] has [all pro], arrived.

French data in (104) further support this line of approach for advFQs. Fitzpatrick (2006) shows that floating tous ‘all’ in French behaves much like English all in its distribution, but notes one interesting property that is not observed in English. Just as in English (100), the floating tous in (104a) cannot quantify over an in situ object like les livres. However, tous may quantify over an in situ object when the associate is a clitic object like les, as in (104b). This phenomenon has been called ‘L-tous’, and the observation dates back to Kayne (1975).

Fitzpatrick (2006) suggested that the contrast between (104a) and (104b) can be captured by the hypothesis that advFQs must bind a variable. In (104a), there is no variable available for tous ‘all’ since the associate object does not cross over the

²² Here I adopt Fitzpatrick’s (2006) formulation of predicate abstractions to analyze advFQs, but É. Kiss’s (2010) theory of focus also requires the focus operator to combine with an open predicate. Identificational focus acts as an operator and must bind a variable. In particular, É. Kiss (2006a; 2006b; 2010) analyzes preverbal focus in Hungarian as a specificational predicate, and argues that focus is predicated of the open sentence determined by the post-focus projection.
quantifier *tous*. Thus, the sentence in (104a) is judged ungrammatical. By contrast, in (104b), the clitic pronoun *les* itself serves as a variable for *tous* and the sentence is judged acceptable.

(104) a. *J’ai *tous voulu lire *[les livres]*.
    I-have all-Pl. wanted to.read the books
    ‘I wanted to read all the books.’

b. *J’ai tous voulu *les* lire.
    I-have all-Pl. wanted [them] to.read
    ‘I wanted to read them all.’ (Doetjes 1997)

The distribution of Hebrew *kol* ‘all’ is restricted in a similar way to that of English *all* and French *tous* (Shlonsky 1991). As shown by the contrast between (105a) and (105b), Hebrew *kol* requires the presence of a pronominal clitic (e.g. *-am*) when it functions as a floating Q. When it appears in a non-floated position, as in (106), no such pronominal is required or even allowed (Shlonsky 1991). This contrast can be explained if we assume that the floating quantifier *kol* ‘all’ requires a pronominal element next to it, just like English *all* and French *tous*. In particular, the floating *kol* must be adjoined to a pronoun such as *-am* in (105a) to be licensed as an advFQ. Hebrew is somewhat special in that the pronominal element must be overt (e.g. *-am*) while it may be covert in English and French (cf. Shlonsky 1991, who argues that *kol* is adnominal and the pronominal clitic is an agreement marker; see also Benmamoun 1999 for the point that the presence of agreement clitics cannot be conclusively relied upon to determine the syntactic status of floating quantifiers).

(105) a. Ha-yeladim yašnu kul-am
    the-children slept all-3.MASC.PL
    ‘The children all (of them) slept.’

b. *Ha-yeladim yašnu kul
    the-children slept all
    ‘The children all slept.’

(106) a. Ktafti et kol ha-praxim bi-zhirut.
    I-picked Acc all the-flowers with-care
    ‘I picked all the flowers carefully.’

b. *Ktafti et kol-am ha-praxim bi-zhirut.
    I-picked Acc all-3.MASC.PL the-flowers with-care
    ‘I picked all (of them) the flowers carefully.’

As illustrated with (107), floating *kol* may quantify over a subject *wh*-phrase, but not over an object *wh*-phrase (Shlonsky 1991). This is also expected under the
proposal that Hebrew kol ‘all’ is an adverbial floating Q which requires a variable, like English all and French tous. The subject eize kita ‘which class’ in (107a) moves to subject position via A-movement before undergoing wh-movement. Thus, kol may bind the trace of the subject left by A-movement. The object, on the other hand, does not have the option of short A-movement and must move directly to [Spec,CP] by wh-movement. In (107b), kol cannot bind the A’-trace left by the object due to cross-over effects, and thus the sentence is judged ungrammatical.

(107) a. Eize kita avra kul-a et ha-mivxan?
   which class passed all-it (3.SING.FEM) ACC the-exam
   ‘Which class all passed the exam?’ (Shlonsky 1991)

   b. *Eize tapu ax axalta et kul-o?
      which apple you ate ACC all-it (3.SING.MASC)
      Intended: ‘Which apple did you eat all of (it)?’ (Shlonsky 1991)

Extending Fitzpatrick’s claims on advFQs presented above, I argue that advFQs in Korean and Japanese are also adjoined to a pronominal element in base structure and must bind a variable. Specifically, I propose that adverbial floating Qs in Korean and Japanese require a trace or a pronominal to function as a focus operator, and that this leads to a special ordering restriction for advFQs in scrambling.

Note first that both the subject and the object may be linked to an advFQ in Korean and Japanese, unlike the English, French, and Hebrew data in (100)–(107). This is not surprising, however, given the well-established claim that clause-internal object scrambling is A-movement (e.g. Mahajan 1990; Miyagawa 1997; Saito 1992; Sohn 1995). Recall that object scrambling may target [Spec,TP], feed anaphor binding, and does not trigger WCO effects (see 3.3.1 for some data)—which strongly suggests that object scrambling can be A-movement, just like subject movement to [Spec,TP]. Since both the subject and the object may undergo A-movement in scrambling languages like Korean and Japanese, it is naturally expected that the object as well as the subject can be associated with advFQs, providing a legitimate A-trace for advFQs.

If advFQs in Korean and Japanese are the same type of advFQ observed in other languages, however, their distribution should be restricted by the general principle that controls other advFQs such as English all, French tous, and Hebrew kol. I argue that this is indeed the case.

Most notably, advFQs in Korean and Japanese do not appear freely in a sentence; they must follow the associate noun (if it is overt). This is illustrated with (108) and (109). As shown in (108), exhaustive quantifiers such as motwu ‘all’, amwuto ‘anyone’, and the focus-marked quantifier sey-myeng-man ‘3-Cl.-only’, and the
Case-marked quantifier *sey-myeng-i ‘3-Cl-Nom’ may not precede their associate noun (Kang 2002).\textsuperscript{23}

(108) *Subject-oriented advFQ < Subject
   all yesterday student-Pl-Nom beer-Acc drink-Past-Dec
   ‘All students drank beer yesterday.’

   anyone yesterday student-Pl-Nom beer-Acc drink-CI-Neg-Past-Dec
   ‘No students drank beer yesterday.’

   3-Cl-only yesterday student-Pl-Nom beer-Acc drink-Past-Dec
   ‘Only three students drank beer yesterday.’

   3-Cl-Nom yesterday student-Pl-Nom beer-Acc drink-Past-Dec
   ‘Three students drank beer yesterday.’

Like the Korean data, Japanese data from Kawashima (1998) show that exhaustive quantifiers may follow the associate noun (109a) but cannot precede it (109b) (see also Terada 1990). This ordering restriction is surprising given that bare NQs in Japanese, categorized as adnFQs in this book, may precede their associate noun as extensively discussed in Chapter 2 (2.4). A representative example is repeated here as (110). Given the grammaticality of (110), one cannot simply assume that floating quantifiers in general cannot precede their associate noun so as to explain the data in (108) and (109b). The ungrammaticality of the sentences in (108) and (109b) also suggests that advFQs are not simplex adverbials which can be adjoined to a verbal projection rather freely.

(109) a. Gakusei-ga hon-o subete katta (koto)
   student-Nom book-Acc all bought fact
   ‘A student bought all the books.’

b. *Subete Hanako-ga hon-o katta (koto)
   all Hanako-Nom book-Acc bought fact
   ‘Hanako bought all the books.’ (Kawashima 1998: 5, 7; cf. n. 24)

\textsuperscript{23} Kang (2002: 380) observes that the delimiter -ina ‘even’ may precede the host, as in (i). I leave it open whether -ina phrases are externally merged outside vP or may be merged in the higher Spec of vP (above the subject). Either way, the order in (i) is allowed. Kang treats -man ‘only’ as a delimiter, but the contrast between (i) and (108c) suggests that -ina ‘even’ must be treated differently from -man ‘only’. (Kang claims that a -man marked phrase may precede its host NP, but I do not agree with his judgement.) Kang does not discuss quantifiers like motwu/ta ‘all’ or amwuto ‘anyone’. Kim (2002) argues that examples like (108d) are ungrammatical because there is no local Controller for PRO, which functions as the subject of the numeral.

(i) Yel-myeng-ina haksayng-tul-i wassta.
   10-Cl-DM student-Pl-Nom came
   ‘Ten students came.’
Huta-tu, kodomo-ga kozutumi-o okutta.

2-Ci. child-Nom package-Acc sent

'The child sent two packages.' (Chapter 2: ex. (55))

If we assume that advFQs in Korean and Japanese are operators that must bind a variable, as proposed here, the ordering restriction shown in (108) and (109) may receive a principled account. Specifically, let us suppose that advFQs in Korean and Japanese must be combined with an open formula to be interpreted in the semantics, as in the case of English all, French tous, and Hebrew kol. In (108) and (109b), the nouns associated with advFQs are located below the advFQs, and there is no movement that crosses over the advFQs. This means that in (108) and (109b), there is no variable that the advFQs can bind in their c-command domain. There is no way of linking the advFQs with their associate nouns via predicate abstraction in configurations like (108) and (109b). Thus, the sentences in (108) and (109b) are judged ungrammatical.

Put differently, the ordering restriction shown in (108) and (109b) may be explained by the same logic that explains the ungrammaticality of (100)–(107) in English, French, and Hebrew. If there exists no variable (e.g. A-trace) that an advFQ may bind, the sentence becomes ungrammatical. In English, French, and Hebrew, advFQs cannot be associated with an object (unless the object is a pronominal variable) because the object cannot undergo A-movement that crosses over the advFQs. In Korean and Japanese, advFQs cannot precede their associate noun because there is no A-trace that can function as a variable in those contexts.

Moreover, if my analysis for (108) and (109) is on the right track, I further predict that advFQs in Korean and Japanese may be licensed if the nominal in (108) and (109) is replaced with a pronoun that can function as a variable, as in the case of the French L-tous construction in (104b). The data in (111) confirm this prediction. AdvFQs can be licensed if they are associated with a null pronoun which functions as a variable.24

24 Similarly, the sentence in (109b) becomes acceptable if the overt host hon-o is replaced with pro in Japanese (S. Mika, p.c.). It must be noted, however, that overt pronouns such as ku ‘he’ or ku-tul ‘they’ cannot function as a variable for advFQs in Korean, unlike pro. As shown in (i), ku-tul ‘they’ cannot function as a variable for motwu ‘all’. Given the contrast between (111a) and (i), I stipulate that an overt pronoun cannot serve as a variable for a focus operator, unlike pro. It awaits further investigation as to why this contrast holds and how it can be derived from a deeper principle.

(i) *Motwu (ecey) ku-tul-i maykcwu-lul masi-ess-ta.
    all yesterday he-Pl-Nom beer-Acc drink-PAST-Dec

    'All (of them) drank beer yesterday.'
Subject-oriented advFQ < pro

a. **Motwu** (ecey) pro maykcwu-lul masi-ess-ta.
   all yesterday beer-ACC drink-PAST-DEC
   ‘All (of them) drank beer yesterday.’

b. **Amwuto** (ecey) pro maykcwu-lul masi-ci-anh-ass-ta.
   anyone yesterday beer-ACC drink-CI-NEG-PAST-DEC
   ‘None (of them) drank beer yesterday.’

c. **Sey-myeng-man** (ecey) pro maykcwu-lul masi-ess-ta.
   3-Cl-only yesterday beer-ACC drink-PAST-DEC
   ‘Only three (of them) drank beer yesterday.’

d. **Sey-myeng-i** (ecey) pro maykcwu-lul masi-ess-ta.
   3-Cl-NOM yesterday beer-ACC drink-PAST-DEC
   ‘Three (of them) drank beer yesterday.’

Finally, adnFQs such as huta-tu in (110) are not subject to the constraint for variable binding at all. Therefore, they may precede the host noun in higher domains as long as they can be adjoined to the left of their host in base position (as seen in Chapter 2, this obeys the EG since an adnFQ and its host are constituent-mates, unlike advFQs).25

3.4.5 When identificational focus falls on bare NQs

So far, I have tacitly adopted the well-known hypothesis that the basic meaning of a numerical expression $n$ is ‘at least $n$’, and examined cases in which a bare NQ is *not* associated with identificational focus (Horn 1972; 1981; Kadmon 2001; Levinson 2000; cf. Breheny 2008; Geurts 2006; Horn 1992; 1996 for the opposing view that the ‘exactly $n$’ reading is primary). In this section, I consider the possibility that a numeral $n$ is interpreted as ‘exactly $n$’ and discuss how it would affect ordering patterns in scrambling.

I have assumed that advFQs are adjoined to a definite pro as in (112), whereas adnFQs are adjoined to a non-specific noun in neutral contexts as in (113). Under this

25 One might challenge my proposal by arguing that the subject in (108) (or the object in (109b)) may in principle undergo scrambling so that its trace may serve as a variable for the quantifier, as in (i). First of all, it is not clear how and why advFQs may precede the associate subject in (i). Even if (i) can be ruled in, this possibility seems to be generally banned. When a full DP intervenes between the FQ and its trace, as in French (ii), the full DP functions as an intervener for variable binding. Following Fitzpatrick (2006), I assume that advFQs must be local to their variables and general intervention effects hold in adverbial floating quantification.

(i) \[ [CP \ FQ+pro, \ [TP \ Subject, \ [\_p \ t, \ Object \ V]]] \]

(ii) *Il a tous fallu que [les enfants], viennent $t$.
    it has all been.necessary that the children come
    ‘It was necessary that all the children come.’ (Fitzpatrick 2006: 75)
proposal, advFQs in (112) function as a quantificational element and are interpreted with an ‘exactly n’ reading. In contrast, adnFQs as in (113) function as modifiers of the host noun and receive an ‘at least n’ reading in neutral contexts. I have argued that semantically exhaustive quantifiers belong to the advFQ type and take the structure in (112), whereas bare NQs in Korean and Japanese belong to the adnFQ type, whose underlying structure can be represented by (113).²⁶

(112) Adverbial floating quantifiers (cf. Doetjes 1997; Fitzpatrick 2006)

(113) Adnominal floating quantifiers (adopted from Saito et al. 2008)

Let us now consider the opposite possibility that a bare NQ is merged with the definite pro, as in (112). If a bare NQ can in principle be merged with pro, we would expect it to function as an advFQ in terms of its syntax and semantics. I argue that this is indeed the case in certain contexts. Specifically, I argue that bare NQs are modifiers in neutral contexts with a cardinal meaning, but that bare NQs can be interpreted as a quantificational element in some non-neutral contexts.

I claim that when identificational focus falls on a bare NQ, the bare NQ is adjoined to pro in base structure, just like advFQs in (112). In these contexts, it is expected that the syntax and semantics of bare NQs should not be distinct from that of advFQs in (112). We predict that bare NQs with identificational focus receive an ‘exactly n’ reading, and show the distribution of advFQs. I argue that such contexts do exist and that in exactly those contexts, bare NQs exhibit the same distributional property as advFQs. I also argue that this explains rather unexpected judgement variations concerning the EG in some focus contexts.

²⁶ As noted earlier, (113) is a structure adopted for the sake of concreteness. Other proposals on adnFQs can be made compatible with my proposal if it is assumed that the numeral and its host form a constituent in base structure. For instance, Choi (2011) argues that a classifier takes an NP as its complement, and a numeral in turn takes the classifier phrase as its complement. Park (2009) argues that NumP functions as a predicate for an NP in a small clause, and NP undergoes movement to [Spec,DP], picking up its Case. The main points in this book for adnFQs are unaffected by the choice among these possible alternatives.
A bare NQ is interpreted as ‘exactly $n$’ when it is used as an answer to a ‘how many’ question. In languages like Hungarian, a ‘how many’ question is asked with a preverbal focus structure, and a numeral necessarily entails an ‘exactly $n$’ reading when given as an answer to a ‘how many’ question. This is illustrated with the example in (114) (recall discussion of (45)). As illustrated in (114), the answer to a ‘how many’ question becomes infelicitous if it is extended beyond the numerical value given in the first response.

(114) A: [FocP HÁNY KÖNYVET [vett Harry]]?
    ‘How many books did Harry buy?'

   B: [FocP NÉGY könyvet], #valójában hetet is.
      four    book-Acc in.fact    7-Acc even
    ‘Four books, in fact, seven.’

The same is true of Korean data. As shown in (115), when the NQ ney-kwen ‘four-Cl.’ is given as an answer to the question ‘how many books?’, the numeral carries the ‘exactly four’ reading, and the answer cannot be extended by a further comment such as ‘in fact, seven’. This is in sharp contrast with the behavior of a bare NQ in polar question contexts such as (57), repeated here as (116). In the polar question context (116), the meaning of the numeral can be extended along the numerical scale past ‘four’, in contrast to (115).

(115) A: Harry-ka chayk-ul myech-kwen(-ul) sa-ss-ni?
    Harry-Nom book-Acc how.many-Cl-Acc buy-Past-Ques
    ‘How many books did Harry buy?’

   B: ney-kwen (sa-ss-e), #sasil, ilkop-kwen sa-ss-e.
      4-Cl    buy-Past-Dec in fact, 7-Cl    buy-Past-Dec
    ‘(He bought) four (books), in fact, seven.’

(116) [If Mina buys four books in this shop, she may get one for free.]
   A: Kulayse Mina-ka chayk-ul ney-kwen sass-ni?
      so    Mina-Nom book-Acc 4-Cl    bought-Ques
    ‘So, did Mina buy four books?’

   B: Ung sasse, sasil ilkop-kwen sasse.
      yes    bought in fact 7-Cl    bought
    ‘Yes, (she) bought (four books). In fact, (she) bought 7 books.’

I propose that the numeral as an answer to ‘how many’ questions such as (115) receives identificational focus, just as the numeral in preverbal focus position in Hungarian (114). The numeral with identificational focus is interpreted with an [+exhaustive] ‘exactly $n$’ reading, unlike the numerals in neutral (non-focal) contexts.
I argue that a bare NQ with an ‘exactly \( n \)’ reading is merged in the same syntactic position as exhaustive quantifiers in (112). Under this proposal, we can account for the otherwise unexpected behavior of bare NQs in focal contexts.

Note first that the NQ in (115) may stand alone without the presence of an overt host noun, in contrast to bare NQs in neutral contexts as seen in (63), repeated here as (117). In effect, the NQ in (115) behaves in the same way as a Case-marked NQ in (118). The asymmetry between (115) and (117), and symmetry between (115) and (118), straightforwardly follow from the current proposal. The NQ in (115) must be interpreted as an [+exhaustive] ‘exactly \( n \)’ because it is given as an answer to a ‘how many’ question. On the syntactic side, this means that the NQ is merged in a preverbal focus position as an exhaustive quantifier. Thus, it is expected that its associate noun does not have to be overtly pronounced, just like advFQs as in (118). A bare NQ in (117), on the other hand, is interpreted with an ‘at least \( n \)’ reading without preceding context (in non-focal neutral contexts), and thus requires an overt non-specific host noun.

(117) *Sey-myeng Mary-lul manna-ss-e.
  3-Cl Mary-Acc meet-Past-Dec
  ‘Three (people) met Mary.’

(118) Sey-myeng-i Mary-lul manna-ss-e.
  3-Cl-Nom Mary-Acc meet-Past-Dec
  ‘Three (people) met Mary.’

Moreover, given the fact that advFQs are not subject to the EG, unlike adnFQs, we expect that a bare NQ with identificational focus would not be subject to the EG. Kang (2002) shows that this is indeed the case in Korean. In particular, Kang reports that ‘in a context where quantificational information is important, a separated FQ [from the subject by the object] is more or less acceptable’. Crucial to my proposal, the ‘context where quantificational information is important’ corresponds to those contexts where a numeral receives exhaustive interpretation.

One such context is the ‘how many’ context discussed above. In an out-of-the-blue context, (119B) is simply ungrammatical (as a violation of the EG). However, when it is used as the answer to the ‘how many?’ question in (119A), the sentence becomes acceptable (to varying degrees), even though the object kukes-ul intervenes between the subject haksayng-i and its NQ twu-myeng—apparently violating the EG. Under my proposal that numerals with exhaustive interpretation are merged separately from their associate, the apparent lack of adherence to the EG in (119B) is in fact predicted.
A: Haksayng myech-myeng-i khemphyuthe chayk-ul sass-ni? 
student how-many-Cla-Nom computer book-ACC bought-QUES 
‘How many students bought the computer book?’

B: 'Haksayng-i kukes-ul twu-myeng sasse. 
student-Nom it-ACC 2-Cla bought 
‘Two students bought it.’ (Kang 2002: 387)

Note that ‘how many’ contexts are not the only context where a numeral receives an ‘exactly n’ reading. There are other pragmatic contexts that force identificational focus on a bare NQ; gapping contexts like (120) are one such context. The NQs in gapping contexts such as (120) are interpreted as ‘exactly two’ and ‘exactly three’, and the sentence cannot be extended with a comment which suggests that the NQs mean ‘at least two’ or ‘at least three’. As predicted, the EG does not hold in gapping contexts such as (120), and the object may intervene between the subject and the subject-oriented NQ. My account for (119B) thus extends to gapping contexts such as (120), where the numerals are interpreted with exhaustive focus.

(120) Haksayng-i khemphyuthe-lul twu-myeng, phulinthe-lul sey-myeng sassta. 
student-Nom computer-ACC 2-Cla printer-ACC 3-Cla bought 
‘Two students bought computers and three students bought printers.’

(Kang 2002: 387)

In Korean, it is also possible to overtly mark the [+exhaustive] feature on a bare NQ by combining it with the exhaustive quantifier *motwu* ‘all’, as illustrated in (121). The sentence in (121) means that there are exactly three contextually salient students, and all of them drank beer. Not surprisingly under the current proposal, the combined phrase *sey-myeng motwu* ‘all three’ shows the distribution of advFQs, but not that of adnFQs. They can stand alone without an overt host, as in (122), and they can also be separated from their host by a vP-internal element, not being subject to the EG, as in (123). We can thus extend the proposal for the bare NQ with exhaustivity in (115) to (120) and (121) without further stipulation.

(121) Haksayng-tul-i sey-myeng motwu maykcwu-lul masi-ess-ta. 
student-Pl-Nom all beer-ACC drink-PAST-Dec 
‘All three students drank beer.’

(122) Sey-myeng motwu maykcwu-lul masi-ess-ta. 
3-Cla all beer-ACC drink-PAST-Dec 
‘All three (students) drank beer.’

student-Pl-Nom beer-ACC 3-Cla all drink-PAST-Dec 
‘All three students drank beer.’
Finally, it has been reported in the literature that there are some judgement variations regarding the Subject Puzzle paradigm discussed in Chapter 2 (see Nakanishi 2008; Hoji and Ishii 2004; Miyagawa and Arikawa 2007 for recent debates on Japanese floating Qs; Kim 2013 for Korean floating NQs). Most speakers that I consulted with informed me that the subject cannot be separated from its NQ by the object, but the literature reports that speakers tend to accept the order when the NQ is interpreted with focus (sometimes preceded by a pause or marked by a focal stress). I maintain the position that the ordering in (124) is ungrammatical out of focus, being subject to the EG. I assume, however, that it would be acceptable in contexts where the NQ receives identifiational focus and is interpreted as an exhaustive quantifier. In other words, most speakers interpret the sentence in (124) by assuming that it is uttered in non-focal neutral contexts, but some speakers may analyze the NQ as an advFQ with exhaustive focus so that the ordering in (124) becomes acceptable for them.27

(124) \[ S < O < NQ_{SUBJ} \]

\[
\begin{align*}
\% & \quad \text{Gakusei-ga sake-o (PAUSE) san-nin nonda.} \\
& \quad \text{student-Nom sake-Acc 3-CIpeople drank} \\
& \quad \text{‘Three students drank sake.’ (Japanese)}
\end{align*}
\]

In fact, those speakers who marginally accepted (124) find the same order ungrammatical in non-focal contexts (e.g. listing contexts), as in (125)—where it is impossible to assign an identifiational focus to the NQs. The same is true of the Korean data in (126). When it is not feasible to interpret the numeral with an exhaustive reading, the ordering in (126) is utterly ungrammatical, in contrast to (119B).

(125) [Context: I will tell you what happened at the party yesterday]


\[
\begin{align*}
\text{first,} & \quad \text{student-Nom window.glass-Acc 2-CI broke} \\
& \quad \text{‘First, two students broke some windows.’}
\end{align*}
\]

b. *Tugini sensei-ga Mary-o san-nin sikatta.

\[
\begin{align*}
\text{next} & \quad \text{teacher-Nom Mary-Acc 3-CI scolded} \\
& \quad \text{‘Next, three teachers scolded Mary.’}
\end{align*}
\]

c. *Sorekara oyatati-ga sake-o zyuu-nin nonda.

\[
\begin{align*}
\text{then} & \quad \text{parent-Nom sake-Acc 10-CI drank} \\
& \quad \text{‘Then, ten parents drank sake.’ (N. Hasegawa, p.c.) (Japanese)}
\end{align*}
\]

27 David Pesetsky (p.c.) suggested to me that the fact that Case-markers in Korean can be dropped would also be a factor. If the Case-marker attached to an NQ is optional, an NQ in an ‘NP–NQ’ sequence would be ambiguous between a truly Caseless NQ and a covertly Case-marked NQ.
In short, quantifiers are interpreted as exhaustive quantifiers for various reasons. Some quantifiers are identified as exhaustive quantifiers due to their inherent lexical meanings (e.g. motwu ‘all’, amwuto ‘anyone’ in Korean; subete ‘all’ in Japanese). Some quantifiers are interpreted exhaustively due to their morphological marking (e.g. -man ‘only’ in Korean, -dake ‘only’ in Japanese, Case-marked NQs in Korean in general). Some quantifiers are interpreted as non-exhaustive quantifiers in neutral contexts, but may be reanalyzed as exhaustive ones when the background context forces such an interpretation (e.g. bare NQs in ‘how many?’ contexts or gapping contexts).

Quantifiers that are exhaustive due to their lexical meaning or morphological marking are judged grammatical in contexts where the EG is apparently ‘violated’, and judgements for such sentences are uniformly agreed upon by speakers (e.g. (86)–(99)). By contrast, much speaker variation was reported with data like (124) with bare NQs. Under my approach, this contrast is not surprising at all. Contextual support is not necessary to identify exhaustive quantifiers which are overtly marked by lexical or morphological properties, whereas strong contextual support is mandatory to associate a bare NQ with identificational focus.

When exhaustivity is clearly marked by lexical meaning or by morphology, speakers would necessarily analyze such floating quantifiers as advFQs (even without preceding contexts), and thus it is expected that judgements for those quantifiers are uniform among speakers. By contrast, the basic meaning of a bare NQ is non-exhaustive. Thus, strong pragmatic context is needed to override the basic meaning of the numeral and reanalyze it as an exhaustive quantifier. Depending on the speaker’s intention to associate identificational focus with a bare NQ, judgements for sentences like (124) may vary accordingly. Speaker variations for data like (124) (without explicit preceding context) are thus expected.

To conclude, I have argued that the basic meaning of a numerical expression \( n \) is ‘at least \( n \)’ and that a bare NQ is not associated with identificational focus in neutral contexts. From the syntactic viewpoint, this means that bare NQs are adnominals merged to a non-specific noun in neutral contexts. If, however, identificational focus
falls on a bare NQ, the numeral functions as an exhaustive quantifier, just like advFQs. Bare NQs in ‘how many’ contexts or gapping contexts behave differently from bare NQs in neutral contexts. Numerals with an exhaustive interpretation may stand alone without an overt associate, and their distributions are not subject to the EG, in contrast to standard adnFQs. The judgement variation concerning the Subject Puzzle may receive a principled account by the proposal that NQs with exhaustivity have the syntax and semantics of advFQs. Overall, the asymmetry between NQs in neutral contexts vs. NQs in focal contexts further supports the current hybrid approach, which hypothesizes that floating quantification is not a uniform phenomenon.

3.5 Conclusion

In this chapter, I have argued for a hybrid approach to floating quantification. Specifically, I have proposed that adverbial floating quantification is merged into a focus projection outside a verbal domain and binds a variable as an operator. Adnominal floating quantifiers, on the other hand, are adjoined to a non-specific noun within a nominal projection. I have shown that we can capture otherwise unexpected facts as a consequence of the theory of floating quantification proposed here. Some empirical consequences of the theory are summarized in (127) and (128).

(127)  Adverbial floating quantification
  • Floating Qs show the distribution of a certain type of adverbial.
  • The noun associated with adverbial floating Qs may undergo A-movement, but not A'-movement.
  • Movement of the noun associated with adverbial floating Qs is not subject to restrictions on sub-extraction out of NP/DP.
  • Floated adverbial Qs carry an exhaustive reading with identificational focus.
  • Adverbial floating Qs cannot precede their associate unless the associate is pronominal.
  • Adverbial floating Qs may be used without an overt host.
  • Adverbial floating Qs are not subject to the EG (in vP domains): a subject and a subject-oriented adverbial Q may be separated by a vP-internal element.
  • A bare NQ with an ‘exactly n’ reading shows the syntax and semantics of adverbial Qs.
Adnominal floating quantification

- Adnominal floating Qs appear in the path of nominal movement.
- The host noun associated with adnominal floating Qs may undergo A’-movement, but not A-movement.
- Movement of the noun associated with adnominal floating Qs is subject to constraints for sub-extraction in general.
- Floating adnominal Qs are non-exhaustive (e.g. existential, non-universal, partitive).
- Adnominal floating Qs may precede their overt host in certain contexts.
- Adnominal Qs may not stand alone without an overt host.
- Adnominal Qs are subject to the EG: a subject and a subject-oriented NQ may not be separated by a vP-internal element.
- A bare NQ has an ‘at least n’ reading in neutral non-focal contexts.

The facts reported in (127) and (128) cannot be accommodated under the across-the-board adnominal or across-the-board adverbial approaches to floating quantifiers. The divergent behavior of the two types of quantifier strongly suggests that the hybrid approach is on the right track. Specifically, the evidence collected here strongly suggests that a bare NQ without Case or focus marking shows the typical characteristics of adnominal floating quantifiers, and that it is directly merged to its host, supporting Sportiche-style approaches (cf. e.g. Kuroda 1983; Sportiche 1988; Ueda 1990).

Floating quantifiers with exhaustivity, on the other hand, must be analyzed as adverbial floating quantifiers (e.g. *motwu ‘all’, *amwuto ‘anyone’, exhaustive focus-marked NQs (e.g. -man ‘only’), and Case-marked NQs in Korean; *minna ‘all’, *zen’in ‘all’, and exhaustive focus-marked NQs (e.g. -dake ‘only’, -sika ‘only’) in Japanese; *all, *both, *each in English; *tous ‘all’, *chacun ‘each’ in French; *kol ‘all’ in Hebrew). They are externally merged in a focus position outside a verbal projection in which their associate is included, and contain a quantifier and a null pronoun which are linked to the associate noun via binding (cf. e.g. Doetjes 1997; Fitzpatrick 2006; cf. Dowty and Brodie 1984; Kayne 1975; Nakanishi 2004).

I have argued that the generalizations described in (127) and (128) can be explained by the hybrid approach couched within the CL model. It has been shown that underlying constituency of floating quantifiers crucially affects ordering patterns at syntactic edges. This, in turn, provides further support for the hypothesis that orderings at syntactic edges are determined by the interactions among underlying constituency, probe-goal theory, and CL. In Chapters 2 and 3, we have seen evidence for this proposal from the primary predicational domain vP. In the remainder of this book, I argue for the proposal from non-primary predicational domains, which include predicational structures smaller or bigger than vP. I show that an object merged on the edge of a secondary predicational domain behaves in exactly the same way as the subject on the edge of a primary predicational domain.
Appendix 3A  Reply to a processing approach to floating quantification

In Chapter 3, I have argued that a hybrid approach to floating quantification is on the right track and that the across-the-board adnominal or adverbial approach cannot be maintained. Recently, however, Miyagawa and Arikawa (2007: M&A hereafter) presented an alternative approach, which aims to capture the dual behaviors of floating NQs in Japanese from the perspective of processing difficulties. In this appendix I argue against the processing approach, and show that the evidence for the processing approach is in fact inconclusive.

M&A argue that floating NQs are all adnominal but that, owing to some parsing difficulties, certain types of ordering are judged degraded. Specifically, M&A focus on the Subject Puzzle paradigms that I discussed in Chapter 2, and argue that the object may intervene between the subject and the subject-oriented NQ in Japanese in certain prosodic contexts. In particular, they claim that the object may intervene between the subject and its NQ when a pause precedes the NQ_{Subj}, as repeated here with (1). They also report that the same ordering is judged acceptable when an adverb precedes the NQ_{Subj}, as in (2), or when the NQ_{Subj} is marked with focus, as in (3). They call the judgements for the data in (1)–(3) the ‘non-standard paradigm’, which cannot be explained by a traditional adnominal approach to NQs. (See also Kim 2013 and Nakanishi 2008 and references therein for semantic and pragmatic factors that may contribute to judgements on floating NQs in Korean and Japanese.)

(1) Non-standard paradigms: S < O < NQ_{Subj}
\[\text{Gakusei-ga sake-o [PAUSE] SAN-NIN nonda.}\]
\[\text{student-Nom sake-Acc 3-Cl people drank.}\]
‘Three students drank sake.’ (M&A: ex. (14))

(2) Non-standard paradigms: S < O < adverb < NQ_{Subj}
\[\text{Gakusei-ga sake-o imamadeni san-nin nonda.}\]
\[\text{student-Nom sake-Acc so.far 3-Cl drank.}\]
‘Three students drank sake so far.’ (Gunji and Hasida 1998: 57)

(3) Non-standard paradigms: S < O < focus-marked NQ_{Subj}
\[\text{Gakusei-ga watasi-no hon-o huta-ri-sika kaw-ana-katta.}\]
\[\text{student-Nom my-Gen book-Acc 2-C1-only buy-NEG-PAST}\]

To be specific, M&A argue that (1) is judged ungrammatical under the standard parse of floating NQs; but the sentence in (1) may be associated with a different parse that is grammatical, illustrated in (4) (adopting my proposal (2007) that the subject may undergo scrambling). The object first moves to the edge of vP and then further moves to [Spec,TP] to satisfy the EPP requirement of T (following Miyagawa 1997; 2001). The subject may move to [Spec, TP] or [Spec,CP] later. M&A argue that all floating quantifiers are externally merged with the host noun, forming a nominal constituent, even in the case of (1)–(3).
M&A's syntactic structure for \( S < O < NQ_{\text{subj}} \) in Japanese

\[
[\text{TP} \quad S \quad [\text{TP} \quad O \quad [\text{VP to } [\text{VP | ts NQS} \quad [\text{VP ... to ... }]]]]]
\]

In essence, this claim amounts to saying that the ordering \( S < O < NQ_{\text{subj}} \) in (1) is perfectly grammatical, but judged to be degraded owing to an incorrect parse such that \( NQ_{\text{subj}} \) is associated with the adjacent object. M&A extend this claim to (2) and (3), and argue that an adverb or focus attached to the \( NQ_{\text{subj}} \) prevents the listener from inappropriately construing the \( NQ_{\text{subj}} \) as a part of the object.

M&A's proposal on the non-standard paradigm in (4) is not compatible with the basic premise of the CL model. In (4), the ordering at \( \text{vP} \) indicates that the object precedes the subject (\( O < S \)), but in the next domain, the subject precedes the object (\( S < O \)). It is thus incoherent to implement the derivation (4) with the CL model that I support in this book. As seen in Chapter 3, the puzzles concerning (1)–(3) can be resolved by my hybrid approach: namely, that the NQs in (1)–(3) are adverbial floating quantifiers with exhaustive focus. Since the hybrid approach may successfully accommodate the paradigms in (1)–(3), I do not adopt the analysis in (4). However, one might ask whether evidence for (4) may threaten my analysis. I show that it is not the case.

M&A provide interesting evidence for the claim that the object is located in \([\text{Spec}, \text{TP}]\) in the non-standard paradigm in (4). Crucially, however, all the evidence M&A adduce does not prove the claim that (4) is the correct syntax for the non-standard paradigm. The evidence may show that the object is placed in \([\text{Spec}, \text{TP}]\), but in fact it does not support the claim that the NQs in (1)–(3) are adnominal in base structure as described in (4). Thus, even if the evidence provided by M&A is empirically correct, it does not challenge my proposal that the quantifiers in (1)–(3) are of an adverbial type. I argue that the syntax of (1)–(3) can be explained without assuming (4).

In particular, this appendix reviews three pieces of evidence adduced by M&A. The first comes from scopal interactions between an object quantifier and negation. M&A argue that sentential negation may scope over the universal quantifier in object position when the subject precedes the object, as shown in (5a). Interestingly, however, when a subject-oriented NQ follows the object, as in (5b) and (5c), the object quantifier must outscope the negation.

(5)  

a. Gakusei-ga huta-ri zen’in-o mi-na-katta.  
student-NOM 2-CL all-ACC see-NEG-PAST  
‘Two students did not see them all.’ (not>>all, all>>not)

b. Gakusei-ga zen’in-o huta-ri-tomo mi-na-katta.  
student-NOM all-ACC 2-CL-both see-NEG-PAST  
‘Both of the two students didn’t see them all.’ (*not>> all, all>>not)

student-NOM all-ACC 2-CL-only see-NEG-PAST  
‘Only two students didn’t see them all.’ (*not>> all, all >> not)
M&A argue that the scopal difference shown above can be derived from the claim that the object in the non-standard paradigm (5b,c) must move to [Spec,TP] over negation, as depicted in (4). Importantly, however, (5b) and (5c) can be explained without assuming the structure or derivation in (4). The data just show that the object is placed in [Spec,TP] in (5b,c), unlike the object in (5a). The data in (5) can also be made compatible with my analysis for the non-standard paradigms presented in Chapter 3. For instance, consider the derivation in (6).

(6) Alternative view for (5b,c) under the CL approach

\[
\begin{array}{c}
[CP/TP] S [TP \text{ zen’in-o } [NQS-only + pro][v_P \text{ t}_{\text{SUBJ}} [v_P \text{ t}_{\text{OBJ}} ... ]] \text{ Neg T}] \\
\end{array}
\]

As in (6), suppose that the focus-marked NQ is merged separately from its associate. The object in (6) moves to [Spec,TP], and the subject moves to the outer spec of [Spec,TP] or higher. The derivation in (6) explains the fact that the object in (5b) and (5c) must outscope the negation, located higher than the Neg head, as M&A originally assumed. Moreover, the derivation in (6) is fully compatible with the CL model.

As Richards (2001) extensively argues, when multiple movement is triggered by the same head (i.e. T head in (6)), it is expected that the result of such movements will preserve the relative ordering established in the lower structure. In other words, the object tucks itself in below the subject in [Spec,TP]. This has the consequence that the ordering at vP is compatible with the ordering at CP—the subject precedes the object in both domains. Even if the subject lands at a higher position than [Spec,TP] (which M&A allow), it is still compatible with my analysis, since the ordering at vP (S < O) does not contradict the ordering at CP (S < O). The data in (5) do not challenge my hybrid approach to floating Qs, and in fact, the data are in harmony with it. Thus, even if we accept M&A’s empirical claims for (5), it is tenable to maintain the analysis in (6) (instead of (4)), which is compatible with the CL model.

M&A argue that the second piece of evidence for (4) comes from the distribution of an indeterminate pronoun in Japanese. Kishimoto (2001) notes that while the object position can host an indeterminate pronoun (7), the subject position cannot (8). To explain this asymmetry, Kishimoto argues that the indeterminate pronoun must be m-commanded by -mo. The subject is outside the domain of the -mo particle, and thus an indeterminate pronoun in subject position cannot be licensed. Interestingly, however, the indeterminate pronoun dono-eiga-o in (9) cannot be licensed by -mo, unlike (7). M&A argue that this is because the object in (9) has moved to [Spec,TP], outside the domain of -mo, as depicted in (4), so as to create the non-standard paradigm, S < O < NQSubj.

(7) Kodomo-ga san-nin dono-eiga-o mi-mo-si-na-katta.
child-Nom 3-CL which-movie-Acc see-MO-do-Neg-PAST
‘Three children did not see any movie.’

(8) *Dare-ga Hanako-o home-mo-si-na-katta.
who-Nom Hanako-Acc praise-MO-do-Neg-PAST
‘No one praised Hanako.’ (Kishimoto 2001: 600)
(9) *Kodomo-ga dono-eiga-o imamadeni san-nin mi-mo-si-na-katta.
    child-Nom which-movie-ACC so-far 3-CL see-MO-do-Neg-PAST
    ‘Three children have not seen any movie so far.’

Note here again that what (9) shows is that the object is outside the licensing domain of -mo. Crucially, however, it does not show that the NQ san-nin is externally merged together with the subject. We can explain the data in (9) without assuming the syntax in (4). If the object in (9) undergoes movement to [Spec,TP], as in (6), it will be located outside the m-command domain of -mo. Thus, we can explain the facts in (9) by assuming the syntax in (6), instead of (4).

Finally, M&A argue that unexpected scope ambiguity provides evidence for (4). As shown in (10), the subject scopes over the object in Japanese in the SOV order. M&A report, however, that when an adverb tugitugito ‘one after another’ follows the object, scope ambiguity is obtained unexpectedly, as in (11). They argue that this is because the object (and the subject) has moved to [Spec,TP] along the lines of the derivation in (4).

(10) Dareka-ga daremo-o sikatta.
    someone-Nom everyone-ACC scolded
    ‘Someone scolded everyone.’ (some >> every, *every >> some: M&A (31))

(11) Dareka-ga daremo-o tugitugito sikatta.
    someone-Nom everyone-ACC one.after.another scolded
    ‘Someone scolded everyone one after another.’ (some>>every, every >> some: M&A (32))

Note, however, that (11) can be explained without assuming (4) as well. The data in (11) can be captured under the analysis in (6), where the object crosses over the trace of the subject. Even if the claim that the object in (11) is located in [Spec,TP] is correct, it does not harm or threaten my overall analysis for the non-standard paradigms developed in this book.28

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28 M&A provide experimental evidence that the NQ in the non-standard paradigm is preceded by an intonational break. The pitch track that M&A report in fact supports my suspicion that bare NQs are focused in the non-standard paradigm. As I noted above, bare NQs show the non-standard paradigm only when they are (exhaustively) focused. M&A also discuss an asymmetry between unaccusative and unergative verbs in licensing floating Qs, but it is a reinterpretation of my generalization (published as Ko 2007) in light of (4), and thus it does not challenge my proposal developed here. M&A (appendix) report that when a transitive verb is supplemented by an aspectual adverb, the non-standard paradigm can be obtained more easily, as shown in (i).

(i) A: ‘Is this new magazine selling well?’
    B: Ee, kesa-mo gakusei-san-ga [vp sore-o
    yes this.morning.also student-Polite-Nom it-ACC
    go-nin kat-te iki-masi-ta yo].
    5-CL buy-ing go-Polite-PAST Exclam
    ‘Yes, this morning also, five students bought it.’ (Kuno and Takami 2003: 284)

(i) suggests to me that the complex verb construction contains an extended vP domain due to verb raising so that the subject may undergo vP-internal scrambling over the scrambled object (in the spirit of phase extension proposed by den Dikken 2007a). I leave to future research the question of how complex verb constructions interact with the EG.
In evaluating M&A’s analysis, there are other issues that need to be considered seriously, which I will not delve into in this appendix. First, M&A argue that the non-standard paradigm is basically grammatical in syntax, but misparsed occasionally due to an incorrect prosodic cue. It is not obvious, however, why speakers do not adopt the non-standard parse immediately. When a structure is ambiguous between an ungrammatical and grammatical parse, it is usually the case that the grammatical parse wins. Over and over again, however, it has been noted in the literature that the Subject Puzzle holds (see the references cited in Chapter 2). It is mysterious why speakers have a hard time in overcoming the unacceptability of the Subject Puzzle paradigm unless ample discourse context is given.

Secondly, under M&A’s analysis, it is not clear why (12) is perfectly grammatical. In (12), an object-oriented NQ immediately follows the subject, but there is absolutely no doubt about the fact that (12) is grammatical. If (1) can be mis-parsed because the object and the subject-oriented NQ are close enough, it is not obvious why (12) is not mis-parsed in the same way.

(12) Hon-o, gakusei-ga t, go-satu katta.
    book-Acc student-Nom 5-Cl bought
    ‘Students bought five books.’

M&A argue that (12) avoids a ‘mis-parse’ that would lump together the object NQ and the subject into a single constituent because the subject and the object NQ are in two separate maximal projections (M&A: 651). Note, however, that in (1) too the object and the NQ_{Subj} are in two separate projections: under M&A’s analysis, the NQ_{Subj} must be inside a nominal constituent containing the trace of the subject, separately from the object. M&A’s claim for (12) can be made clearer if a theory of intonational phrase can be given, but until then, the basic contrast between (1) and (12) awaits further clarification.

Third, I disagree with M&A’s claim that (1)–(3) are qualitatively the same type of data. In my informant work, it consistently holds true that exhaustive quantifiers show a different distribution than bare NQs. Data like (3) or the data with advFQs in Chapter 3 (e.g. Case-marked NQs, focus-marked NQs, group-denoting maximizers, negative-polarity items) were judged grammatical uniformly even when subject-oriented FQs were separated from the subject by an object. In contrast, much speaker variation was observed with the data like (1) and (2) with bare NQs. Under my approach, this is expected. Rich pragmatic context is necessary to override the default cardinal reading of bare NQs and assign identificational focus to them. AdvFQs, on the other hand, can be readily analyzed as exhaustive adverbials due to their lexical properties or morphological marking. Under M&A’s approach, however, it is not clear how the difference between (1, 2) and (3) can be captured.

Moreover, my collaborative research on the processing of floating quantifiers shows that mere processing difficulty must be dissociated from syntactic ungrammaticality. In Ko and Oh (2012), we showed that on-line self-paced reading tests and off-line judgement tests support the hybrid approach developed in this book. Specifically, the type of host noun, argument structure, and Q-types matter in on-line processing as well as off-line judgements of floating Qs. The subject-oriented NQs in the Subject Puzzle paradigm were processed more slowly than subject-oriented adverbial FQs or object-oriented NQs, as predicted by my hybrid approach.

M&A argue that a focus marker attached to an NQ in (3) helps speakers to insert a phonological break between the NQ and the preceding argument in processing, and thus
sentences like (3) in Japanese are judged grammatical. Ko and Oh (2012), however, show that the opposite is true when it comes to object-oriented NQs. Object-oriented NQs were processed more slowly when a focus-marker was attached to the NQ. These inhibition effects would be puzzling under the processing approach to (3).

In Ko and Oh (2012), we also found an asymmetry between processing and judgement data due to the type of host noun. The processing delay obtained with transitive/unergative subject-oriented NQs was maintained in off-line experiments (i.e. they are ungrammatical sentences). In contrast, inhibition effects associated with object-oriented adverbial NQs in processing disappeared in the off-line test (i.e. they are grammatical sentences with temporary processing delay). These results provide some interesting challenges to M&A’s claim that the Subject Puzzle reflects a mere parsing difficulty. If the Subject Puzzle arises due to processing difficulty, such a dissociation between processing and judgement data would not be expected.

Lastly, it should not be overlooked that all the arguments presented in M&A target the Subject Puzzle paradigm reported in section 2.1. Empirical evidence for my proposals is by no means limited to one pattern, however. As will be shown in Chapters 4 and 5, the object also obeys the EG if it is merged on the edge of a secondary predication domain. The presence of a null subject also affects the distribution of floating NQs. Moreover, advFQs cannot be licensed if they are preceded by a predicate that selects its associate. The distribution of multiple nominative constructions that will be dealt with in Chapter 4 cannot be explained by the processing theory, either. It is not yet obvious how a processing theory may capture such an array of facts in a unified way.
Chomsky (2000; 2001; 2004) argues that phases can be characterized as propositional in semantics and isolable in phonology. The proposition-based phase model has provided us with an important guideline to study cyclic syntax, but the question of which syntactic unit is the proper domain of cyclic Spell-out has been rather controversial (recall section 1.2 for discussion of this issue). In this book, I adopt an alternative theory concerning the domain of cyclic Spell-out. In particular, I argue for the hypothesis (1) that a predicational structure in general constitutes a unit of Spell-out, contra Chomsky’s proposition-based phase approach.

(1) Spell-out domains (cf. den Dikken 2007a for ‘inherent phases’)

A Spell-out domain is a predication (subject–predicate structure).

The proposal in (1) has been inspired by the pioneering works of den Dikken (2006a; 2007a; 2007b) on phase extension and predication. Adapting den Dikken (2007a), I argue for the research program that a predicational structure in general constitutes a unit of cycle in syntax. In the implementation of this idea, however, I depart from den Dikken’s (2007a) original proposals in some significant ways. Most importantly, den Dikken implements (1) under Chomsky’s phase framework. Thus, the complement of a predicational unit, to the exclusion of the edges, undergoes cyclic Spell-out under den Dikken (2007a) (with possible phase extension due to head movement). I argue against this assumption and couple the proposal in (1) with the CL model (see Pesetsky 2007 for a precursor to this approach).

In particular, I claim that when a predication relationship is established between a subject and a predicate, cyclic Spell-out and linearization are conducted on the predication unit as a whole. On my proposal, the subject and its predicate undergo Spell-out and linearization at the same time, contrary to the original proposal by den Dikken (2007a). In what follows, we will observe some important consequences of this departure for predicate fronting: namely, that predicate fronting from within a small clause is impossible unless a null subject can be postulated in the small-clause domain.

The notion of ‘predication’ can be understood differently from framework to framework (see den Dikken 2006a: ch. 2 for a detailed review). As proposed in
Chapter 1, I follow den Dikken’s (2006a) perspective on this issue. In particular, I follow his claim that a predicational relationship is always asymmetrical, and that a functional head (i.e. \textit{RELATOR}) mediates the local relationship between the subject and the predicate, as described in (2). The ‘predicate’ is the syntactic constituent that expresses a property ascribed to the subject. The ‘subject’ refers to the constituent that a predicate is predicated of (see Chapter 1; see e.g. Adger and Ramchand 2003; Bowers 1993; Déchaine 1993; Heycock 1991; 1994; Rothstein 1983; Williams 1980 for theories of predication).\(^1\)

\begin{equation}
(2) \quad \text{RELATOR-P (RP) } \xleftrightarrow{\text{Spell-out domain}} \text{ subject } \quad \text{RELATOR'} \quad \text{predicate } \quad \text{RELATOR}
\end{equation}

I propose that the general predicational structure RP, as a whole, undergoes cyclic Spell-out and linearization, and argue that ordering restrictions within and outside the RP domain can be best captured by the CL model. In Chapters 2 and 3 I argued that the primary predication domain \(vP\) forms a Spell-out domain (where the \textit{RELATOR} in (2) = \(v\)). In the remainder of the book, I adduce evidence for the claim from the ordering patterns in and out of secondary predicational domains. In particular, I show that when a predicational relationship is established between a subject and a secondary predicate (or a decomposed verb), linearization is conducted on the predicational unit. In this chapter, in particular, I examine cases where the RP corresponds to non-verbal small clauses (section 4.2), infinitival complements (4.3), and Sentential Predication (4.4).\(^2\)

\(^1\) Some qualification on my proposal in (1) is in order. In addition to (1), I assume that the root CP undergoes Spell-out, as the final stage of the derivation (as in den Dikken 2007a). Though I do not evaluate my proposal against Bošković’s (2012), there is some interesting convergence between my proposal and his. If \(R\) in (2) corresponds to Bower’s \(P\) head, which is assumed to be N, A, V, or P, my proposal for (2) has the same consequence as Bošković’s (2012) theory: namely, that a phase head corresponds to the (highest) projections of lexical heads, N, A, V, or P. I leave it for future research whether the evidence for Bošković’s (2012) claim can be accommodated under the predication-based phase theory, however.

\(^2\) For clarification, I do not consider the possibility of phase extension in this book. I assume that a predicational unit is considered as a Spell-out domain once it is formed at External Merge. This is compatible with the phase extension theory of den Dikken (2007a; 2007b) if Korean and Japanese lack head movement. If head movement does exist in K/J (precisely, movement of a \textit{RELATOR} head), however, my arguments may go against the phase extension theory. Since it is controversial whether there exists head movement in K/J, I leave this issue open for now (see Y.-S. Choi ‘1999; Hoji 1998; Koizumi 2000; Otani and Whitman 1991; Yoon 1994 for a controversy on verb-raising in K/J; Han et al. 2007 for an overview). See sect. 4.3.2 for some relevant discussion on the affixal status of the \textit{RELATOR}. 

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130 Edges of complement predication
4.1 Overall predictions for complement predication

The first major prediction to be discussed in this chapter concerns the EG within various types of predicational domain. When the hypothesis in (1) and the EG proposed in Chapter 2 are taken together, we are led to predict that elements merged on the edge of a predication domain RP as a constituent will not be separable by their domain-mates, as stated in (3)—one of the main predictions that I test throughout the book.

(3) The Edge Generalization in the predicational domain

If X and Y are dominated by a specifier γP of a predicational domain RP, X and Y cannot be separated by a RP-internal element Z that is not dominated by γP.

As described in (4), suppose that X and Y are externally merged in the specifier of a predicational domain RP. Since X and Y are already on the edge of an RP, they cannot undergo movement within RP (the RElATOR cannot probe into its own specifier under the probe-goal theory of movement). Therefore, a domain-internal element Z cannot intervene between the edge elements X and Y within the RP. If the RP undergoes Spell-out, as proposed here, we predict that X and Y cannot be separated by Z in higher domains, either.

(4) Domain-internal movement out of syntactic edges

We have seen evidence for this generalization (EG) from the distribution of transitive subjects in Chapters 2 and 3. In this chapter, I provide further evidence for the EG from the distribution of the subject in secondary predicational domains: small-clause complements, Raising and Control constructions, and Sentential Predication. It is shown that the subject of a secondary predicational domain cannot be separated from its associate (adnominal) NQ by a domain-internal predicate. In doing so, I also explain why an object which functions as the subject of a small clause
(of a raising type, in particular) seems to show a more restricted distribution than an object in simple transitive clauses.

In this chapter, we will also see that the consequences of CL for secondary predicational domains are even more drastic, given the interaction between predicate fronting and anti-locality. Under the predication theory depicted in (2), a predicate is externally merged as a complement of the Relator, which is the head of a Spell-out domain. If a complement of a head cannot move into its own specifier (‘anti-locality in movement’: see (10)), we predict that the predicate by itself cannot precede the subject within RP, as illustrated in (5).

(5) **Anti-locality and predicate fronting**

\[
\begin{array}{c}
\text{RP} \\
\downarrow \\
\text{RP} \\
\downarrow \\
\text{subject} \\
\downarrow \\
\text{R'} \\
\downarrow \\
\text{Relator} \\
\end{array}
\]

If RP in (5) is a Spell-out domain, CL leads us to predict that the initial ordering within the RP will be preserved in the higher domains. Especially in the case of small clauses, the space within the small clause is so limited that neither the subject nor the predicate can move within the RP. The subject cannot move within the RP because it is already merged on the edge of the Relator and thus cannot be probed by the Relator. The predicate cannot move within the RP because anti-locality blocks such a short movement. I provide a range of data which support this prediction. In section 4.2, it is shown that a small-clause predicate (of an epistemic verb) cannot precede its own subject, or intervene between the subject and its associate NQ. In 4.3, the same generalization extends to complement domains which involve so-called Subject-to-Object Raising and Control in Korean. In 4.4, I show that a Sentential Predicate or the elements merged within a Sentential Predicate cannot precede the Major Subject for the same reason.

In this chapter, I also examine seemingly complex interactions among a null subject, predicate fronting, and quantifier floating in small-clause domains. As described in (6), if a direct object is co-indexed with a null subject in a small-clause complement, it is possible for a small-clause predicate to precede the object or intervene between the object and its associate NQ. Specifically, if the RP undergoes fronting to the left of the direct object in VP, the small-clause predicate may linearly precede the object without any ordering conflicts at PF. I show that in exactly those contexts where a null subject can be postulated within a small clause, predicate fronting (more precisely, RP fronting) is possible. In section 4.2, I show that this is
the case of small-clause complements of some episodic verbs. In 4.3, I argue that predicate fronting out of Raising or Control verb constructions in Korean supports the same generalization. There, I show that order-preservation effects for complement domains can be obviated when the matrix verb can take a proleptic object or a direct object in base structure.

(6)  **Null subject on the edge of a predicational domain**

This chapter is organized as follows. In section 4.2, I examine how (sub-)extraction from small-clause domains in Korean and Japanese is regulated by the CL and locality in movement. In particular, interactions among the subject of a small clause, types of floating quantifier, and predicate fronting are closely examined. In 4.3, I extend my proposal for small-clause complements to infinitival complements that are selected by Raising or Control verbs in Korean. In 4.4, I consider certain implications of my proposal for Sentential Predication in Multiple Nominative Constructions. Section 4.5 concludes the chapter.

### 4.2 Small-clause complements

In this section, I examine ordering puzzles in small-clause complements. In section 4.2.1, I discuss ordering restrictions in small clauses selected by epistemic verbs, and compare them with ordering patterns in small clauses selected by episodic verbs in 4.2.2. In 4.2.3, I examine the distribution of advFQs associated with small-clause domains, and explain why advFQs are not compatible with predicate fronting, just like adnFQs.

**4.2.1 Small clauses with epistemic verbs**

In Chapter 2 we saw that an object may license its associate NQ rather ‘freely’. In fact, all the examples seen in Chapter 2 seem to suggest that the object is fairly free to move, stranding its NQ. Given this ‘freer’ distribution of the object, one might argue that the asymmetries between the subject and the object in scrambling may be attributable to an assumption that the object may always move and license its floating
NQs, unlike the subject. Examples with small-clause constructions present immediate counterevidence for this.

Simply put, it is not the case that the object can strand its NQ everywhere. When the object is interpreted as the subject of a small clause, marked by -lo ‘as’ in Korean or -ni/-to in Japanese, the object cannot strand its NQ across the small-clause predicate. This pattern is typically obtained when the main verb is an epistemic predicate (see 4.2.2 for episodic predicates). As illustrated with the (b) examples in (7) and (8), the small-clause predicate cannot intervene between the object and its associate NQ.3

(7) Korean ‘consider’-type epistemic verbs
a. (7) Kim kyoswu-nun cencik taythonglyeng-ul sey-myeng
   Kim professor-Top former president-Acc 3-Cl
   ceyca-lo samassta.
   student-as considered
   ‘Prof. Kim considered three former presidents as (his) students.’

b. *Kim kyoswu-nun cencik taythonglyeng-ul ceyca-lo sey-myeng
   Kim professor-Top former president-Acc student-as 3-Cl
   samassta.
   considered
   ‘Prof. Kim considered three former presidents as (his) students.’

(8) Japanese ‘consider’-type epistemic verbs
a. Tanaka kyouzyu-wa moto souri-o san-nin
   Tanaka professor-Top former prime.minister 3-Cl
   tekininsya-to minasita.
   best.man-as considered
   ‘Prof. Tanaka considered three former prime ministers as (his) best men.’

b. *Tanaka kyouzyu-wa moto souri-o tekininsya-to
   Tanaka professor-Top former prime.minister-Acc best.man-as
   san-nin minasita.
   3-Cl. considered
   ‘Prof. Tanaka considered three former prime ministers as (his) best men.’

3 I collected the data using matrix verbs known to take a small clause as their complements (based on the discussion of Kim 1990 and Maling and Kim 1992): for Korean, mantulta ‘make’, khiwuta ‘bring up’, ppopta/chwutayhata ‘select’, chwikuphata ‘treat’, samta ‘consider’, and yekita ‘consider’; for Japanese, sodateru ‘bring up’, minasu ‘consider’, and ninmeisuru ‘appoint’. Epistemic verbs with floating quantifiers (e.g. (7), (8)) seem to be somewhat degraded regardless of word order, for reasons unclear to me. A clear contrast exists between (a) and (b) examples, however. Unless mentioned otherwise, the judgements on Japanese sentences in 4.2 are from Ito Takayoshi and Mori Kana (p.c.).
One obvious question is why the transitive object seen in the previous chapters may maintain its relationship with a stranded NQ, but the object in (7b) and (8b) cannot. I argue that the contrast between the two types of object can be understood as a similar type of asymmetry to that between the transitive subject and object discussed in Chapter 2.

It has been argued that *as* in English spells out the functional head of the small clause. Bowers (1993) calls it a \( \Pr \) head, which corresponds to the \textsc{relator} in den Dikken (2006a: 34) (see also Aarts 1992). I extend this claim to Korean -lo and Japanese -ni/-to, and assume that -lo/-ni/-to are lexicalizations of the \textsc{relator} head of small clauses. Small clauses form a unit of a predication structure, just like \( \text{vP} \)s. The only difference between the two is that in the \( \text{vP} \) domain, the complement of the \textsc{relator} head (i.e. \( \text{v} \)) is \( \text{VP} \), whereas small clauses can vary in the complement of the \textsc{relator} head so that an adjectival phrase, noun phrase, or prepositional phrase can be the complement.\(^4\) I also assume that the accusative-marked elements in (7) and (8) are externally merged at the specifier position of the predicational unit \( \text{RP} \), as described in (9) (see section 4.2.2 for independent evidence for this claim). For convenience, the subject of a small clause is abbreviated to \text{SS} in (9) and hereafter.

\( \text{(9) } \text{Small-clause complements in Korean/Japanese} \)

\[
\begin{array}{c}
\text{RP} \\
\text{nP} \\
\text{SS} \quad \text{NQ}_{\text{SS}} \\
\text{R'} \\
\text{NP} \\
\text{RELATOR} \\
-\text{lo/-ni/-to} \\
\end{array}
\]

The ungrammaticality of the (b) examples in (7) and (8) can then be understood as an instantiation of the EG in a small clause: the SS and its associate NQ cannot be separated by their domain-mates. This time, the intervening domain-internal element is a small-clause predicate. Since the SS and its NQ are merged on the edge of a Spell-out domain \( \text{RP} \), they cannot move within the \( \text{RP} \), and the small-clause

\(^4\) As shown in (i), presence of *as* in English is sometimes obligatory (i.a, i.b), optional (i.c), or impossible (i.d), depending on the selectional property of the main verb (den Dikken 2006a; D. Edmiston, p.c.). The head -lo/-ni/-to is affixal, and it is impossible to omit the affixal head in Korean and Japanese. As acknowledged in Ch. 1, I assume that reverse predication (ii) cannot be base-generated in small clauses in Korean and Japanese, and the same seems to be true of the English examples in (i). It remains open when and where reverse predication is available in languages. For now, I have no insight to offer on this issue.

(i) a. Imogen regards Brian *as* a nice guy./*Imogen regards a nice guy as Brian.
   b. Imogen views Brian *as* a nice guy./*Imogen views a nice guy as Brian.
   c. Imogen considers Brian (as) a nice guy./*Imogen considers a nice guy as Brian.
   d. *Imogen finds Brian as a nice guy./*Imogen finds a nice guy Brian.

(ii) \[ \text{[RP [XP Predicate] [RELATOR [VP Subject]]]} \] (den Dikken 2006a: 13)
predicate cannot intervene between the two edge elements (similar to the relationship between the transitive subject and vP-internal elements discussed in Chapter 2).

In fact, the prediction is stronger for small clauses in (9). Under CL, we predict that a small-clause predicate suffixed with ‘as’ cannot precede the SS or NQss at all. In (9), the small-clause predicate is merged as the complement of the RELATOR head. If the anti-locality approach to movement (10) is on the right track, we predict that a predicate will be unable to move to the specifier of its own head, the RELATOR (see e.g. Abels 2003; Boeckx 2007; Bošković 1994; 2005; Doggett 2004; Grohmann 2003a; 2003b; Lee 2004; Saito and Murasugi 1999). Such movement is considered too local; the predicate has already been merged with the RELATOR head, and thus there is no reason to merge it again with the same head (see Pesetsky and Torrego 2001 for the original insight).

(10) **Anti-locality in movement**

A complement cannot merge into the specifier of its own head.

Under anti-locality, the small-clause predicate in (9) is simply immobile within RP, and thus cannot precede the elements merged in [Spec,RP]. If small clauses are Spell-out domains, as proposed here, the CL model leads us to predict that a small-clause predicate cannot precede either the SS or NQss in higher domains. This further prediction was tested with (11) and (12). As shown in (11) and (12), small-clause predicates such as ceyca-lo and tekininsya-to cannot precede the subjects of their small clauses, upholding the prediction that follows from (9).

(11) *Ceyca-lo* Kim kyoswu-nun cencik taythonglyeng-ul

student-as Kim professor-TOP former president-ACC

sey-myeng samassta.

3-Ct. considered

‘Prof. Kim considered three former presidents as (his) students.’ (Korean)

(cf. (7))

My Japanese informants report that (12) is grammatical only when it means ‘best.man-and’, which is irrelevant to the current discussion of small clauses. One might argue that ‘predicate-as’ in (9) cannot precede the subject of the small clause because R’ is not a visible constituent in syntax and thus cannot move (cf. Chung 2007; 2011 for a similar approach). It is not clear whether a bar-level projection is invisible in syntax, but even if the claim is correct, it is too weak to rule out incorrect orderings. Suppose that the SS in (9) moves out of the RP first, and that the RP containing the trace of the SS undergoes fronting to the left of the SS. We would then expect that ‘predicate-as’ linearly precedes the SS, contrary to the facts in (11, 12). In other words, even if R-bar does not undergo syntactic processes, it still remains an issue why ‘predicate-as’ cannot precede the SS. Such orderings are ruled out under CL, however: the ordering at RP (SS<predicate-as) and the ordering at a higher domain (predicate-as<SS) conflict with each other. Instead of CL, one may employ some version of the Proper Binding Condition (Fiengo 1977) to rule this out, but in 4.3.2 I present detailed arguments on why the current proposal fares better than the Proper Binding Condition. I thank Mamoru Saito and Marcel den Dikken (p.c.) for directing my attention to this issue.
(12) *Tekininsya-to Tanaka kyouzyu-wa moto souri-o
  best.man-as Tanaka professor-TOP former prime.minister-Acc
  san-nin minasita.
  3-Cl. considered
  'Prof. Tanaka considered three former prime ministers as (his) best men.'
  (Japanese) (cf. (8))

Given the facts in (11) and (12), one might claim that (7b) and (8b) are ungrammatical due to some constraint that the main verb and the small-clause predicate must be adjacent to each other. The grammaticality of (13) and (14), however, directly challenges such a claim. In these examples, the entire small clause was fronted to the left of the main subject, and the small-clause predicate is not adjacent to the main predicate. Though not perfect, (13) and (14) are considerably better than (11) and (12). This suggests that the small-clause predicate may in principle be separated from the main predicate. Therefore, the 'adjacency approach' cannot explain the facts in (11) and (12) by stipulating that the small-clause predicate must be adjacent to the main predicate.

(13) (?)*Cencik taythonglyeng-ul sey-myeng ceyca-lo Kim
  former president-Acc 3-Cl. student-as Kim
  kyoswu-nun samassta.
  professor-TOP considered
  'Prof. Kim considered three former presidents as (his) students.' (Korean)

(14) (?)*Moto souri-o san-nin tekininsya-to Tanaka
  former prime.minister-Acc 3-Cl. best.man-as Tanaka
  kyouzyu-wa minasita.
  professor-TOP considered
  'Prof. Tanaka considered three former prime ministers as (his) best men.'
  (Japanese)

Furthermore, the 'adjacency approach' cannot explain the contrast between (13, 14) and (15, 16), either. In (15) and (16), the small-clause predicate is not adjacent to the main predicate, but the small-clause predicate intervenes between the SS and NQss. If the 'adjacency approach' to (11) and (12) were correct, we would wrongly expect that all the examples in (13)–(16) would be ungrammatical, since the main verb is not adjacent to the small-clause predicate.

(15) *Cencik taythonglyeng-ul ceyca-lo sey-myeng Kim
  former president-Acc student-as 3-Cl. Kim
  kyoswu-nun samassta.
  professor-TOP considered
  'Prof. Kim considered three former presidents as (his) students.' (Korean)
Moto souri-o tekininsya-to san-nin Tanaka

former prime.minister-ACC best.man-as 3-CL Tanaka kyouzyu-wa minasita.

professor-TOP considered

‘Prof. Tanaka considered three former prime ministers as (his) best men.’

(My analysis presented in (9), by contrast, captures all the asymmetries observed in (7)–(16) without any further stipulation. Under anti-locality, the small-clause predicate in (9) cannot undergo movement or be fronted to the left of the SS or NQss within RP. If CL applies to small-clause domains, the ordering at the small-clause domain must be preserved in higher domains. Thus, the small-clause predicate cannot precede the SS or NQss in higher domains either. This explains the ungrammaticality of (7b) and (8b), and the ungrammaticality of (11) and (12)—where a small-clause predicate precedes the SS or NQss.

Under my approach, the fact that the entire small clause can be fronted follows rather naturally. There is no reason to block RP-fronting in the grammar. In fact, if the RP is a Spell-out domain, it is expected that the Spell-out domain RP may undergo movement as an independent unit at PF (cf. Chomsky’s 2001 claim that phases are isolable at PF). If the entire small clause may undergo fronting to the left of the main subject, it is in fact predicted that examples like (13) and (14) are grammatical. In (15) and (16), the entire small clause undergoes fronting to the left of the main subject. Since the matrix subject and small clause are not domain-mates, it is possible to move the small clause over the subject, adding new ordering statements at vP (RP<S). Moreover, under the current analysis, the examples in (15) and (16) are correctly ruled out as well. Since the small-clause predicate intervenes between the SS and NQs, this constitutes an instance of the EG within the RP. Thus, my account for the ungrammaticality of (7b) and (8b) straightforwardly extends to the ungrammaticality of (15) and (16).

In this section, we have seen some initial evidence for the claim that small-clause domains undergo cyclic Spell-out and CL, and that the ordering at a small-clause domain must be preserved in higher domains (e.g. SS<NQss<predicate). For ease of understanding, I have confined the scope of discussion to small clauses selected by an epistemic verb in this section. In the next section, we will examine the ordering patterns of small clauses selected by episodic verbs, which provide further support for my proposal with an interesting twist.

4.2.2 Small clauses with (some) episodic verbs

The examples in (17) and (18) show possible ordering patterns with an episodic verb ppopa ‘hire’ in Korean and ninmeisuru ‘appoint’ in Japanese. The orderings in (17) and (18) correspond to the ordering patterns with epistemic verbs in (7) and (8). In
(17b) and (18b), the small-clause predicates kyoswu-lo and kyouzyu-ni intervene between the SS and NQss, just as in (7b) and (8b). Crucially, however, judgements for the two types of example differ.

(17) **Korean ‘hire’-type episodic verbs**

a. SNU-nun cencik taythonglyeng-ul sey-myeng kyoswu-lo ppopassta.
   SNU-TOP former president-ACC 3-Cl. professor-as hired
   ‘SNU hired three former presidents as (their) professors.’

b. %SNU-nun cencik taythonglyeng-ul kyoswu-lo sey-myeng ppopassta.
   SNU-TOP former president-ACC professor-as 3-Cl. hired
   ‘SNU hired three former presidents as (their) professors.’

(18) **Japanese ‘appoint’-type episodic verbs**

a. Keio daigaku-wa moto daizin-o san-nin kyouzyu-ni ninmeisita.
   Keio Univ.-TOP former minister-ACC 3-Cl. professor-as appointed
   ‘Keio University hired three former ministers as (their) professors.’

b. %Keio daigaku-wa moto daizin-o kyouzyu-ni san-nin ninmeisita.
   Keio Univ.-TOP former minister-ACC professor-as 3-Cl. appointed
   ‘Keio University hired three former ministers as (their) professors.’

The judgements on epistemic verb constructions in (7) and (8) are quite solid, and the sentences in (7b) and (8b) are judged simply ungrammatical. The judgements on episodic verb constructions in (17) and (18), on the other hand, seem to vary considerably depending on speaker and context: some speakers find the sentences in (17b) and (18b) quite degraded, while others accept them (at least marginally). Without further argumentation, the contrast between epistemic verb constructions in (7) and (8) and episodic verb constructions in (17) and (18) is surprising. I argue, however, that the contrast may receive a principled account when we understand some independent differences between the two constructions.

Crucial to my analysis, the selectional properties of two types of main verb are distinct. An episodic verb in Korean and Japanese may select an object as its sole argument without involving a small-clause predicate (but see also (28) for some exceptions). This is shown with (19) and (20). For instance, in (19), the verb khiwu-ko-iss-ta ‘bringing up’ may take the object sinin-ul twu-myeng ‘two newbies’ without a small-clause predicate. The example in (20) shows the same pattern with sodate-te-iru in Japanese.

**Episodic verbs with an object**

(19) SM enthetheyinmenthu-nun sinin-ul twu-myeng khiwu-ko-iss-ta.
   SM Entertainment-TOP newbie-ACC 2-CL bring.up-PROG-be-DEC
   ‘SM Entertainment is bringing up two newbies.’ (Korean)
In contrast, epistemic verbs cannot select an object without a small-clause predicate. As shown by (21) and (22), the accusative-marked elements, haksayng-ul and gakusei-o, cannot be licensed without the small-clause predicates, atul-lo and musuko-to. I argue that the facts presented in (19)–(22) are the key to understanding the surprising contrast between epistemic verb constructions in (7) and (8) and episodic verb constructions in (17) and (18).

### Epistemic verbs with an object


Kim-TOP student-ACC 2-Cl son-as consider-PAST-DEC

‘Kim considered two students as his son.’ (Korean)

(22) (?)Tanaka-wa gakusei-o huta-ri *(musuko-to) omotte-ita.

Tanaka-TOP student-ACC 2-Cl son-as consider-DEC.PAST

‘Tanaka considered two students as his son.’ (Japanese)

In explaining the ungrammaticality of (7b) and (8b), I have argued that the small-clause predicate cannot intervene between the SS and NQSS because they are domain-mates and their relative orderings are fixed within RP. On this account, it is crucial to assume that the SS in (7) and (8) is externally merged together with the small-clause predicate within an RP; otherwise, we would not expect the ordering restrictions within RP reported there. This approach is in perfect harmony with the fact that epistemic verbs cannot select a nominal object as their sole argument, as shown by (21) and (22). Whenever a noun appears in a complement position of an epistemic verb, it must be analyzed as the subject of a small clause. Given that epistemic verbs cannot take a nominal object as their argument, as seen in (21) and (22), it is impossible to analyze the noun as the direct object of the epistemic verb.

Episodic verbs, on the other hand, may select a nominal complement, as shown by the grammaticality of (19) and (20). Since episodic verbs may take an object as their sole argument, it is in principle possible that a noun in complement position is analyzed as the true object of the verb, as described in (23) (in addition to the possibility in (9)). I call this possibility the ‘direct-object analysis’ (23), and the analysis in (9) the ‘small-clause analysis’.

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6 I thank an anonymous reviewer for pointing out the facts reported in (17)–(22). (22) is acceptable without musuko-to when it means that ‘Tanaka is concerned about two students’, where omot-te-ita is interpreted differently from (22).
The direct-object analysis for episodic verbs

(23) \[
\text{[vP object}] \quad \text{[vP ([rp \ PRO t1 \ NQ_{obj}] \ V] v)}
\]

Under (23), the object is merged as the argument of the main verb, and the small-clause RP contains a null subject anaphorically related to the object of the main verb (given that the subject of the small clause is always interpreted as the object of the main verb, I assume that the null subject is a PRO controlled by the direct object). Under the direct-object analysis in (23), the object and its NQ are not merged in the same RP domain as the small-clause predicate. Therefore, we expect that the object and the associate NQ may be separated by the small-clause predicate. There is no reason to block object movement over the small-clause predicate within the vP domain, as in (23) (i.e. it just adds a new ordering statement in the vP domain). Under (23), it is expected that the order in (17b) and (18b), O<XP-as<NQ_OBI, may be judged acceptable.\footnote{The same argument holds whether the object is merged within the complement domain as in (23) or in [Spec,VP]. Since both RP-fronting and object scrambling are possible, one can derive the ordering ‘object<XP-as<NQ’ (see discussion of (24)). In Ch. 5 I also show that a pro subject exists in adjunct secondary predicate constructions and plays an important role in predicting (the lack of) order-preservation effects.}

Note that epistemic verbs take a proposition as their complement but cannot take a noun as their complement, as shown in (21)–(22). Therefore, the analysis in (23) is not available for epistemic verbs, and order-preservation effects are strongly obtained among speakers. The small-clause analysis in (9) is the only possible way of analyzing the epistemic constructions in (7)–(8). Thus, the sentences in (7b) and (8b) are consistently ruled out, lending credence to the EG.

One remaining question is why not all speakers adopt the analysis in (23) for episodic verbs so that the (b) examples in (17) and (18) are judged grammatical uniformly. I have no precise answer for this question at this point. It seems that speakers entertain different strategies to parse the small clauses of episodic verbs, and thus we observe a wide variety of judgement variations for the (b) examples in (17) and (18). It is worth noting, however, that judgement variations concerning episodic verb constructions do not occur randomly. Speakers seem to be rather consistent in deciding whether they will take the direct-object analysis in (23) or the small-clause analysis in (9). This can be shown by a correlation between the judgements for (17) and (18) and judgements for predicate fronting.

If a speaker assumes that (23) is a viable analysis for episodic verbs, we expect that the speaker would also allow a small-clause predicate to be fronted to the left of the direct object. Specifically, the entire RP may undergo fronting to the left of the direct object or to the left of the main subject, as described in (24). We then expect that the
small-clause predicate ‘XP-as’ may precede the direct object, unlike the patterns seen with epistemic verbs (cf. (11) and (12), which show that predicate fronting is impossible when the small clause is a complement of an epistemic verb). Put differently, we predict that those speakers who accept the direct-object analysis (23) would readily accept fronting of a small-clause predicate as well.

\[
(24) \quad [v_P \ [R_P \ PRO_1 \ XP-as]_2 \ S \ [v_P \ t_2 \ [O_1 \ NQObj] \ V] \ v] \text{ (from (23))}
\]

This prediction is tested with the sentences in (25) and (26). The judgement varies considerably among speakers here, too: some Korean speakers find (25) quite degraded (4/9); some find it marginally acceptable (4/9); some find it perfectly acceptable (1/9); one Japanese speaker finds (26) ungrammatical while another speaker accepts it marginally.

(25) %Aitolsutha-lo SM-un kulwup-ul sey-key khiwuessta.
    idol.star-as SM-TOP group-ACC 3-Cl. brought.up
    ‘SM (Entertainment) brought up three groups (to become) pop idols.’ (Korean)

(26) %Aidoru-ni J.J.-wa guruupu-o mit-tu sodateta.
    idol.star-as J.J.-TOP group-ACC 3-Cl. brought.up
    ‘J.J. brought up three groups (to become) pop idols.’ (Japanese)

Importantly, however, the judgements for (25) and (26) have a significant correlation with the judgements for the (b) examples in (17) and (18). Korean speakers who find (17b) to be less acceptable than (17a) also report that (25) is degraded (4/9). Speakers who accept (17b) to the same degree as (17a) find that (25) is also quite acceptable (3/9). My Japanese consultants find that (18b) is considerably less acceptable than (18a), and they report that (26) is quite degraded (2/2).

This suggests that speakers consistently take either the direct-object analysis in (23) or the small-clause analysis in (9) for episodic verb constructions. When the speaker takes the direct-object analysis in (23) (and (24)), they accept the ‘object<XP-as<NQOBJ’ order (e.g. (17b), (18b)) as well as fronting of a small-clause predicate (e.g. (25) and (26)). On the other hand, when the speaker takes the small-clause analysis in (9), they accept neither the ‘object<XP-as<NQOBJ’ order in (17) and (18) nor predicate fronting in (25) and (26). The judgements do not vary randomly, but only in the direction predicted by the current approach to small clauses.8

8 Predicate fronting shown in (11,12) with epistemic verbs was judged ungrammatical for all the speakers that I consulted with (11/11). This is exactly what we expect. Since the direct-object analysis in (23) (or (24)) is not available for epistemic verbs, the SS is assumed to be externally merged in the same RP as the small-clause predicate. Thus, the ordering between the SS and small-clause predicate is fixed at the RP domain in (11,12) consistently for all speakers.
One final comment on the typology of verb is in order. As discussed above, epistemic verbs take a proposition as their complement and thus cannot select a noun as their sole argument. This selectional requirement seems to be enforced by the semantics of epistemic verbs, and is not negotiable. It must be noted, however, that there is no semantic reason to block the small-clause analysis (9) for episodic verbs. Episodic verbs may select a nominal object as their argument (e.g. a theme of the episodic event), and may also take the small clause as their complement.

In fact, some speakers strongly prefer the small-clause analysis even for episodic verbs. Some episodic verbs such as mantulta ‘make’ in Korean resist the direct-object analysis, just like epistemic verbs. As shown in (27), the episodic verb mantulta takes -lo small clauses but it cannot take a noun as its sole argument, maintaining its figurative interpretation, ‘to raise’ or ‘to educate’. As shown in (28), the sentence is simply ungrammatical when the small-clause predicate hakca-lo is omitted. Predicate fronting such as in (29) is also impossible. This is a typical characteristic of small-clause complements selected by epistemic verbs like samta ‘consider’ in Korean.

MIT-GEN class-NOM John-Acc scholar-as make-PAST-DEC
‘The class at MIT made John a scholar.’

MIT-GEN class-NOM John-Acc make-PAST-DEC
‘The class at MIT made John.’ (omission of the -lo predicate)

scholar-as MIT-GEN class-NOM John-Acc make-PAST-DEC
‘The class at MIT made John a scholar.’ (-lo predicate fronting)

Given that some episodic verbs strongly resist the direct-object analysis, the rigid distinction between epistemic and episodic verbs is somewhat misleading. Strictly speaking, it is the selectional property of the main verb, rather than the aspeutical property of the verb, that determines the underlying structure of small-clause complements. All the epistemic verbs support the small-clause analysis (9) because they take a proposition as their complement. Some, but not all, episodic verbs support the direct-object analysis (23): some episodic verbs may take a direct object and license the presence of a null subject in the small-clause complement; other episodic verbs disallow the direct-object analysis and require the subject of the small clause to be base-generated within its small-clause complement.

4.2.3 Adverbial floating quantification in small clauses

In this section, I consider some implications of my proposal for the distribution of adverbial floating quantifiers associated with small-clause domains. In Chapter 3, we saw that various types of order preservation effect are lifted when an adverbial floating quantifier (advFQ) is employed in place of an adnominal floating quantifier (adnFQ) (see 3.4.3). As repeated here as (30), the object cannot intervene between the
subject and the subject-oriented NQ. I have explained this by assuming that the
subject and its NQ form a constituent in the base structure so that the object cannot
intervene between the two—this is an instance of the EG in the vP domain. The
examples in (31), on the other hand, are acceptable because exhaustive quantifiers
such as motwu, negative-polarity items, focus-marked NQs, and Case-marked NQs
are externally merged separately from their associate as a focus operator. Thus, the
object may move over the advFQ without any ordering conflicts at PF.

(30) *Subject<Object<Subject-oriented NQ

  student-Pl-NOM apple-ACC 2-CL eat-PAST-DEC
  ‘Two students ate apples.’

(31) Subject<Object<Subject-oriented advFQ

   student-Pl-NOM apple-ACC all eat-PAST-DEC
   ‘All the students ate apples.’

   student-Pl-NOM apple-ACC anyone eat-CI-not-PAST-DEC
   ‘No students ate apples.’

   student-Pl-NOM apple-ACC 3-CL-only eat-PAST-DEC
   ‘Only three students ate apples.’

   student-Pl-NOM apple-ACC 2-CL-NOM eat-PAST-DEC
   ‘Two students ate apples.’

Surprisingly, however, such contrasts between adnFQs and advFQs as seen in
Chapter 3 are not observed in small-clause domains. As illustrated in (33b), a small-
clause predicate cannot intervene between the SS and advFQ, just like the pattern
seen with an adnominal NQ in (32).

(32) Epistemic verbs with adnominal Qs

a. (?) Kim kyoswu-nun cencik taythonglyeng-ul sey-myeng
   Kim professor-TOP former president-ACC 3-CL
   ceyca-lo samassta.
   student-as considered
   ‘Prof. Kim considered three former presidents as (his) students.’

b. *Kim kyoswu-nun cencik taythonglyeng-ul ceyca-lo sey-myeng
   Kim professor-TOP former president-ACC student-as 3-CL
   considered
   ‘Prof. Kim considered three former presidents as (his) students.’
Epistemic verbs with adverbial Qs

a. Kim kyoswu-nun *cencik taythonglyeng-ul sey-myeng-ul*
   Kim professor-TOP former president-ACC 3-CL-ACC
   ceyca-lo samassta.
   student-as considered
   ‘Prof. Kim considered three former presidents as (his) students.’

b. *Kim kyoswu-nun *cencik taythonglyeng-ul ceyca-lo*
   Kim professor-TOP former president-ACC student-as
   sey-myeng-ul samassta.
   3-CL-ACC considered
   ‘Prof. Kim considered three former presidents as (his) students.’

Moreover, there is no difference between adnFQs and advFQs in predicate fronting data. As shown by the ungrammaticality of (34b), the predicate ceyca-lo cannot precede the SS and advFQ sey-myeng-ul, just as in (34a) with an adnominal NQ sey-myeng. Given the strong contrast between (30) and (31) in the vP domain, the lack of such contrasts in (32)–(34) is puzzling.

Predicate fronting and types of floating Qs with epistemic verbs

a. *Ceyca-lo* Kim kyoswu-nun *cencik taythonglyeng-ul sey-myeng*
   student-as Kim professor-TOP former president-ACC 3-CL
   samassta.
   considered
   ‘Prof. Kim considered three former presidents as (his) students.’ (Korean)
   (= (11))

b. *Ceyca-lo* Kim kyoswu-nun *cencik taythonglyeng-ul sey-myeng-ul*
   student-as Kim professor-TOP former president-ACC 3-CL-ACC
   samassta.
   considered
   ‘Prof. Kim considered three former presidents as (his) students.’ (Korean)
   (cf. (11))

I maintain that the distribution of advFQs related to SS in (32)–(34) can be explained by understanding the internal structure of fronted predicates. As proposed in section 4.2, I assume that the SS is externally merged as the subject of small-clause complement RP. By extending my proposal for advFQs in Chapter 3, I argue that the advFQs in (32)–(34) are externally merged outside the predicational domain RP and assign exhaustive focus to their associate SS, as illustrated in (35). AdvFQs contain a quantifier and a null pronoun, which must bind a variable in their c-command domain. To satisfy this condition, SS must undergo raising to the left of the advFQ so that the focus operator may bind a variable in its c-command domain. Up to this point, I have simply extended what I argued for advFQs in Chapter 3 to advFQs associated with small-clause domains.
Small-clause RP and adverbial FQ

A crucial difference between the advFQs in (31) and the advFQs in (32)–(34) comes from the type of intervener that lies between the FQ and its associate noun. In (30) and (31), an argument is the intervener. The internal argument in (30) and (31) may move over the advFQ by itself as an independent unit. In (32)–(34), on the other hand, the offending intervener is a predicate complex. As depicted in (35), the small-clause predicate cannot function as a predicate without the affixal Relator -lo. If the predicate in (35) moves, stranding the Relator -lo, the stranded affix will not be able to be pronounced at PF and causes ungrammaticality. Since -lo is affixal to the predicative NP, the syntactic node that contains the predicate complex ‘predicate-lo’ must be fronted. Furthermore, if a (R-)bar-level movement is blocked for a principled reason, the entire RP (containing SS or the trace of SS) must move whenever the small-clause predicate moves (see Chung 2007; 2011 for the original insight and section 4.3.2 for discussion of its weakness; see also n. 5 above). I argue that this morphological consideration is sufficient to explain the contrast between the advFQs associated with primary predication in (30) and (31) and the advFQs associated with small clauses in (32)–(34).

Consider the example (33b) again, repeated here as (36). Under the proposal presented above, the advFQ sey-myeng-ul cannot bind a variable associated with the SS in (36). The derivation in (36) is illustrated in (37a), where the RP cencik taythonglyeng-ul ceyca-lo is fronted to the left of the advFQ sey-myeng-ul.

(36) *Kim kyoswu-nun cencik taythonglyeng-ul ceyca-lo sey-myeng-ul Kim professor-TOP former president-ACC student-as 3-CL-ACC

samassta.

considered

‘Prof. Kim considered three former presidents as (his) students.’ (=33b)

(37) a. ... *[RP cencik taythonglyeng-ul, ceyca-lo]₁ sey-myeng-ul + pro₂ t₁ former president-ACC student-as 3-CL-ACC

b. *A friend of the students has all (pro) arrived.

Derivations like (37a) are ruled out for the same reason (37b) is ungrammatical. Recall that (37b) is judged ungrammatical, where the associate for all, the students, is
embedded under other phrases, namely a friend. In such configurations, predicate abstraction results in binding of the embedding phrase a friend into pro; the embedded phrase the students cannot be related to all (see Chapter 3 for the relevant discussion). Just as (37b) is ungrammatical, derivations like (37a) are ruled out. In (37a), the entire RP is fronted to the left of the advFQ sey-myeng-ul. The advFQ may bind a trace of the RP, but not the trace of SS. Hence, the SS cannot be associated with the advFQ sey-myeng-ul in (37a).

One might consider the possibility that the SS and NP predicate move separately over sey-myeng-ul in (36), so that the advFQ binds a trace of the SS. Such a possibility, however, is blocked for independent reasons. As illustrated in (38a), the NP-predicate by itself cannot undergo fronting over sey-myeng-ul. If the predicate moved separately from the RELATOR, the affixal head -lo would be stranded. The sentence would then be filtered out at PF due to the stranded affix. To front the NP-predicate, the entire RP that contains the trace of the SS must be fronted, as in (38b). Here again, sey-myeng-ul cannot bind the trace of the SS, but the trace of the RP only. Thus, predicate fronting in (38b) is predicted to be banned, just as in (37a).9

(38) a. …*[cencik taythonglyeng-ul]₂ [NP ceyca-], sey-myeng-ul + pro₂ [RP t₂ t₁-lo]
   b. …*[cencik taythonglyeng-ul]₂ [RP t₂ ceyca-lo], sey-myeng-ul + pro₂ t₁

Put differently, the affixal head -lo must be attached to the NP-predicate in the overt syntax. Thus, the fronted predicate must contain the RELATOR head -lo and accompany either the SS or a trace of SS. Ironically, however, if the fronted predicate must contain the SS or the trace of SS, the advFQ cannot function as an exhaustive operator for the associate SS. Because the trace of the SS must be embedded under the fronted RP, it is impossible for the advFQ to bind a variable associated with the SS. Given that a floating quantifier cannot be licensed when the trace of its associate is embedded under other phrases, the ungrammaticality of (36) follows.

Predicate-fronting data in (34b), repeated here as (39), follows straightforwardly from the current approach. Since the predicate ceyca-lo in (39) must follow its SS in the RP domain, the predicate cannot precede the SS in higher domains. Under CL,

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9 Previous studies on fronted predicates in English (Bowers 1993; Huang 1993) reached the same conclusion. As shown by Bowers (1993), binding facts in English support the conclusion that fronted small clauses must contain a trace of the SS. In (i.a) himself is co-indexed with the subject of the small clause Bill, but cannot be co-indexed with the higher subject John. This is what we observe with VP-fronting data in (ii) as well. As argued by Huang (1993), an anaphor contained in the fronted VP must co-refer with the local (embedded) subject, but not with the higher subject. This pattern can be captured by assuming that the fronted small clause in (i) and the fronted VP in (ii) must contain the trace of the local subject. If the fronted predicate must contain the trace of the local subject, the anaphor must be locally bound by it.

(i) English small clause constructions (Bowers 1993: 623)
   a. Proud of himself in John, doesn’t think Bill, will ever be.
   b. [predP t₁ proud of himself]ₙ in John, doesn’t think Bill, will ever be t₁.

(ii) [predP t₁ criticize himself]ₙ in John, thinks Bill, never will t₁. (Huang 1993)
the ordering in (39) can be ruled out by ordering conflicts between the RP domain and the higher vP domain. The presence of sey-myeng-ul in (39) is simply irrelevant and not helpful in improving the judgement. (In fact, the sentence remains ungrammatical if the advFQ sey-myeng-ul is omitted.)

(39) *Ceyca-lo Kim kyoswu-nun cencik taythonglyeng-ul sey-myeng-ul
student-as Kim professor-TOP former president-ACC 3-Cl-ACC

considered

‘Prof. Kim considered three former presidents as (his) students.’ (Korean)
(cf. (11))

Finally, the contrast between epistemic and episodic verb constructions with respect to the distribution of advFQs naturally follows from their different underlying structures. As shown by the grammaticality of (40a), a small-clause predicate may intervene between the object and the object-oriented advFQ when the main verb is an episodic verb like ppopta ‘hire’ in Korean (cf. (33b) for epistemic verbs). Moreover, the small-clause predicate may precede the object and the object-oriented advFQ when the main verb is an episodic type, as in (40b) (cf. (34b) for epistemic verbs).

(40) Episodic verbs with adverbial Qs
a. SNU-nun cencik taythonglyeng-ul kyoswu-lo sey-myeng-ul ppopassta.
SNU-TOP former president-ACC professor-as 3-Cl-ACC hired
‘SNU hired three former presidents as (their) professors.’ (Korean) (cf. (33b))

professor-as SNU-TOP former president-ACC 3-Cl-ACC hired
‘SNU hired three former presidents as (their) professors.’ (Korean) (cf. (34b))

Given that episodic verbs like ppopta ‘hire’ may take a direct object as their argument, it is expected that a small-clause RP containing a PRO can intervene between the object and the object-oriented advFQ, as illustrated in (41a). Furthermore, the predicate may precede the object and its advFQ when the entire RP is merged to the left of the object, as in (41b). Hence, both sentences in (40) are expected to be grammatical under the current proposal. Note that in contrast to (36), the object may undergo fronting and leave a trace, which serves as a variable for sey-myeng-ul in (41a) and (41b).

(41) a. [vP former president-ACC2 [RP PRO professor-as] [FocP sey-myeng-ul + pro2 [vP t2 V]] v] (=40a)

b. [vP [RP PRO professor-as] former president-ACC2 [FocP sey-myeng-ul + pro2 [vP t2 V]] v] (=40b)
4.2.4 Summary

In this section, we have seen some consequences of the CL approach for scrambling from within small-clause domains. I have proposed that small-clause domains undergo cyclic Spell-out and linearization as a predicational unit. The syntactic structure of a small clause is so impoverished that neither its specifier nor its complement predicate may undergo movement within an RP: the specifier cannot undergo domain-internal movement because it is already on the edge and cannot be probed by the RELATOR head (under a probe-goal theory). The predicate cannot undergo RP-internal movement due to anti-locality. Thus, the CL model leads us to predict rigid order-preservation effects for the small-clause domain: the argument structure within the small clause is fixed once and for all, even in scrambling languages like Korean and Japanese. In this section, I have presented a set of correlated facts that support this prediction.

When a main verb takes the small clause as its sole argument, the subject of the small clause must be base-generated within the small-clause domain. In exactly these constructions, we observe strong order-preservation effects in small-clause domains: (i) predicate fronting is impossible; (ii) the small-clause predicate cannot intervene between its subject and NQ; (iii) the entire small clause can be fronted to the left of the main subject. Evidence for this claim was taken from epistemic (and some episodic) verb constructions.

When a main verb may take the direct object as its sole argument, on the other hand, it is possible to analyze the noun in complement position as an argument of the main verb. In these contexts, order-preservation effects can be obviated. In these contexts, the small clause contains a null subject which is anaphorically related to the direct object of the main verb. The entire small clause may be fronted to the left of the direct object, and the small-clause predicate may precede the noun (the direct object), which is interpreted as the subject of the small clause.

We have also seen that there is no difference between advFQs and adnFQs in terms of ordering patterns when they are associated with the subject in a small-clause domain. I have argued that this is because of the affixal status of the RELATOR head. A fronted predicate always contains a trace of SS or SS itself. Predicate abstraction leads to the binding of an advFQ to the trace of the RP, but not to the trace of the SS. Thus, advFQs cannot be associated with the SS when the small-clause predicate is fronted.

The evidence for my proposal on small clauses is summarized in (42). By assuming that CL applies to small clauses, we can provide a principled account for the order-preservation effects and correlated facts in (42). The symmetry between subject scrambling out of vPs and scrambling out of small-clause domains further confirms my overall proposal that CL applies not only to a main predicational domain but also to a secondary predicational domain. In what follows, I extend my proposal to infinitival domains and multiple subject constructions in Korean.
Small-clause complements and ordering restrictions

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### 4.3 Extension to Raising and Control constructions

In the preceding section, we saw that a small-clause predicate cannot precede its own subject when the subject is externally merged on the edge of the small-clause domain. In this section, we turn our attention to the ordering relationship between the subject and its predicate in complement infinitival domains. Given the contrast between the epistemic and episodic verb constructions seen above, we expect that the distribution of the subject in infinitival domains will be affected by the types of main predicate as well. In particular, we predict that strong order-preservation effects will be obtained when the main verb takes the infinitival of a raising-type verb. The infinitival of a null subject type, on the other hand, may show more flexibility in licensing predicate fronting. In this section, I show that these predictions are indeed borne out.

The initial evidence is taken from Ahn and Cho’s (2008; 2010) data and argumentation. I further develop their analyses by incorporating J. H.-S. Yoon’s (2007) proposal on Major Subject constructions into the CL model. I show that order-preservation effects are lifted for infinitivals when a direct-object analysis or a proleptic-object analysis is available for the main verb. Evidence is drawn from Subject-to-Object Raising constructions in Korean (4.3.1) and various types of Control verb constructions (4.3.3). I also compare my proposal with competing analyses, which rely on the Proper Binding Condition (cf. Tanaka 2002; J. H.-S. Yoon 2007) or the affixal status of a Relator in Korean (cf. Chung 2007; 2011; 4.3.2 below).
4.3.1 Predicate fronting out of Raising constructions

To start the discussion, let me briefly summarize Ahn and Cho’s (2008) proposal. They argue that predicate fronting out of an embedded clause in (43b) is impossible, whereas the same operation is allowed in (44b). The only difference between the two is that the embedded subject Yenghi is NOM-marked in (43b), whereas the (apparent) embedded subject is ACC-marked in (44b). Constructions like (44) have been called ECM (Exceptional Case Marking) or Subject-to-Object Raising (SOR) constructions (see J. H.-S. Yoon 2007 for a critical review of current studies on this construction; cf. e.g. Hiraiwa 2002; Hoji 2005; Oka 1988; Saito 1983; Sells 1990; Takano 2003; Tanaka 2002 for Japanese; e.g. K.-S. Hong 1997, S.-M. Hong 2005; P.-Y. Lee 1992 for Korean). Following J. H.-S. Yoon (2007), I use the term ‘SOR’ to refer to constructions like (44).10

(43) a. Chelswu-nun Yenghi-ka yeppu-ta-ko sayngkakha-n-ta.
   Chelswu-TOP Yenghi-NOM pretty-DEC-C think-PRES-DEC
   ‘Chelswu thinks that Yenghi is pretty.’

   Pretty-DEC-C Chelswu-TOP Yenghi-NOM think-PRES-DEC
   ‘Chelswu thinks that Yenghi is pretty.’ (Chung 2007: 2)

   Chelswu-TOP Yenghi-ACC pretty-DEC-C think-PRES-DEC
   ‘Chelswu thinks that Yenghi is pretty.’

b. *Yeppu-ta-ko Chelswu-nun Yenghi-lul sayngkakha-n-ta.
   Pretty-DEC-C Chelswu-TOP Yenghi-ACC think-PRES-DEC
   ‘Chelswu thinks that Yenghi is pretty.’ (Ahn and Cho 2008: 58)

Ahn and Cho argue that the contrast between (43b) and (44b) can be explained by the CL approach to scrambling. In particular, they claim that the nominative-marked subject Yenghi-ka in (43b) is externally merged as the subject of the embedded predicate yepputako, as described in (45). If Yenghi-ka precedes its predicate yepputako in the embedded CP domain, this ordering statement must be preserved in the

10 Strictly speaking, the complement clause in (44) is not ‘infinitival’ because it can host a Tense morpheme in Korean. But, capitalizing on the fact that the subject of the embedded clause can be ACC-marked, the clauses embedded under epistemic verbs such as sayngkakhata ‘think’ and mit-ta ‘believe’ in Korean (and equivalents in Japanese) have been called ECM/SOR, similar to English believe-type sentences. Here, I use the traditional term ECM/SOR despite the fact that the complement clause in (44) is Tense-marked. As will be shown shortly, I adopt J. H.-S. Yoon’s (2007) view that the ACC-marked NP may be base-generated in the higher clause (as a proleptic object) or raised from the lower clause (as a Major Subject for the lower clause). In this section, I do not intend to provide a comprehensive review on the SOR construction. Rather, I focus on the consequences of Yoon’s analysis of SOR for predicate fronting and linearization. I refer the reader to J. H.-S. Yoon (2007) for critical reviews and general discussions regarding SOR in Korean and Japanese.
higher domains under CL. However, if *Yenghi-ka precedes its predicate yepputako in
the embedded CP domain, and the predicate yepputako precedes the subject Yenghi-
ka in the matrix CP domain, it leads to ordering conflicts at PF.

(45) *Yeppu-ta-ko₁ Chelswu-nun [CP Yenghi-ka t₁] sayngkakhanta

a. Ordering at the embedded CP: Yenghi-ka < yepputako
b. Ordering at the matrix CP: yepputako < Yenghi-ka [ordering contradiction!]

(=derivation of (43b) (Ahn and Cho 2008: 67)

In contrast to (43), the noun interpreted as the subject of the embedded clause in
(44) is ACC-marked. Ahn and Cho (2008) assume that the accusative-marked Yenghi-
lul in (44) is base-generated in the higher clause (as a proleptic object), and the
embedded clause contains a pro co-indexed with Yenghi-lul, as described in (46).
Since Yenghi-lul in (44) is externally merged in the higher clause, it would not
participate in linearization in the embedded CP domain. Thus, the embedded
predicate yepputako may undergo successive-cyclic movement across the matrix
object Yenghi-lul in (44) without any ordering conflicts.

(46) [CP pro₂ yeppu-ta-ko]₁ Chelswu-nun [vP t₁ Yenghi-lul₂ t₁ sayngkakhanta]

a. Ordering at the embedded CP: yepputako
b. Ordering at the matrix CP: yepputako < Yenghi-lul (Ahn and Cho 2008: 69)

Notably, the proposal that Ahn and Cho present is built on the same logic as my
proposal for predicate fronting from small-clause domains: when the subject is
externally merged within the embedded predicational domain, the predicate cannot
precede the embedded subject. In contrast, when a null subject analysis is available
for the embedded predicational domain, the predicate may precede the noun (i.e. the
object) anaphorically related to the null subject. In this section, I provide further
support for the overall analysis that Ahn and Cho pursue for predicate fronting out
of SOR. I, however, depart from their approach when it comes to the detailed
analyses. This is partly because Ahn and Cho do not develop their analysis in full
detail, and also because their approach would not make correct predictions unless we
adopted a particular theory of SOR constructions into the CL model. ¹¹

¹¹ As acknowledged explicitly, Ahn and Cho (2008: 70) remain agnostic as to what constitutes a Spell-
out domain in syntax and how domain-internal movement affects reordering within the Spell-out domain.
They mention that their approach may be extended to small-clause domains selected by a verb like samta
‘take’ or yekita ‘consider’ in Korean. They do not, however, discuss the small clauses of a Control type
(selected by episodic verbs) or explain why small clauses and SOR must be treated in the same way in terms
of Spell-out. Ahn and Cho (2008: n. 3) also briefly mention that some sort of anti-locality and probe-goal
theory might be relevant here, but do not specify the consequences of the theories.
In the following, I attempt to present a fully-fledged version of the CL analysis for predicate fronting out of SOR constructions by coupling J. H.-S. Yoon’s (2007) Major Subject analysis with CL. In particular, following Yoon (2007), I argue that a Major Subject (MS), but not Grammatical Subject, undergoes raising in SOR constructions. A Grammatical Subject is the subject of a verb, an unsaturated predicate, and receives a theta role from the lexical predicate. The Major Subject is an additional subject on top of the Grammatical Subject and the lexical predicate. The sentence following the Major Subject functions as a property-denoting Sentential Predicate. Yoon (2007) provides a variety of convincing evidence for the claim that the ACC-marked noun in SOR constructions is interpreted as the Major Subject of the embedded clause, and proposes that the Major Subject is raised to a higher clause in the overt syntax. The pictorial description for SOR constructions is given in (47).12

\[(47)\] *Derivation of SOR in Korean* (J. H.-S. Yoon 2007: 623 with some annotational differences)

![Diagram of SOR derivation](image)

In (47), a Major Subject is base-generated in the embedded clause XP, and then raises to derived (a non-thematic/proleptic) object position in the higher VP domain in the overt syntax. Predicate abstraction yields a Sentential Predicate by a null operator. The embedded clause ZP functions as a Sentential Predicate for the Major Subject, as indicated by the arrow in (47). The Major Subject may be co-indexed with a null or overt pronoun within the Sentential Predicate (see 4.4 for independent evidence). Note, crucially, that XP consists of (at least) two predicational domains: one is the primary predicational domain ZP, which contains the Grammatical Subject and the lexical predicate, and the other is the Major predication XP, which consists of the Major Subject and the Sentential Predicate. As we will see, this multiple predicational structure is the key to understanding the ordering restrictions in SOR.

J. H.-S. Yoon (2007) suggests that in addition to the derivation in (47), some SOR constructions may allow a different parse, where the ACC-marked object is base-

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12 The process of Sentential Predicate formation can be recursive, yielding more than one Major Subject and nested Sentential Predicates. When there are multiple Major Subjects, only the first, highest one undergoes SOR.
generated in the higher clause as a proleptic object. Under this proleptic parse, the object is interpreted as the topic of the main clause, and is not linked to an element in the embedded clause via syntactic movement (unlike the MS in (47), which undergoes overt raising). Yoon suggests that the proleptic parse is available only when a DP (preferably animate noun) is employed. Under this approach, the ACC-marked object in SOR can be analyzed as a proleptic object, like Bill in (48).

(48) I believe about/regarding Bill that he is responsible for the failure.
    (J. H.-S. Yoon 2007: 616)

With this theoretical background, let us return to the predicate-fronting data discussed at the beginning of the section, repeated here as (49a) and (49b).

(49) a. *Yeppu-ta-ko Chelswu-nun Yenghi-ka sayngkakha-n-ta.
    Pretty-Dec-C Chelswu-Top Yenghi-Nom think-Pres-Dec
    ‘Chelswu thinks that Yenghi is pretty.’ (Chung 2007: 2)

b. Yeppu-ta-ko Chelswu-nun Yenghi-lul sayngkakha-n-ta.
    Pretty-Dec-C Chelswu-Top Yenghi-Acc think-Pres-Dec
    ‘Chelswu thinks that Yenghi is pretty.’ (Ahn and Cho 2008: 58)

My explanation for (49a) is essentially the same as that of Ahn and Cho (2008). The embedded subject Yenghi-ka in (49a) is Nom-marked and remains in the embedded clause. The embedded subject Yenghi-ka and its predicate yeppu ‘pretty’ form a predicational unit, and thus the constituent undergoes cyclic Spell-out and CL, just like small clauses as seen in the preceding section. This means that Yenghi-ka must precede yeppu ‘pretty’ in the higher domains. If the predicate yeppu ‘pretty’ is fronted to the left of the subject Yenghi-ka in a higher predicational domain, it causes ordering conflicts between the two domains, and the derivation is canceled out at PF. Hence, the ungrammaticality of (49a) follows from CL (see also 4.4 for some important details and further discussion on the internal structure of (49a)).

The example in (49b), on the other hand, can be analyzed in two ways. One possibility is that Yenghi-lul in (49b) is analyzed as a Major Subject base-generated in the embedded clause and then the embedded clause undergoes raising to the left of the main subject. This is described in (50). If Yoon (2007) is on the right track, we would expect (50) to be ruled out under CL. In the embedded domain, Yenghi-lul functions as a subject for the Sentential Predicate (pro yeppu-ta-ko). If a predicational domain in general undergoes cyclic Spell-out, it is predicted that the Major Subject and its Sentential Predicate will undergo linearization at the same time. This means that the Sentential Predicate must follow the Major Subject Yenghi-lul in higher domains as well. If the Sentential Predicate is fronted to the left of the Major Subject, ordering contradiction arises and the derivation will be canceled out. Thus, the Major Subject analysis in (50) cannot serve as a legitimate derivation for the sentence in (49b).
‘Chelswu thinks that Yenghi is pretty.’

a. embedded predicational domain: Yenghi-lul < (pro) yeppu-ta-ko

b. matrix predicational domain: (pro) yeppu-ta-ko < Yenghi-lul

The other possibility for (49b) is a proleptic analysis, whereby Yenghi-lul in (49b) is base-generated in the higher clause and interpreted as the topic of the matrix verb sayngkakhanta ‘think’. As described in (51), the proleptic object Yenghi-lul and the embedded clause are merged in different Spell-out domains, and there is no direct predicational relationship that holds between Yenghi-lul and the embedded clause (pro yeppu-ta-ko). It is then expected that the embedded clause (including the null subject) may precede the object Yenghi-lul. (49b) with the proleptic parse is presented in (51).

‘Chelswu thinks of Yenghi that she is pretty.’

Note that in both types of analysis, (50) and (51), a null subject is involved, but crucially, only the latter is considered as a legitimate parse for (49b). It is not the presence of a null subject per se, but the predicational relationship that determines the (im)possibility of predicate fronting out of SOR constructions. If the Acc-marked noun is analyzed as the Major Subject of the lower clause, predicate fronting is impossible because the Major Subject undergoes CL with the lower predicate. If the Acc-marked noun is analyzed as a base-generated object, however, predicate fronting is possible because the object is spelled out separately from the lower predicate.

My proposal for (49a) and (49b) makes further predictions concerning predicate fronting, which distinguishes the current approach from alternative proposals suggested before. First, if predicate fronting is possible due to the proleptic analysis for (49b), we predict that predicate fronting would be impossible if the proleptic parse is controlled for. I argue that this is indeed the case. According to Yoon (2007: 647), the prolepsis parse is available only when the proleptic argument is a DP (and animate, preferably). The proleptic parse is impossible for examples like (52a), where the object is a scene-setting inanimate PP. According to Yoon (2007), the example in (52a) must be derived from the Major Subject analysis, as in (52b), and not from the proleptic analysis. We then predict that the sentence in (52a) would become ungrammatical if the embedded predicate precedes the scene-setting PP. The fact in (53) supports this prediction (cf. (49b)).
   I-TOP here-from-ACC my land-COP-C believe-PRES-DEC  
   ‘I believe that my land begins from here.’
   
   b. Na-nun yekise-pwuthe-lul, [cp t₁ [ pro₁ nay ttang-i-lako]] mit-nun-ta.  
   [my land-COP-C I-TOP here-from-ACC believe-PRES-DEC]  
   ‘I believe that my land begins from here.’

(53) *[Nay ttang-i-lako] na-nun yekise-pwuthe-lul mit-nun-ta.  
   my land-COP-C I-TOP here-from-ACC believe-PRES-DEC  
   ‘I believe that my land begins from here.’

In sharp contrast to (49b), the embedded predicate *nay ttang-i-lako ‘be my land’ in (53) cannot precede the *ACC-marked object yekise-pwuthe-lul ‘here-from-ACC’. If the asymmetry between (49a) and (49b) were simply attributable to the presence/absence of *ACC-marking, the ungrammaticality of (53) would be perplexing. In both examples in (49b) and (53), the predicate is moved over an *ACC-marked object. Crucially, however, (53) is ungrammatical, whereas (49b) is fairly grammatical.

If we adopt J. H.-S. Yoon’s (2007) proposal under CL, however, the ungrammaticality of (53) naturally follows. Since the proleptic analysis is unavailable for (53), (52b) is the only possible parse for the underlying structure of (53) (cf. (49b) with a proleptic analysis). Given that the Major Subject precedes the Sentential Predicate in the embedded domain, the Major Subject must continue to precede the Sentential Predicate in the higher domain. Predicate fronting as in (53) is ruled out due to ordering conflicts between the lower and higher predicational domains.

Moreover, my proposal for (53) makes a further prediction concerning cases where the embedded subject is not a null pronoun. In those cases, I predict that not only predicate fronting but also clausal fronting would be impossible (if a proleptic analysis is unavailable). To be specific, the Major Subject and Sentential Predicate form a predicational unit and undergo CL together. Therefore, the entire Sentential Predicate must follow the Major Subject. This must be true whether the Sentential Predicate contains a null *pro or an overt subject. It means that not only the lexical predicate but also the overt subject within the Sentential Predicate must follow the Major Subject. The facts reported in (54) and (55) show that this is indeed the case.

As illustrated in (54a), a temporal PP cinan cwu pwuthe-lul ‘last week from-ACC’ can be used as a Major Subject in SOR constructions. In (54a), an overt subject nalsi-ka ‘weather-NOM’ exists in the embedded clause in addition to the (raised) Major Subject cinan cwu pwuthe-lul ‘last week from-ACC’ (cf. (53) with a null subject). Since a temporal PP cannot be merged as a proleptic object, the internal structure of (54a) is essentially the same as the one for (53). This is shown in (54b). If (54b) is right, we would expect that not only the predicate cohacyesstako but also the embedded subject nalsi-ka cannot precede the (raised) Major Subject. Under CL, the entire Sentential Predicate must follow the Major Subject. The data in (55) show that this is indeed the case.
   I-Top last week from-Acc weather-Nom improved-C believe
   ‘I believe that the weather started improving since last week.’ (J. H.-S. Yoon 2007)

b. Na-nun cinan cwu pwuthe-lul, [t₁ [nalssi-ka cohacyessta-ko]] mitnunta.

   Ordering at the embedded predicational domain:
   cinan cwu pwuthe-lul < nalssi-ka < cohacyessta-ko

(55) a. *[Cohacyessta-ko],₂ na-nun cinancwu pwuthe-lul, [t₁ nalssi-ka t₂] mitnunta.
   improved-C I-Top last week from-Acc weather-Nom believe

b. *[Nalssi-ka cohacyessta-ko],₂ na-nun cinan cwu pwuthe-lul, [t₁ t₂]
   weather-Nom improved-C I-Top last week from-Acc
   mitnunta.
   believe
   ‘I believe that the weather has started improving since last week.’

In Korean, it is in principle possible for an embedded clause to be fronted in non-SOR constructions, as in (56b). It is also possible to raise the embedded clause if the proleptic analysis is feasible, as in (57b). Thus, the ungrammaticality of (55b) cannot be explained away by stipulating that embedded clauses are immobile in Korean. The contrast between (55b) and (56, 57) can be best explained if we assume that CL requires the Grammatical Subject to follow the Major Subject in SOR, preserving their ordering within the first Spell-out domain.

   I-Top M.-Dat B.-Nom linguistics-Acc like-C said
   ‘I said to Mina that Bill likes linguistics.’

   B.-Nom linguistics-Acc like-C I-Top M.-Dat said
   ‘I said to Mina that Bill likes linguistics.’

   I-Top C.-Acc he-Gen father-Nom rich-C remember
   ‘I remember about Cheli that his father is rich.’

   he-Gen father-Nom rich-C I-Top C.-Acc remember
   ‘I remember about Cheli that his father is rich.’

4.3.2 Reply to alternative challenges

The ungrammaticality of (55b) has some significant implications for alternative approaches to predicate fronting based on the Proper Binding Condition (PBC: Fiengo 1977). Tanaka (2002), for instance, posited that the object in SOR moves directly from the embedded argument position (without assuming the Major Subject analysis). On this approach, a fronted predicate as in (53) or (55a) contains a trace of the embedded subject, and the sentences are assumed to be ungrammatical due to PBC effects. If this analysis is on the right track, however, we expect PBC effects to disappear if the gap position in the embedded clause is filled by a pronoun or if the embedded clause does not contain a gap. As shown in (55b), however, this prediction is not borne out. Preposing the complement clause results in ill-formedness even when the complement clause appears to lack a gap altogether. By contrast, the Major Subject approach plus CL can provide a unified account for the (im)-possibility of predicate fronting and clause fronting out of SOR constructions.

J. H.-S. Yoon (2007) suggests that predicate fronting in SOR can be dealt with by the PBC by assuming that the fronted clause must contain an unlicensed trace of the Major Subject, as in (58).

(58) a. *[t₁ Cohacyessta-ko], na-nun cinan cwu pwuthe-lul₁ [nalssi-ka t₂] improved-C I-TOP last week from-ACC weather-NOM
   mitnunta.
   believe

b. *[t₁ Nalssi-ka cohacyessta-ko], na-nun cinan cwu pwuthe-lul₁ t₂ mitnunta.
   weather-NOM improved-C I-TOP last week
   from-ACC believe
   ‘I believe that the weather has started improving since last week.’

I am not denying the existence of PBC effects in the grammar, but the PBC seems too weak to cover the patterns discussed here (see Takita 2010 for a general discussion of PBC effects under the CL model). The Grammatical Subject and its lexical predicate already form a complete grammatical unit (see ZP in (47)). The Major Subject is just an optional element in the clause. As already seen in (51), an embedded clause may undergo fronting without the presence of the Major Subject. If the embedded clause may undergo fronting in (51) as a single constituent, there is no reason to block such a possibility in (58). In other words, if an offending trace does not exist in the fronted clauses in (58), the PBC is simply inapplicable. CL is necessary to block such cases, where the fronted clause does not contain a trace of the Major Subject as in (55). Since CL concerns linear ordering among overt elements, it can capture the facts whether or not the fronted constituent contains a trace of the Major Subject.
Moreover, in some contexts, the PBC approach seems too strong. If predicate fronting is impossible solely due to PBC effects, we predict the sentence will remain ungrammatical whether the Major Subject in (58b) is phonetically null or not. If, on the other hand, CL is responsible for the impossibility of predicate fronting, it is crucial whether the Major Subject has phonetic content or not. Given that a null element does not affect linear order among overt constituents at PF (cf. Fox and Pesetsky 2005a for ellipsis), it is expected that the grammaticality of the sentence may be significantly improved if the Major Subject is a null element in the derivation like (55b). The empirical data favor the CL approach over the PBC approach.

In (59A), a scene-setting PP keki pwuthe-lul ‘from there’ is employed in SOR, and thus it is impossible to apply the proleptic analysis for it. The raised object must be interpreted as the Major Subject of the lower clause in (59A). As a response to the hearsay in (59A), one can utter sentences like (59B), rectifying incorrect information. Because the Major Subject is considered old information, it can be replaced with a null element in (59B). Interestingly, clausal fronting is perfectly grammatical in contexts like (59B). The embedded clause Mikwuk ttang-i-lako can be fronted to the left of the matrix subject. This is in stark contrast with the sentence in (59B’), where the Major Subject is pronounced overtly.

(59)  A: Cheli-nun keki pwuthe-lul Hankwuk ttang-i-lako mit-nun-tay.  
   C.-TOP there from-ACC Korea land-COP-C believe-PRES-C_hearsay  
   ‘(I heard that) Cheli believes that the land of Korea starts there.’

   B: Aniya. Mikwuk ttang-i-lako Cheli-nun pro mit-e.  
   No. USA land-COP-C C.-TOP believe-C  
   ‘No, Cheli believes the land of the USA starts there.’

   B’: *Aniya. Mikwuk ttang-i-lako Cheli-nun keki pwuthe-lul mit-e.  
   No. USA land-COP-C C.-TOP there from-ACC believe-C  
   ‘No, Cheli believes the land of the USA starts there.’

The contrast between (59B) and (59B’) can be explained by the CL approach, but not by the PBC approach. As depicted in (60), if the Major Subject is a null element, predicate fronting over the null Major Subject does not contradict ordering information at PF. Thus, (59B) is allowed under CL. (59B’) with the overt Major Subject is ruled out, as expected, because of the ordering conflicts between the embedded and matrix predicational domains.

(60)  CL plus Major Subject analysis for (59B): (possibly) grammatical

\[
[Mikwuk\ ttang-i-lako]_2\ \ Cheli-nun\ \ pro\ [t_1\ t_3]\ \ mit-e.
\]

a. ordering at the embedded domain: Mikwuk ttang-i-lako
b. ordering at the matrix domain: Mikwuk ttang-i-lako<Cheli-nun<mit-e

On the other hand, sentences like (59B) cannot be saved by the PBC approach. If a fronted clause must contain a trace of the Major Subject as in (58b), the sentence is
predicted to be ungrammatical whether the Major Subject is null or not. This is illustrated with (61) for (59B). Under the PBC approach to predicate fronting, there is no reasonable way to distinguish (59B) from (59B'): if (59B') is ungrammatical due to the offending trace (triggering the PBC effects), (59B) is predicted to be ungrammatical as well, contrary to the facts.13

(61) **PBC plus Major Subject analysis for (59B): ungrammatical, contrary to the facts**

\[ t_1 \text{Mikwuk tangan-lako}_2 \text{Cheli-nun} \text{pro}_1 \text{t}_2 \text{mit-e.} \]

The CL approach can be further supported by the interpretation of a null Major Subject under an intensional verb. It is known that the raised object in SOR can be ambiguous between *de re* and *de se* readings, whereas the embedded subject in SOR must retain a *de se* interpretation (see O’Grady 1991; Song 1994; J. H.-S. Yoon 2007). For instance, in (62a), *caki anay-lul ‘self wife-Acc’* can be compatible with the context where the identity of a thief is unknown to John. It can describe a situation where John hears some noise at night and thinks that an intruder has broken in, but does not realize that it is his wife (a *de re* reading). In (62b), *caki anay-ka ‘self wife-NOM’* cannot be used in such contexts, and (62b) implies that John is aware that the one making the noise is his wife (a *de se* reading).

J.-TOP self wife-Acc thief-COP-DEC-C thought
‘John thought that his wife was the thief.’ (*de re/de se)

J.-TOP self wife-NOM thief-COP-DEC-C thought
‘John thought that his wife was the thief.’ (*de re/de se)

Importantly for our discussion, predicate fronting is compatible with the *de re* reading of a null Major Subject. For instance, the sentence in (63B) is perfectly grammatical under the *de re* situation mentioned above, where John does not know the identity of an intruder whom he thinks is a thief. In (63B), the null Major Subject can be interpreted as a *de re* object, which suggests that *pro* is interpreted upstairs, just like the overt counterpart in (63A). The fact that (63B) is grammatical under the *de re* reading implies that the fronted predicate in (63B) may move over a null Major Subject upstairs, as the CL approach predicts. The derivation for (63B) is given in (64), which illustrates that the embedded clause may move over a raised object.

13 As a response to (61), one might claim that the fronted predicate in (59B) does not contain a trace but a *pro* subject so that PBC effects do not arise. This, however, begs the question of why we may not apply the same *pro*-analysis for (59B). If *pro* may exist within the fronted predicate in (59B’), we would expect the sentence to be grammatical, contrary to the facts.
   John-TOP self wife-ACC ghost-COP-Dec-C thought-Chearsay
   ‘(I heard) John thought that his wife is a ghost.’ (de re/de se)

B: Anya. Totwuk-i-la-ko John-un pro sayngkakhayss-e.
   No. thief-COP-Dec-C J.-TOP thought-Dec
   ‘No, John thought that his wife was a thief.’ (de re/de se)

(64) **CL plus Major Subject approach for (63B): grammatical**

\[
\begin{array}{l}
[totwuk-i-la-ko]_2 \text{ John-un pro}_1 \text{ [t}_1 \text{ t}_2 \text{] sayngkakhayss-e.} \\
\end{array}
\]

a. ordering at the embedded domain: \text{totwuk-i-la-ko}

b. ordering at the matrix domain: \text{totwuk-i-la-ko<John-un<sayngkakhayss-e}

If the fronted predicate must contain a trace in (63B) that triggers PBC effects, we wrongly predict that (63B) would be ungrammatical in the \text{de re} context. As in (65), if a trace must exist within the fronted predicate, (65) would be ungrammatical due to PBC effects. We would then wrongly predict that (63B) is not compatible with a \text{de re} reading of the null object.

(65) **PBC plus Major Subject approach for (63B): ungrammatical, contrary to the facts**

\[
\begin{array}{l}
[t_1 \text{ Totwuk-i-la-ko}]_2 \text{ John-un pro}_1 \text{ t}_2 \text{ sayngkakhayss-e.} \\
\end{array}
\]

As a response to my criticism, one might argue that the null object in (63B) must be analyzed as a proleptic object and thus the fronted clause does not contain a trace in (63B). But (63B) is compatible with both \text{de re} and (pragmatically weird) \text{de se} readings. Thus, one cannot assume that the \text{pro} in (63B) is a proleptic object which lacks a \text{de se} reading. There might be other ways to save (63B) under the PBC approach, but the grammaticality of predicate fronting and the semantic ambiguity of a null object seen here seem to be better captured by the CL approach than by the PBC approach.

Finally, my arguments present some non-trivial challenges to another competing analysis for predicate fronting, which relies on the morphological characteristics of predicates in Korean. Chung (2007; 2011), in particular, claims that predicates in Korean are simply immobile due to their morphological make-up. Chung assumes that a verbal stem and its inflectional endings in Korean project independently, and do not form a constituent at syntax (see Park 1994; J.-H.-S. Yoon 1994; 1997; J.-M. Yoon 1996). A verbal complex is formed by morphological Merger at PF.

On this view, the embedded clause in (66) is analyzed as (67), where the verbal stem and inflectional heads do not form a syntactic constituent. On the basis of this hypothesis, Chung (2007; 2011) argues that embedded predicates (and predicates in
general) in Korean cannot undergo movement because they do not form a unit that can be a target for movement. Chung (2011) takes the ungrammaticality of predicate fronting in (68) as evidence for the claim in (67).

    I-TOP J.-NOM M.-ACC love-PRES-DEC-C think-PRES-DEC
    'I think that John loves Mary.'

(67) [CP [MoodP [TP John-i [VP Mary-lul [salangha v] -n t1] -ta M] -ko c]]

    I-TOP J.-NOM M.-ACC love-PRES-DEC-C think-PRES-DEC
    'I think that John loves Mary.'


As noted earlier, I have no position as to whether verbs in Korean come into the syntax in a fully inflected form or whether inflectional morphemes are combined through verb raising or morphological Merger. In fact, Chung (2007; 2011) may be right in assuming that PF-Merger is responsible for the formation of verbal morphology in Korean. That, however, does not mean that the impossibility of predicate fronting must be attributed to the affixal status of inflectional morphemes. Even if (67) is exactly the right way of analyzing verbal morphology in Korean, the ‘affixal approach’ by Chung seems too weak to cover the overall data on predicate fronting.

Consider Chung’s examples in (68) again. Chung argues that (68b–d) are ungrammatical because the predicate salangha-n-ta-ko is not a syntactic constituent. On a closer look, however, the affixal approach by itself is too weak to rule out the ungrammatical sentences in (68). If the arguments of a verb may undergo scrambling to the left of the predicate, (68b–d) will be ruled in, contrary to the facts. This is illustrated in (69).

(69) a. [CP John-i [CP t1 t2 salangha-n-ta-ko]3 Mary-lul2 t3] (cf. (68b))

b. [CP [CP t1 t2 Salangha-n-ta-ko]3 John-i1 Mary-lul2 t3] (cf. (68c))

c. [CP t1 t2 Salangha-n-ta-ko]3 na-nun [CP John-i Mary-lul t3… (cf. (68d))

As in (69), suppose that John-i and Mary-lul undergo clause-internal scrambling and the CP containing the traces of John-i and Mary-lul may undergo scrambling, too. We then get the undesirable result that the orderings in (68b–d) can be created. To block cases like (69), it is necessary to assume either that clause-internal scrambling of a CP is impossible (e.g. ‘anti-locality’) or that PBC effects rule out cases like (69). The point here is clear. The affixal approach may rule out derivations where the predicate moves without its arguments, but it has little to do with cases where
the predicate moves together with its arguments or traces of the arguments. Additional mechanisms such as anti-locality or PBC are needed (see 4.2.3 for the affixal approach and licensing of advFQs). The affixal approach faces a more serious problem when the embedded subject is filled by a lexical item. As shown with (70a) again, the embedded clause in some SOR constructions is filled with an overt subject. As in (70b), the sentence is grammatical when the embedded clause is fronted. Crucially, however, when the same embedded clause is fronted over the object, the sentence becomes ungrammatical, as in (70c). Under the affixal approach, there is no obvious way to explain the contrast between (70b) and (70c). The example in (70b) shows that nalssi-ka cohacessta-ko is a legitimate string that can undergo fronting. If so, then, we should expect that exactly the same string in (70c) may undergo fronting as a constituent, contrary to the facts.

\[
\text{(70) a. Na-nun cinan cwu pwuthe-lul } [\text{nalssi-ka cohacessta-ko}] \text{ mitnunta.} \\
\text{I-TOP last week from-ACC weather-NOM improved-C believe} \\
\text{‘I believe that the weather started improving from last week.’} \\
\text{b. [Nalssi-ka cohaciessta-ko] na-nun mitnunta.} \\
\text{weather-NOM improved-C I-TOP believe} \\
\text{c. *[Nalssi-ka cohaciessta-ko] na-nun cinan cwu pwuthe-lul mitnunta.} \\
\text{weather-NOM improved-C I-TOP last week from-ACC believe}
\]

The contrast between (70b) and (70c) suggests again that the affixal approach is too weak. One might rely on the PBC to rule out cases like (69) and (70c), but then it is not the ‘affixal status of inflectional morphemes’ but the PBC that is the main reason to block predicate fronting. My criticisms against the PBC approach discussed above would then directly extend to Chung’s affixal approach. The best implication that we can draw from the affixal approach is that whenever a predicate is fronted in Korean, the fronted predicate must contain pro or the traces of all of its arguments. In 4.2.3 I considered such a possibility for small-clause domains associated with advFQs, but I will not look into this issue any further for SOR. The burden of proof for this implication is on the affixal approach. Even if this consequence turns out to be correct on independent grounds, my arguments for CL and predicate fronting presented in this section remain intact.

---

14 In 4.2.3, I argued that the fronted small clauses must contain either SS or the trace of SS in order to not strand the affixal head -lo ‘as’ in Korean, and that this is crucial to explain the incompatibility of advFQs and predicate fronting. The ordering restrictions shown in 4.2.3 cannot be explained either by the PBC or by CL. Cases like (69), on the other hand, must be treated differently. If domain-internal scrambling such as (69) were possible, the embedded predicate would precede its arguments. Other principles such as CL and PBC are necessary to block cases like (69).

15 The best implication that we can draw from the affixal approach is that whenever a predicate is fronted in Korean, the fronted predicate must contain pro or the traces of all of its arguments. In 4.2.3 I considered such a possibility for small-clause domains associated with advFQs, but I will not look into this issue any further for SOR. The burden of proof for this implication is on the affixal approach. Even if this consequence turns out to be correct on independent grounds, my arguments for CL and predicate fronting presented in this section remain intact.
be possible in Control constructions. Ahn and Cho (2008) show that this prediction is borne out. As shown in (72), a verb like ‘persuade’ may take a direct object as its sole argument, and as expected, predicate fronting to the left of the object is perfectly grammatical, as in (72b). Recall that small-clause complements are allowed to be fronted when a main verb takes a nominal object as its argument (4.2.2). On my view, predicate fronting in (72b) and predicate fronting from small clauses receive the same account. Predicate fronting is possible because the predicate contains a null argument anaphorically related to the direct object. The relevant derivation under CL is illustrated in (73).

   I- TOP C.-ACC persuade-PAST-DEC
   ‘I persuaded Chelswu.’

   I- TOP C.-ACC America-LOC go-IMP-C persuade-PAST-DEC
   America-LOC go-IMP-C I- TOP C.-ACC persuade-PAST-DEC
   ‘I persuaded Chelswu to go to America.’

(73) [cP PRO1 Mikwuk-ey ka-la-ko]2 na-nun Chelswu-lul1 t3 seltukha-yess-ta.

   a. ordering at the embedded domain: Mikwuk-ey ka-la-ko
   b. ordering at the matrix domain: Mikwuk-ey ka-la-ko<na-nun
   <Chelswu-lul<seltukhayessta

Ahn and Cho (2008) also point out an interesting correlation between Case marking and predicate fronting, which I adopt here without further evaluation. They argue that Case marking of the direct object may vary depending on the main predicate, and show that an embedded predicate may precede the direct object only when the object bears correct Case morphology. This is shown with (74)–(81).

First, verbs like seltukhata ‘persuade’ may take an ACC-marked object or DAT-marked object, as shown in (74). Then, the embedded predicate may precede either type of object, as illustrated in (75).

   I- TOP C.-ACC persuade-PAST-DEC

   I- TOP C.-DAT persuade-PAST-DEC
   ‘I persuaded Chelswu.’

   America-LOC go-IMP-C I- TOP C.-ACC persuade-PAST-DEC
   ‘I persuaded Chelswu to go to America.’
   America-LOC go-IMP-C I-Top C.-DAT persuade-PAST-DEC
   ‘I persuaded Chelswu to go to America.’

Second, verbs like *kkosita ‘entice’ may take an ACC-marked object, but not a DAT-marked one, as shown in (76). Predicate fronting is possible only when the ACC-marked object is used, as in (77).16

(76)  
       I-Top C.-ACC entice-PAST-DEC
       I-Top C.-DAT entice-PAST-DEC
       ‘I enticed Chelswu.’

(77)  
       America-LOC go-IMP-C I-Top C.-ACC entice-PAST-DEC
       America-LOC go-IMP-C I-Top C.-DAT entice-PAST-DEC
       ‘I enticed Chelswu to go America.’

Third, verbs like *hata ‘do’ take a DAT-marked object only, as in (78), and predicate fronting is allowed only when a DAT-marked object is used, as in (79a). Cases like (79b) are particularly interesting because the sentence becomes acceptable when the embedded predicate follows the ACC-marked object Chelswu-lul, as in (79c).

(78)  
       I-Top C.-DAT do-PAST-DEC
   b. Na-nun Chelswu-lul ha-yess-ta.
       I-Top C.-ACC do-PAST-DEC
       ‘I did it to Chelswu.’

(79)  
       America-LOC go-C I-Top C.-DAT do-PAST-DEC
   b. Mikwuk-ey ka-key na-nun Chelswu-lul ha-yess-ta.
       America-LOC go-C I-Top C.-ACC do-PAST-DEC

16 Ahn and Cho (2008) report that the embedded predicate in (77) can be licensed if it follows its subject Chelswu-eykey, as in (i). But I do not agree with the factual claim that they make for (i), which is simply ungrammatical to me.

(i)  
% Na-nun Chelswu-eykey Mikwuk-ey ka-la-ko kosi-ess-ta.
    I-Top C.-DAT USA-LOC go-IMP-C entice-PAST-DEC
    ‘I enticed Chelswu to go to America.’
Ahn and Cho’s (2008) observation strengthens the claim that an embedded predicate can be fronted over the object base-generated in the higher clause. As shown in (74)–(79), predicate fronting is possible only if the object can stand alone as the sole argument of the main verb and bears the correct morphology that the main verb assigns to it. The object in the higher clause does not belong to the same Spell-out domain as the embedded predicate, and thus the embedded predicate may precede the object without any ordering conflicts.

A comment on (79c) is in order, however. If Chelswu-ulu cannot be an argument of the main verb, as in (78b), it is not clear what the status of Chelswu-ulu in (79c) is. Given the contrast between (79b) and (79c), Ahn and Cho (2008) assume that Chelswu-eyekey belongs to a different Spell-out domain from the embedded predicate, whereas Chelswu-ulu must belong to the same Spell-out domain as the embedded predicate, but they do not provide evidence for this. I do, however, believe that their approach is on the right track. Here, I provide some independent evidence for this hypothesis from the semantic interpretation of (79c).

Depending on which Case marking we use, we obtain different semantic interpretations for (79c). If Chelswu-eyekey is used in (79c), the sentence means ‘I did something to Chelswu in order to make him go to America.’ If Chelswu-ulu is used in (79c) instead, it means ‘I caused Chelswu to go to America.’ The former can be used only if I performed some intentional action on Chelswu, but the latter can be used if my accidental, unintentional behavior caused the event of Chelswu going to America. From a syntactic viewpoint, the infinitival clause in (79c) is interpreted as a purposive adjunct with Chelswu-eyekey, whereas it is interpreted as a causative complement with Chelswu-ulu.

This semantic difference naturally follows if we assume that Chelswu-eyekey is an object of the main verb, and that Chelswu-ulu is the subject of the embedded clause. The clause that follows Chelswu-eyekey is an adjunct of a Control type. Thus, predicate fronting to the left of Chelswu-eyekey is grammatical, as in (79a). By contrast, the clause that follows Chelswu-ulu is a complement of the main verb. Since Chelswu-ulu and the embedded predicate are externally merged in the same predicational domain, predicate fronting is disallowed in (79b).

This leads us to expect that if a causative verb cannot take a nominal object, predicate fronting should be impossible regardless of Case marking on the embedded subject. The examples in (80) and (81) show that this is indeed the case. Verbs like mantulta ‘make’ cannot take a direct object whether it is Dst-marked or Acc-marked, as shown in (80). As illustrated in (81a), the verb may be used as a causative verb,
and in those cases, the causee can be marked either by Dative or Accusative Case. As shown in (81b) and (81c), predicate fronting is impossible over the causee regardless of its Case marking, as expected.

(80)  
a. ?* Na-nun Chelswu-eykey mantul-ess-ta.  
I-TOP Chelswu-Dat make-PAST-DEC  
b. ?* Na-nun Chelswu-lul mantul-ess-ta.  
I-TOP Chelswu-Acc make-PAST-DEC  

'I made Chelswu (do something).'

(81)  
I-TOP Chelswu-Dat/Chelswu-Acc money-Acc make-C make-PAST-DEC  
'I made Chelswu make money.'  
b. ?* Ton-ul pel-key na-nun Chelswu-eykey mantul-ess-ta.  
money-Acc make-C I-TOP Chelswu-Dat make-PAST-DEC  
'I made Chelswu make money.'  
c. ?* Ton-ul pel-key na-nun Chelswu-lul mantul-ess-ta.  
money-Acc make-C I-TOP Chelswu-Acc make-PAST-DEC  
'I made Chelswu make money.'

Semantically, the examples in (81) are interpreted as causative constructions (but not as a purposive adjunct) whether we take Chelswu-eykey or Chelswu-lul, in contrast to the ambiguity of (79c). This implies to us that both Chelswu-eykey and Chelswu-lul in (81) are base-generated in the embedded clause, and linearized together with the embedded predicate. Thus, under CL, it is expected that the embedded predicate ton-ul pel-key cannot precede the embedded subject regardless of its Case marking.

4.3.4 Summary

In this section, we have seen ordering restrictions in infinitival complement domains. I have argued that infinitival clauses undergo cyclic Spell-out with their subject as a predicational unit. As a consequence of CL, the embedded predicate must follow the embedded subject. Apparent predicate fronting is in fact clausal fronting, which contains the embedded predicate and a null subject anaphorically related to an object in the higher clause. On the basis of this argument, I have explained why predicate fronting out of a complement clause is possible only when the main verb may take a direct object or a proleptic object in the higher clause. The symmetry between the two types of small clause and two types of infinitival clause provides further support for the current view that CL is responsible for the (im)-possibility of predicate fronting.
4.4 Sentential Predication in multiple-subject constructions

In the preceding section, I adopted J. H.-S. Yoon’s (2007) proposal that the raised object in SOR is a Major Subject in the embedded clause. Furthermore, I assumed that the Major Subject and following Sentential Predicate undergo Spell-out as a predicational unit, and thus the embedded predicate (or embedded clause) cannot precede the raised object in SOR constructions. In this section, I examine some important implications of this proposal for Multiple Nominative Constructions (MNCs) in Korean, which contain a Major Subject. Some representative MNCs are taken from Yoon (2007) and illustrated in (82).

(82) a. Cheli-ka apeci-ka pwuca-i-si-ta.
   C.-NOM father-NOM rich-COP-HON-DEC
   ‘Cheli’s father is rich.’

   J.-NOM height-NOM great-DEC
   ‘As for John, his height is great/tall.’

c. I hakkyo-ka enehakkwa-ka coh-ta.
   this school-NOM linguistics-NOM good-DEC
   ‘The linguistics department at this school is very good.’

d. Pwukhansan-i mwul-i manhi nanta.
   Mt.P.-NOM water-NOM a.lot flows
   ‘As for Mt Pwukhan, a lot of springs flow (from it).’ (J. H.-S. Yoon 2007)

Yoon (2007) argues that in the examples in (82), the initial NOM-marked noun is interpreted as the Major Subject, and the following sentence functions as a Sentential Predicate which denotes a property of the Major Subject. The syntactic relationship between the Major Subject and Grammatical Subject in MNCs can be diverse. The Major Subject can be a possessor of the Grammatical Subject (e.g. a kinship relationship in (82a), or a part–whole relationship in (82b)), and it can also be a scene-setting adjunct of the lower clause (e.g. a locative PP in (82c), a source PP in (82d)).

As Yoon (2004; 2007) extensively argues, MNCs can be established only when the Sentential Predicate satisfies the ‘characteristic property’ condition (essentially the same as the ‘aboutness condition’ of Kuno 1973), stated in (83) (see also Hong 1997).

(83) ‘Characteristic property’ condition in MNCs (J. H.-S. Yoon 2007: 626)
   b. Preference for the lexical predicate to be an individual-level predicate.
   c. Preference for the Major Subject to be more salient than Grammatical Subject.
The sentence following the Major Subject is already a complete predicational unit, but it turns into a Sentential Predicate which denotes a property of the Major Subject. Thus, MNCs are most natural when the lexical predicate describes a generic/habitual property of the Major Subject, when the predicate is an individual-level predicate (instead of a stage-level predicate), or when the Major Subject functions as the most salient topic or focus of the sentence. For instance, (84a) is judged grammatical as an MNC because the Sentential Predicate ‘people read it with joy’ can be taken as a general property of the Major Subject ‘this kind of book’. By contrast, (84b) is judged quite unnatural because the sentence ‘Cheli reads it now’ cannot be interpreted as a general property of ‘this book’ under normal circumstances.

(84) a. *Ilen chayk-i₁ [salamtul-i₁ pro₁ culkye ilknunta].
   this.kind book-NOM people-NOM with.joy read
   ‘As for this kind of book, people enjoy reading it.’

b. Ilen chayk-i₁ [Cheli-ka pro₁ cikum ilknunta].
   this book-NOM C.-NOM now read
   ‘Cheli reads this kind of book now.’ (J. H.-S. Yoon 2007)

It has been argued that the Major Subject must be base-generated in the left periphery of the sentence in MNCs (e.g. Doron and Heycock 1999; Heycock 1993; J. H.-S. Yoon 1987; 2004; 2007). For instance, the initial noun ilen chayk-i₁ ‘this kind of book-NOM’ in (84a) is interpreted as the Major Subject, and co-indexed with a null pronoun inside the Sentential Predicate. The set of evidence adduced by Yoon (2007) further supports the conjecture that the Major Subject is base-generated outside the Sentential Predicate.

To be specific, the Major Subject (the initial NP in MNCs) may be co-indexed with a gap or resumptive pronoun within an island, as in (85a). It is also possible that the Major Subject is not co-indexed with any constituent within the Sentential Predicate, as in (85b). The Major Subject must scope over the arguments inside the Sentential Predicate as in (86), and it must be interpreted as a specific and presuppositional element, as in (87) and (88). All the properties described in (85)–(88) can be captured under the assumption that the Major Subject is base-generated above the Sentential Predicate, and there is no trace of the Major Subject inside the Sentential Predicate.

No island effects

(85) a. Yenghi-ka [[(kunye-uy) apeci-ka ha-si-nun] saep]-i
   Y.-NOM she-GEN father-NOM do-HON-REL business-NOM
   manghayssta.
   went.bankrupt
   ‘As for Yenghi, the business her father was running went bankrupt.’
b. Enehak-i chwicik-i yocum elyep-ta.
   linguistics-NOM employment-NOM these.days difficult-DEC
   ‘As for linguistics, getting a job is difficult these days.’

High scope
(86) Sey-myeng-uy haksayng-i pwumo-ka enu kyoswu-eykey-na
   3-CL-GEN student-NOM parent-NOM which professor-DAT-ever
   sokaytoyessta.
   be.introduced
   ‘Three (specific) students’ parents were introduced to every professor.’
   (3>>every, *every>>3)

Specific Major Subject
(87) a. Etten haksayng-i apeci-ka hakkyo-ey cacwu osin-ta.
    Certain student-NOM father-NOM school-LOC often come-DEC
    ‘Some specific student’s father often comes to school.’ (specific only)

b. Etten haksayng-uy apeci-ka hakkyo-ey osin-ta.
   Certain student-GEN father-NOM school-LOC come-DEC
   ‘Some student’s father comes to school.’ (specific/non-specific)

Presuppositional Major Subject
(88) a. Myech-myeng-uy haksayng-i pwumo-ka chotaytoyess-ni?
    how.many-CL-GEN student-NOM parents-NOM were.invited-QUES
    ‘How many of the students had their parents invited to the event?’
    (presuppositional)

b. Myech-myeng-uy haksayng-uy pwumo-ka chotaytoyess-ni?
   how.many-CL-GEN student-GEN parents-NOM were.invited-QUES
   ‘How many (of the) students had their parents invited to the event?’
   (presuppositional/cardinal readings)

With this background for MNCs, let us consider predictions for ordering patterns in MNCs under the CL model. The most representative Major Subject is the initial NOM-marked noun in MNCs. If a predicational unit undergoes Spell-out, as argued for SOR, we predict that the Major Subject and Sentential Predicate in MNCs also undergo Spell-out. Specifically, we predict that the Major Subject must precede the Grammatical Subject and the clause that contains the Grammatical Subject and lexical predicate, regardless of the categorial status of the Major Subject. Given the claim that the Major Subject is base-generated at the left periphery of the sentence, as in (89), it is predicted that even a low adjunct PP or a thematic object must precede
the Grammatical Subject when they function as a Major Subject. The examples in (90)–(92) show that this is indeed the case.\footnote{I assume that maximal projections that contain empty operators in their specifier position may function as a predicate (see Rothstein 1983; Baltin 1995). On this view, the embedded CP in (i) is viewed as a predicate. Similarly, TP in (89) functions as a predicate for the Major Subject.}

(89) $\begin{array}{c}
\text{C} \\
\text{MS}_1 \rightarrow \text{TP} \\
\text{TP} [\text{Sentential Predication}] \\
\text{Op}_1 [\text{GS... pronoun/}\text{ec}_1 ]... \quad \text{[co-indexation]} \quad \text{(cf. J. H.-S. Yoon 2007; n. 18 below)}
\end{array}$

In (90), the Major Subject $\text{John-i}$ must precede not only the Grammatical Subject $\text{apeci-ka} \quad \text{‘father-NOM’}$, as shown by (90b), but also the internal argument $\text{wuphyo-lul} \quad \text{‘stamp-ACC’}$, as shown by (90c). This is in sharp contrast with (90d), where scrambling of the internal argument $\text{wuphyo-lul} \quad \text{‘stamp-ACC’}$ is possible over the subject complex $\text{John-uy apeci-ka} \quad \text{‘John-GEN father-NOM’}$. If (90c) and (90d) had the same base structure, the contrast between the two would be surprising. Under the analysis in (89), however, this contrast is in fact expected.

(90) $\begin{array}{ll}
\text{MNC with habitual predicates} \\
\text{a. \quad \{} & [\text{PredP} \quad \text{\quad John-i} \quad [\text{PredP} \quad \text{\quad apeci-ka} \quad \text{\quad wuphyo-lul} \quad \text{\quad mou-si-n-ta.]}] \\
\quad & \text{John-NOM} \quad \text{\quad father-NOM} \quad \text{\quad stamp-ACC} \quad \text{\quad collect-HON-PRES-DEC} \\
\end{array}$

‘John’s father collects stamps.’

$\begin{array}{ll}
\text{b. \quad *\{} & [\text{PredP} \quad \text{\quad Apeci-ka}_1 \quad \text{\quad John-i} \quad [\text{PredP} \quad \text{\quad t}_1 \quad \text{\quad wuphyo-lul} \quad \text{\quad mou-si-n-ta.]}] \\
\end{array}$

\begin{array}{ll}
\quad & \text{\quad father-NOM} \quad \text{\quad John-NOM} \quad \text{\quad stamp-ACC} \quad \text{\quad collect-HON-PRES-DEC} \\
\end{array}$

$\begin{array}{ll}
\text{c. \quad *\{} & [\text{PredP} \quad \text{\quad Wuphyo-lul}_1 \quad \text{\quad John-i} \quad [\text{PredP} \quad \text{\quad apeci-ka}_1 \quad \text{\quad t}_1 \quad \text{\quad mou-si-n-ta.]}] \\
\end{array}$

\begin{array}{ll}
\quad & \text{\quad stamp-ACC} \quad \text{\quad John-NOM} \quad \text{\quad father-NOM} \quad \text{\quad collect-HON-PRES-DEC} \\
\end{array}$

$\begin{array}{ll}
\text{d. \quad \{} & [\text{PredP} \quad \text{\quad Wuphyo-lul}_1 \quad \text{\quad John-uy} \quad \text{\quad apeci-ka}_1 \quad \text{\quad t}_1 \quad \text{\quad mou-si-n-ta.]} \\
\end{array}$

\begin{array}{ll}
\quad & \text{\quad stamp-ACC} \quad \text{\quad John-GEN} \quad \text{\quad father-NOM} \quad \text{\quad collect-HON-PRES-DEC} \\
\end{array}$

When $\text{John}$ is $\text{GEN}$-marked, as in (90d), the object and the subject belong to the same predicational unit (the primary $\nu$P domain), but the object $\text{wuphyo-lul}$ may undergo $\nu$P-internal movement to the left of $\text{John-uy apeci-ka}$ (recall object scrambling in Chapter 2). In contrast, when $\text{John}$ is $\text{NOM}$-marked, as in (90c), the sentence following $\text{John-i}$ must be interpreted as the Sentential Predicate, and $\text{John-i}$ in (90c) is base-generated above the Sentential Predicate. Since the Sentential Predicate cannot
undergo movement over its own (Major) Subject due to anti-locality, all the elements including the internal object wuphyo-lul must follow the Major Subject. Hence, the ungrammaticality of (90c) follows, which contrasts with (90d). Under this proposal, it is explained why (otherwise perfectly grammatical) object scrambling is banned over the Major Subject in MNCs. The examples in (91) replicate the same pattern with a stative predicate.

(91) MNC with stative predicates

a. \(\text{[PredP John-i [PredP apeci-ka yenge-lul cal ha-si-n-ta]]} \)
   \(\text{John-NOM father-NOM English-ACC well do-HON-PRES-DEC} \)
   'John’s father speaks English well.’

b. *\(\text{[PredP Apeci-ka, John-i [PredP t_i yenge-lul cal ha-si-n-ta]]} \)
   \(\text{father-NOM John-NOM English-ACC well do-HON-PRES-DEC} \)

c. *\(\text{[PredP Yenge-lul, John-i [PredP apeci-ka t_i cal ha-si-n-ta]]} \)
   \(\text{English-ACC John-NOM father-NOM well do-HON-PRES-DEC} \)

d. \(\text{[PredP Yenge-lul, John-uy apeci-ka t_2 cal ha-si-n-ta]} \)
   \(\text{English-ACC John-GEN father-NOM well do-HON-PRES-DEC} \)

The examples in (92) show that the Major Subject must precede the Grammatical Subject even when the Major Subject is interpreted as a thematic object of the verb. The Major Subject ilen chayk-i in (92a) is interpreted as the thematic object of the verb ‘read’, but crucially, it must precede the Grammatical Subject salamtul-i ‘people-NOM’. If it follows the Grammatical Subject, as in (92b), the sentence becomes ungrammatical. This is in contrast with the example in (92c), where the thematic object is marked with an Accusative Case.

(92) a. \(\text{[PredP Ilen chayk-i, [PredP salamtul-i pro_i culkye ilknunta]]} \)
   \(\text{this.kind book-NOM people-NOM with.joy read} \)
   'As for this kind of book, people enjoy reading it.’

b. *\(\text{[PredP Salamtul-i, ilen chayk-i, [PredP t_i pro_i culkye ilknunta]]} \)
   \(\text{people-NOM this.kind book-NOM with.joy read} \)

c. \(\text{[PredP Salamtul-i ilen chayk-ul culkye ilknunta]} \)
   \(\text{people-NOM this.kind book-ACC with.joy read} \)

If (92a) and (92c) shared the same underlying structure, the ungrammaticality of (92b) would remain unexplained. These facts reported in (92) can be best captured if we assume that the Major Subject ilen chayk-i is base-generated above the Sentential Predicate in (92a). The Major Subject ilen chayk-i is externally merged to the left of the Sentential Predicate, and the Predicate cannot move over its own subject within
the same Spell-out domain. If CL applies to the predicational unit that contains the Major Subject and the Sentential Predicate, it follows that the Major Subject must precede the elements contained in the Sentential Predicate.\textsuperscript{18}

J. H.-S. Yoon’s (2007) proposal on MNCs also has some implications for the interpretation of floating quantifiers in MNCs. According to Yoon, the Major Subject must be interpreted as a specific, presuppositional noun. If we tie this claim with my proposal for types of floating quantification in Korean, we predict a particular type of floating Qs may appear in MNCs. Specifically, we expect that floating Qs of an adverbial type may appear in MNCs, but adnominal Qs cannot. Since the associate noun for adverbial floating Qs is interpreted as an exhaustive, presuppositional, specific noun, it can be interpreted as a legitimate Major Subject. In contrast, the host noun for adnominal NQs is interpreted as non-specific with a cardinal meaning of numerals. Thus, it is expected that adnominal NQs should not be associated with a Major Subject. The facts in (93)–(95) uphold this expectation. AdvFQs such as \textit{motwu ‘all’} and \textit{ney-kay-ka ‘4-CL-NOM’} can be associated with the Major Subject in MNCs, as in (93a,b) and (94a,b). Bare NQs with a cardinal meaning such as \textit{ney-kay} in (93c) and \textit{ney-myeng} in (94c) are not felicitous in the same context.\textsuperscript{19}

\begin{itemize}
  \item (93) a. $[\text{PredP} \ \text{ilen hakkyo-tul-i motwu} \ [\text{PredP} \ \text{enehakkwa-ka coh-ta}]]$.

  This school-PL-NOM all linguistics-NOM good-DEC

  ‘All the linguistics departments at this kind of school are very good.’

  b. $[\text{PredP} \ \text{ilen hakkyo-ka ney-kay-ka} \ [\text{PredP} \ \text{enehakkwa-ka coh-ta}]]$.

  This school-NOM 4-CL-NOM linguistics-NOM good-DEC

  ‘Four of this kind of school have good linguistics departments.’
\end{itemize}

\textsuperscript{18} It is not the case that the Major Subject is always the first element in the sentence. As in (i), some evaluative adverbs may precede the Major Subject. It is noteworthy, however, that the meaning of (i.a) differs from that of (i.b). In (i.a), the adverb ‘fortunatly’ receives a speaker-oriented reading, whereas it receives a Major Subject-oriented reading in (i.b). This suggests that the Major Subject can be base-generated above or below the evaluative adverb \textit{tahaynghito ‘fortunately’}. If the Major Subject had undergone movement in (i.b), we would expect that (i.b) would be ambiguous between the speaker-oriented and MS-oriented readings, contrary to the facts. I thus assume that the Major Subject is adjoined to TP (above the Grammatical Subject) and may move to a higher A’-position as long as the condition in (83) is met (cf. J. H.-S. Yoon 2007, who argues that the Major Subject is merged in the highest A’-position).

\begin{itemize}
  \item (i) a. Tahaynghito \textit{John-i apeci-ka yenge-lul cal ha-si-n-ta}.

  Fortunately John-NOM father-NOM English-ACC well do-HON-PRES-DEC

  ‘Fortunately, John’s father speaks English well.’ (speaker-oriented reading)

  b. \textit{John-i tahaynghito apeci-ka yenge-lul cal ha-si-n-ta}.

  John-NOM fortunately father-NOM English-ACC well do-HON-PRES-DEC

  ‘Fortunately, John’s father speaks English well.’ (MS-oriented reading)
\end{itemize}

\textsuperscript{19} (94c) can be made acceptable when \textit{haksayng-tul-i ‘student-Pl-NOM’} is contrastively focused and the numeral is interpreted as an exhaustive quantifier. See 3.4.5 for the contexts where a bare NQ is interpreted as an adverbal Q with exhaustive focus.
c. *[PredP  Ilen hakkyo-ka ney-kay [PredP enehakkwa-ka coh-ta]].
   this school-NOM 4-Cl linguistics-NOM good-Dec
   ‘Four of this kind of school have good linguistics departments.’

(94) a. [PredP  Haksayng-tul-i motwu [PredP pwumo-ka chotay-toy-ess-ta]].
   Student-Pl-NOM all parent-NOM invite-Pass-Past-Dec
   ‘The parents of all the students were invited.’

b. [PredP  Haksayng-tul-i ney-myeng-man [PredP pwumo-ka chotay-toy-ess-ta]].
   Student-Pl-NOM 4-Cl-only parent-NOM invite-Pass-Past-Dec
   ‘The parents of only four of the students were invited.’

c. %[PredP  Haksayng-tul-i ney-myeng [PredP pwumo-ka chotay-toy-ess-ta]].
   Student-Pl-NOM 4-Cl parent-NOM invite-Pass-Past-Dec
   ‘The parents of four of the students were invited.’ (specific with focus)

The examples in (95) show the same point. As illustrated in (88), repeated here as (95a), ‘how many’ questions in MNCs are interpreted as presuppositional questions. A Case-marked NQ (of the adverbial type) can appear in MNCs, as shown in (95b), and maintain the presuppositional meaning observed in (95a). In contrast, ‘how many’ without Case marking cannot be licensed in the same position, as seen in (95c). This is expected if we assume that myech-myeng in (95c) is interpreted as a bare NQ of the adnominal type, which strongly prefers the cardinal meaning. The cardinal meaning of ‘how many’ in (95c) conflicts with the preference for the presuppositional meaning of the Major Subject in MNCs.

(95) **Presuppositional ‘how many’ questions and adverbial Q**

a. [PredP  Myech-myeng-uy haksayng-i [PredP pwumo-ka chotay-toy-ess-ni]]?
   how-many-Cl-Gen student-NOM parents-NOM invite-Pass-Past-QueS
   ‘How many of the students had their parents invited to the event?’
   (presuppositional)

b. [PredP  Haksayng-tul-i myech-myeng-i [PredP pwumo-ka chotay-toy-ess-ni]]?
   Student-Pl-NOM how-many-Cl-Nom parent-NOM invite-Pass-Past-QueS
   ‘How many of the students had their parents invited to the event?’
   (presuppositional)

c. ??[PredP  Haksayng-tul-i myech-myeng [PredP pwumo-ka chotay-toy-ess-ni]]?
   Student-Pl-Nom how-many-Cl parent-NOM invite-Pass-Past-QueS
   ‘How many (of the) students had their parents invited?’
   (cardinal/non-presuppositional)

One important issue that I cannot resolve in this work concerns the data reported in my previous studies (Ko 2005a; 2007), in which I reported that the object cannot intervene between the possessor and the possessee, as illustrated in (96). In Ko (2005a), I adopted a possessor raising analysis for inalienable possession
constructions (cf. e.g. D.-I. Cho 1993; S. Cho 2000; Choe 1987; Chun 1985; Gerdts 1991; Kang 1987; Kim 1989; 1990; Kitahara 1993a; Maling and Kim 1992; Sim 2004; Ura 1996; Yoon 1990 for discussion of the syntax and semantics of inalienable possession constructions in Korean; refer to Yeon (2011: ch. 8) for various pragmatic properties of inalienable possession constructions in Korean and limitations of formal approaches to them). There, I argued that the possessor John-i is externally merged as a constituent with the possessee apeci-ka at the edge of vP, and thus the object cannot intervene between the two subjects (as an instantiation of the EG at the vP domain). If, however, John-i is merged separately from the Sentential Predicate, as assumed here, there is no reason to block the ordering in (96).

(96) * [PredP John-i, [PredP wuphyo-lul, pro, apeci-ka, t, mou-si-n-ta.]]
   ‘John’s father collects stamps.’

Suppose that the object wuphyo-lul is scrambled to the left of the Grammatical Subject apeci-ka and then John-i is merged above the Sentential Predicate. We then expect that (96) would not cause a problem for the purpose of linearization. As reported in Ko (2005a), it is generally true that an internal argument or low adjunct cannot be scrambled over the Grammatical Subject when a Major Subject precedes it. It seems that the intervening object triggers some intervention effect for the binding of pro in (96), but I leave it for future research how to formalize this idea.

4.5 Conclusion

In this chapter, we have seen various types of ordering restriction observed in complement predication domains. In particular, I have focused on the distribution of objects when they are interpreted as the subject of the embedded clause. It is not the case that an object may move freely. Rather, the distribution of the object is crucially affected by the argument structure of the main verb and embedded clauses. When the object is externally merged as the subject of a complement domain, the distribution of the object shows the same pattern as a subject in the primary predicational domain: strong order-preservation effects are observed for the object on the edge of the secondary predicational domain. When the object is merged as a direct object or proleptic object of the main verb, order-preservation effects for the lower predicational domain seem to be lifted. Important generalizations discussed in this chapter are summarized in (97).

(97) Ordering restrictions in complement predicational domains
   • When selected by an epistemic verb, a small-clause predicate cannot precede its subject or the subject-oriented NQ. But the small clause as a whole may undergo fronting to the left of the matrix subject. The epistemic verb cannot take a noun as its sole argument.
When selected by some episodic verbs, a small-clause predicate may precede the noun interpreted as its subject or subject-oriented NQ. Episodic verbs that allow predicate fronting may also take a noun as their sole argument.

Predicate fronting over an adverbial floating quantifier is impossible when the predicate is selected by an epistemic verb, but becomes possible when the predicate is selected by an episodic verb (which can take a noun as its sole argument).

An embedded predicate may not precede a raised object interpreted as the Major Subject of the embedded clause. But when the main verb takes a proleptic object, the embedded predicate may precede the object, which is interpreted as the subject of the embedded clause.

The embedded predicate of a Control verb may precede a noun which is interpreted as the subject of the embedded clause. The noun must bear the correct Case morphology assigned by the main verb.

A Major Subject must precede the Grammatical Subject and lexical predicate regardless of its syntactic category or thematic role.

I have shown that the ordering restrictions summarized in (97) may receive a principled account by the proposal that CL applies to predicational domains. In particular, by assuming that a predicational unit undergoes cyclic Spell-out as a whole, we can derive the ordering restrictions in (97). Under the probe-goal theory of movement, the subject cannot undergo movement within its predicational domain. Due to anti-locality of movement, the embedded predicate cannot undergo movement within its own predicational domain. Thus, CL leads us to predict that the subject of the embedded predicational domain (and the subject-oriented quantifier) must precede its own predicate. In this chapter, it has been shown that this prediction is supported by small-clause complements, Subject-to-Object Raising constructions, Control constructions, and Major Subject constructions. In the next chapter, I extend this claim to adjunct and secondary predicational domains, which include resultative and depictive predications and decomposed VPs in Korean and Japanese.
This chapter examines possible interactions between the underlying predicational structure and orderings at syntactic edges. In particular, the chapter discusses ordering patterns in and out of adjunct and secondary predicational domains.

In section 5.1, I present an observation that a resultative phrase headed by -key in Korean shows different ordering patterns from a resultative phrase headed by -ni in Japanese. I propose that this contrast can be captured by my proposals for syntactic edges, coupled with a theory of resultatives by Simpson (1983). It is shown that neither the edge nor the complement predicate may move within the resultative phrase, and this explains the rigid ordering patterns of resultatives in Korean. Order-preservation effects seem to be obviated when the resultative hosts a null subject associated with the object of a main verb, which explains the ordering patterns of resultatives in Japanese. In this section, we will see that there is an interesting correlation between (the lack of) order-preservation effects and Simpson’s (1983) law on resultative phrases.

In section 5.2, I consider order-preservation effects within depictive predicational domains in Korean and Japanese. It is argued that depictives are merged as an adjunct to a verbal projection in both Korean and Japanese (supporting Koizumi 1994), and that a null subject must be postulated within the depictive phrases. This explains otherwise surprising contrasts between resultatives and depictives in terms of (re-)ordering and scrambling out of their edges. In particular, my proposal captures the fact that adjunct resultative predication and depictive predication show the same ordering patterns, which contrast with resultative predication of a complement type.

This chapter also concerns predicational units within a decomposed VP. In section 5.3, I examine the interaction between the interpretation of ‘again’ and the distribution of the object and its associate quantifier. I assume that the semantic ambiguity of ‘again’ (e.g. restitutive, intermediate, and repetitive readings) must be derived from their diverse syntactic positions, following von Stechow (1996) and Bale (2007). I propose that hidden small clauses within a VP undergo cyclic Spell-out and
linearization. This explains why the semantic ambiguity of ‘again’ is correlated with certain types of orderings at the edge of small clauses. My proposal for small clauses within a decomposed VP is extended to ditransitive constructions in section 5.4. Section 5.5 concludes the chapter with remarks on some of the implications of my arguments for the theories of argument structure.

5.1 Resultative constructions

In this section, I examine ordering puzzles in resultative constructions in Korean and Japanese. It is shown that ordering patterns in resultative constructions in Korean and Japanese differ from each other. I propose that this contrast can be explained along the lines of the predictions for two types of small clause in Chapter 4, with a notable convergence with Simpson’s (1983) theory of resultatives. In doing so, I derive a previously unnoticed correlation between Simpson’s law and order-preservation effects within small-clause domains.

5.1.1 Two different types of resultative: the case of Korean

The syntax of secondary predication can be represented in two ways, ‘complementation’ or ‘adjunction’ (see e.g. Bowers 1993; den Dikken 2006a; Hale and Keyser 1993; Hoekstra 1988; Larson 1988; Stowell 1981; Williams 1994 for complementation analyses; e.g. Déchaine 1993; Legendre 1997 for adjunction analyses; see also n. 22 below for the contrast between a complex predicate and small-clause analysis). English, in particular, is argued to take both options for different constructions. Various syntactic tests for VP constituency such as VP-preposing, VP ellipsis, and do so-substitution show that resultatives are VP-internal and are attached at the same level as subcategorized PPs, in contrast to depictives. Some representative examples are given in (1)–(6).

A resultative predicate cannot be stranded under VP ellipsis or VP-fronting, on a par with a PP complement. In (1b), the preceding clause contains a resultative phrase the shutters open and in the following clause, the resultative predicate shut is stranded outside the VP-ellipsis domain. The sentence is ungrammatical, just as (1a) where a complement PP on the floor is stranded. In (2b), the VP phrase fasten them is fronted to the exclusion of the resultative predicate open, and the sentence is ungrammatical. The same pattern is found with a complement PP in (2a), where the subcategorized PP on the table is stranded after VP-fronting.

(1) a. *Jason put the book on the table, and Bill did so on the floor.
   b. *Bill fastened the shutters open, and Mary did so shut.

(2) a. *Jason said he would put the book on the table, and put the book he did on the table.
   b. *Bill said that he would fasten the shutters open and fasten them he did open.
A depictive phrase, on the other hand, can be stranded in these contexts, as shown by the grammaticality of (3a) and (3b). A depictive phrase _wide awake_ may survive next to VP ellipsis, as in (3a). A depictive phrase _tired_ in (3b) may be stranded when the main predicate _wipe the table_ is fronted. The evidence in (1)–(3) strongly suggests that resultative phrases in English pattern with a VP-internal complement, whereas depictive phrases pattern like a VP-external adjunct. ((1)–(3) are from Levin and Rappaport Hovav 1995: 49.)

(3) a. Jason wiped the table tired and Mary did so _wide awake_.
   b. Jason said that he would even wipe the table tired and _wipe the table_ he did
tired.

Furthermore, resultative phrases in English are relatively easy to extract from islands, as shown in (4) (Shim and den Dikken 2009). This suggests that resultatives in English must be categorized as a complement, which allows _wh_-extraction out of itself. Word order data in (5) and (6) also point to the same conclusion. A depictive phrase must be located further away from the verb when it appears with a resultative predicate, as in (5). This suggests that the resultative phrase is merged closer to a verb than the depictive phrase, which is in line with the hypothesis that the resultative phrase is base-generated as a complement of a verb.

(4) a. Jim hammered _the metal flat_.
   b. _How flat_ do you wonder whether Jim hammered _the metal _?

(5) a. I washed [[the car clean _resultative_ ] cold _depictive_ ].
   b. *I washed [[the car cold _depictive_ ] clean _resultative_ ]. (Rothstein 1983)

As illustrated in (6), a resultative predicate cannot appear in a double-object construction. This makes sense if the resultative phrase competes with one of the objects for VP-internal position and a verb cannot host three internal arguments. A depictive phrase, in contrast, is compatible with a double-object construction. These facts can be taken together as evidence for the claim that resultatives are inside the complement domain of V while depictive phrases are adjuncts outside the domain of V (see Baker 2003: 220–21 for further discussion).

(6) a. *I broke Chris a coconut [open _resultative_ ].
   b. I gave Chris the meat [raw _depictive_ ]. (Williams 1980)

Not all languages, however, employ the English strategy to represent secondary predication. A major distinction lies in the syntax and semantics of resultatives. Simpson (1983) observes that in English-type languages, resultatives can only be predicated of the (deep) object, not of the verb’s external argument. This generalization has often been called ‘Simpson’s law’. For instance, example (4a) above means that ‘the metal got flat as a result of Jim’s hammering’. It does not mean that
'Jim got flat [or 'tired' in a figurative meaning] as a result of hammering the metal' (but see Levin and Rappaport Hovav 1995 for apparent counterexamples and possible accounts; cf. Rappaport Hovav and Levin 2001 for some qualifications).

Simpson (1983), however, shows that in languages like Warlpiri, resultatives are readily predicatable of an internal or external argument. In (7), for instance, the resultative predicate kuntukuntu-karda ‘fat’ can be a predicate of the external argument puluku-rlu ‘the bullocks’.

(7) Puluku-rlu kapu-lu marna nga-rni kuntukuntu-karda.
    bullocks-ERG FUT-3PL grass-Abs eat-NPST fat-TRANSL
    'The bullocks will eat themselves fat on the grass.' (Simpson 1983: 153, Warlpiri)

Simpson (1983) captured the cross-linguistic difference by assuming that resultatives are merged as a complement in some languages (e.g. English) and as an adjunct in others (e.g. Warlpiri). Under the LFG framework, Simpson argues that if the resultative is an argument of the verb, as in English, we may posit a rule in the lexicon which specifies that the subject of the resultative predicate must be equivalent to the verb’s object. In contrast, if the resultative predicate is not an argument of the verb, as in Warlpiri, it is hard to state such a dependency—hence the resultative may take its subject rather freely (see e.g. Hoekstra 1988; Levin and Rappaport Hovav 1995 for alternative accounts).1

Turning to Korean, the resultative predicate in Korean shows a similar pattern to the one in Warlpiri-type languages. The resultative predicate in Korean is marked by -key or -tolok.2 As shown in (8), the resultative predicate aphu-key can either be the predicate of the subject Susana or the object Jim (see e.g. Kim and Maling 1997; Shim and den Dikken 2009; Wechsler and Noh 2001).

    Susana-NOM Jim-ACC in.pain-RES hit-PAST-DEC
    ‘Susana hit Jim so that she/he was in pain.’

1 As Levin and Rappaport Hovav (1995) discuss, many subsequent approaches have been developed to capture Simpson’s law. Levin and Rappaport Hovav argue that Simpson’s law (Direct Object Rule, in their term) can be best explained by a linking rule: namely, that an NP which refers to the entity that undergoes the change of state in the eventuality described in the VP must be the direct object of the verb or governed by the verb heading the VP. The linking rule is in accordance with Simpson’s approach in that only complement-type resultative phrases are governed by the main verb, and adjunct-type resultatives are not affected by the linking rule. I assume that Simpson’s description is basically correct. Without attempting to provide a further analysis of Simpson’s law, I take it as a diagnostic to distinguish between complement and adjunct types of resultatives.

2 See Lee and Lee (2003), Son (2008), and Yeo (2006) for some differences between -key and -tolok; but nothing in this book hinges on the choice between the two. See Ko (2011) for the ordering patterns of complement -key clauses, which differ from those of resultative -key clauses. There, I show the distributional properties of complement -key clauses are the same as those of small clauses with an epistemic verb seen in Ch. 4.
Furthermore, resultative constructions in Korean can be further divided into two subtypes: in one case, the argument interpreted as the subject of the resultative predicate (‘resultative subject’, hereafter RS) is marked by nominative Case, as (9a), and in the other case, it is marked by accusative Case, as exemplified in (9b).

    Jim-NOM floor-NOM white-RES paint-PAST-DEC
    ‘Jim painted the floor white.’ (RS-NOM with a transitive verb)

    Jim-NOM floor-ACC white-RES paint-PAST-DEC
    ‘Jim painted the floor white.’ (RS-ACC with a transitive verb)

The two constructions have different semantic and syntactic characteristics (see e.g. Hong 2005; Kim 1999; Lee 2006; Shim and den Dikken 2009; Wechsler and Noh 2001). Syntactically, transitive verbs allow either a nominative or accusative RS, as in (9), whereas intransitive verbs allow only the nominative RS, as in (10). The direct object of the verb can co-occur with the nominative RS, but not with the accusative RS, as shown in (11). Semantically, the accusative-marked RS must be the affected theme of the main verb, unlike the nominative RS. For instance, as noted by Shim and den Dikken (2009), the sentence in (9b) can only mean that Jim’s paint brush was directly targeting the floor, indicating that patak-ul is an affected direct object of the verb. In contrast, (9a) may express a reading in which the floor accidentally gets covered with white paint as a result of Jim’s painting clumsily, say, the ceiling.

    Jim-NOM throat-NOM/ACC hoarse-RES cry-PAST-DEC
    ‘Jim cried his throat hoarse.’ (RS-NOM with a unergative verb)

   b. Hoswu-ka kokitul-i/*ul cwuk-key el-ess-ta.
    lake-NOM fish-NOM/ACC die-RES freeze-PAST-DEC
    ‘The lake froze (and so) the fish died.’ (RS-NOM with an unaccusative verb)

    Jim-NOM rice-ACC belly-NOM/ACC explode-RES eat-PAST-DEC
    ‘Jim ate some rice (until his belly got) full.’ (Shim and den Dikken 2009)

Given the properties of resultatives discussed above, Shim and den Dikken (2009) categorize Korean resultative predication into an adjunct type (following Simpson 1983), and propose the structure (12) for resultative phrases in Korean. They provide independent arguments for (12), based on VP replacement, VP topicalization,
recursion, and so forth, which are not repeated here (see Shim and den Dikken 2009 for details; cf. Son (2008) and n. 5 below for possible objections and alternatives).

(12) $[vP_2 [TP-adjunct subject-controlled resultative] [vP_1 subject [VP_2 [TP-adjunct object-controlled resultative] [VP_1 object V]] v]]$

Shim and den Dikken (2009) further argue that the nominative RS is analyzed as a subject of the RP while the accusative one is an object of the main predicate, as described in (13). In both constructions, the resultative phrases are understood as adjuncts of the main verb, but a null argument is placed in different positions in the two constructions. For the nominative RS construction, the verb may simply be intransitive, or select pro as its object if it is transitive, as in (13a). For the accusative RS construction, the verb must be transitive and take the RS as its direct argument, and pro is licensed inside the resultative adjunct RP, as in (13b).

(13) a. $[vP S [VP [resultative RS-NOM predicate-key] [vp (pro) V]]]: (9a), (10a,b)

b.$[vP S [VP [resultative pro predicate-key] [vp RS-ACC V]]]: (9b)

On this proposal, it is naturally expected that the nominative RS can appear either with an intransitive verb or with a transitive verb since it is the subject of an adjunct clause. It is also expected that the accusative RS must appear with a transitive verb as an affected theme, since it is in fact the object of the main verb (see e.g. Hong 2011; Jang 1997; Kang 2001; Kim 1993; 1999; Kim and Maling 1997; M. Lee 2006; Lee and Lee 2003; Son and Svenonius 2008; Wechsler and Noh 2001 for general discussions of Korean resultatives).³

When taken together with my proposal for edges, the hypotheses in (13) lead us to make a set of predictions concerning possible orderings in resultative constructions. Consider first the case where the RS is marked with nominative Case, as illustrated in (14).

³ The structures in (13) describe object-oriented resultative constructions where the resultative subject is semantically related to the main object. (13) can naturally be extended to subject-oriented resultatives so that the pro/nominative subject is co-indexed with the main subject. Wechsler and Noh (2001) argue that Korean resultatives do not allow a pro subject (cf. (13b)), but their arguments are misguided by incorrect generalizations. First, they argue that resultative phrases in Korean can undergo fronting, unlike a clause containing a pro subject. As shown in (i), however, pro-clauses can undergo fronting. Second, they argue that an overt pronoun cannot appear in the position of pro in (13a), which is incorrect. As in (ii), it might be redundant to use a pronoun in the resultative clause, but the sentence is still grammatical. They also argue that -tolok cannot appear with (13b)-type structures. As seen in (8), however, -tolok can be used with (13b).

(i) $[pro John-ul mannassta-ko] Mary-ka malhayssta.$

John-ACC met-C Mary-NOM said

‘Mary said that (she) met John.’


Jim-NOM horses-ACC they-NOM all tired-RS ran

‘Jim ran the horses until they all got tired.’
Nominative-marked resultative subject in Korean

\[ \text{RP} \]  
\[ nP \]
\[ \text{Rs} \text{NOM} \]
\[ \text{NQ} \]
\[ \text{predicate} \]
\[ \text{RELATOR} \]
\[-key/-tolok \]

If my proposal and (13a) (more precisely, (14)) are on the right track, we expect that a nominative RS cannot be separated from its adnominal NQ by a resultative predicate. In other words, we predict that the EG will hold in nominative RS constructions. As proposed in (13a) and (14), if the nominative RS and the resultative predicate are merged in the same predicational domain, we predict that the nominative RS cannot be separated from its NQ by a predicate-internal element. Neither RS nor NQ can undergo movement within RP, since they are externally merged on the edge. The relative orderings established within RP must be preserved in the later stages of derivation under the proposal that RPs undergo cyclic Spell-out.

Moreover, given the anti-locality of movement, the resultative predicate would not be able to precede the RS either (recall the discussion of predicate fronting out of a small clause in section 4.2). Since the space within the resultative RP is so limited, neither its subject nor the predicate can move around within the resultative RP. If RP undergoes Spell-out as a predicational unit, we further predict that the ordering at RP, namely RS\text{NOM} < NQ < predicate-key, must be fixed in the higher domain under CL. In other words, just as in the paradigms with a small-clause subject of an epistemic verb (e.g. (7)–(16) in Chapter 4), we predict a rigid order among the RS, its NQ, and a resultative predicate in nominative RS constructions.

The set of predictions described above is indeed upheld. As shown in (15), the nominative-marked RS koyangi-ka cannot be separated from its NQ sey-mali by the resultative predicate cwuk-key (or cwuk-tolok), as in (15b). Furthermore, the resultative predicate cannot be fronted to the left of the nominative-marked RS, as shown in (15c). The data in (15) thus provide further support for the structure in (13a)/(14) and the EG.\(^4\)

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\(^4\) Marcel den Dikken (p.c.) asks whether pro may leave a floating NQ. The data in (15b) suggest that pro cannot license an associate NQ. If pro could license an NQ, we would expect examples like (15b) to be grammatical with the structure in (i), contrary to fact. Moreover, if pro could be the host of an NQ, we would expect that (ii) would be grammatical in Korean, contrary to the facts, as discussed in Ch. 3. For sentence (ii) to be grammatical, a Case-marked NQ (e.g. sey-myeng-i) must be used in Korean. This is different from PRO, which can license an NQ (see 2.4).

(i) \[ [S [\text{cat-NOMi die-Res} \text{ proi 3-Cll beat}]] \]
(ii) \[ *\text{proi sey-myeng maykwu-lul masiesssta.} \]
\[ 3-\text{Cl} \text{ beer-ACC drank} \]
‘Three (of them) drank beer.’ (Korean)
(15) **Nominative-marked resultative subject and NQ**

a. Chelswu-nun koyangi-ka sey-mali cwuk-key/tolok ttayliessta.
   Chelswu-\textsc{top} cat-\textsc{nomp} 3-\textsc{cl} die-\textsc{res} beat
   ‘Chelswu beat three cats dead.’

b. *Chelswu-nun koyangi-ka cwuk-key/tolok sey-mali ttayliessta.
   Chelswu-\textsc{top} cat-\textsc{nomp} die-\textsc{res} 3-\textsc{cl} beat
   ‘Chelswu beat three cats dead.’

c. *Cwuk-key/tolok Chelswu-nun koyangi-ka sey-mali ttayliessta.
   die-\textsc{res} Chelswu-\textsc{top} cat-\textsc{nomp} 3-\textsc{cl} beat
   ‘Chelswu beat three cats dead.’

Consider now the case where the RS is marked with accusative Case. We then make the opposite prediction of (13a)/(14). If (13b) is on the right track, the seemingly accusative-marked 'RS' is in fact the direct object of the main predicate, and the object and the secondary predicate are merged in separate predicational domains, as described in (16). It is then expected that the object may move across the resultative predicate, stranding an NQ (cf. (15b)).

(16) **Accusative-marked object, anaphorically related to the pro resultative subject**

$$
[vP \quad \textsc{obj}_{\text{acc}} \quad S \quad [vP \quad [rP \quad \text{pro predicate-key}]] \quad [nP \quad \text{t \quad \textsc{nomp} \quad \textsc{v}] \quad v)]
$$

As exemplified in (17), the prediction described in (16) is also borne out. The accusative-marked RS koyangi-lul and its NQ sey-mali can be separated by cwuk-key, in contrast to the nominative-marked RS in (15b). Note also that the resultative predicate may precede koyangi-lul in (17c), in contrast to (15c). This is expected if the entire RP including the null subject undergoes fronting to the left of the direct object or to the left of the main subject. If the object and the RP are externally merged in different predicational domains, as in (16), there is no reason to block the possible scenario for (17c), where the entire RP undergoes fronting to the left of the object (and the main subject). Alternatively, the resultative adjunct RP could simply be
base-merged higher than the direct object in (17c). In either case, we would expect (17c) to be grammatical, in contrast to (15c).5

(17) **Accusative secondary subject and NQ**

a. Chelswu-nun koyangi-lul sey-mali cwuk-key/tolok ttailiessta.  
Chelswu-Top cat-ACC 3-Cl die-RES beat  
‘Chelswu beat three cats (until they) died.’

b. Chelswu-nun koyangi-lul cwuk-key/tolok sey-mali ttailiessta.  
Chelswu-Top cat-ACC die-RES 3-Cl beat  
‘Chelswu beat three cats (until they) died.’

c. Cwuk-key/tolok Chelswu-nun koyangi-lul sey-mali ttailiessta.  
die-RES Chelswu-Top cat-ACC 3-Cl beat  
‘Chelswu beat three cats (until they) died.’

Finally, we can observe the EG within the vP domain with resultative constructions as well. If object-oriented resultatives are merged within VP, as in (13), we would expect the main subject and a subject-oriented NQ to be inseparable by an object-oriented resultative predicate since they are all vP-domain-mates. This is indeed the case, as shown in (18).

(18) **Main subject, resultative predicates, and NQs**

students-NOM 3-Cl cat-ACC die-RES beat  
‘Three students beat a cat dead.’

students-NOM die-RES 3-Cl cat-ACC beat  
‘Three students beat a cat dead.’

Since the subject is merged on the edge of vP, it cannot undergo movement within vP. Thus, the vP-internal secondary predicate cannot intervene between the subject and the NQs in vP. Under CL, we correctly predict that this ordering restriction will be preserved. In short, the ungrammaticality of (18b) can be seen as another instance of the EG.6

5 Son (2008) argues that resultatives with RS-ACC (e.g. koyangi-lul in (17)) must be analyzed as a complementation type, whereas resultatives with RS-NOM (e.g. koyangi-ka in (15)) must be an adjunct type (following Song 2005; Yeo 2006; cf. Shim and den Dikken 2009). In fact, Son’s split analysis is compatible with my proposal as long as the small clause contains a null subject, as in (i). If the resultative predicate and the object are merged in separate predication domains, we expect the patterns reported in (17) whether the RP is an adjunct as in (13) or a complement as in (i). Due to the evidence adduced by Shim and den Dikken (2009), I adopt the adjunct analysis for Korean resultatives here. Even if (i) is a possible structure, it does not affect my main arguments.

(18b) is simply ungrammatical is noteworthy. It indicates that cwuk-key cannot be interpreted as a subject-oriented resultative either. This is in harmony with Shim and den Dikken’s proposal in (12). Under (12), the subject-oriented resultative is also a domain-mate with the

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(i) [vP [vP OBl (NQ)] [vP [rp [pro predicate] V]] V]

6 In addition, the fact that (18b) is simply ungrammatical is noteworthy. It indicates that cwuk-key cannot be interpreted as a subject-oriented resultative either. This is in harmony with Shim and den Dikken’s proposal in (12). Under (12), the subject-oriented resultative is also a domain-mate with the
Note that there are some interesting parallels between adjunct resultatives seen here and complement small clauses as discussed in Chapter 4. The subject of small clauses in epistemic-verb constructions and the nominative RS show the same distributional properties: they cannot be the sole argument of the main verb, predicate fronting is impossible, and strong order-preservation effects are observed. On the other hand, the accusative RS and the accusative-marked noun in episodic verb constructions behave in the opposite way: they can be interpreted as the sole argument of the main verb, predicate fronting is possible, and NQ stranding is much freer. In this section, I have shown that the parallel behavior listed above is not accidental, but the parallels between adjunct resultatives and complement small clauses can be naturally captured by assuming that predicational units in general undergo CL.

5.1.2 Two different types of resultative: the case of Japanese

In the preceding section, I argued that Korean -key resultatives are adjuncts, which do not observe Simpson’s law. Interestingly enough, however, Takezawa (1993) shows that Japanese -ni resultatives do obey Simpson’s law. As shown in (19), a transitive object and unaccusative subject may be associated with a resultative predicate marked with -ni. In contrast, the resultative cannot be the predicate of a transitive subject or an unergative subject, as illustrated in (20).

(19) Transitive object and unaccusative subject
      John-NOM ice cream-ACC solid-RES froze
      ‘John froze the ice cream solid.’
   b. Aisukuriimu-ga kotikoti-ni kootta.
      ice cream-NOM solid-RES froze
      ‘The ice cream froze solid.’

(20) Transitive subject and unergative subject
      John-NOM fish-ACC deep.black-RES burned
      *‘John burned the fish until he became black.’/√‘John burned the fish black.’
      John-NOM exhausted-RES danced
      ‘John danced until (he was) exhausted.’

If we extend Simpson’s typology to Japanese, we are led to assume that Japanese -ni resultatives involve complementation, unlike Korean -key resultatives.7 Also unlike

subject and the NQ in the vP domain. Thus, we correctly expect that a subject-oriented resultative cannot intervene between the subject and its NQ.

7 Though Takezawa did not mention Simpson’s law, Takezawa analyzed the facts in (19, 20) to indicate that -ni marked resultative predicates are base-generated in the complement domain of V.
Korean, Japanese lacks a nominative-marked RS that appears with unergative or transitive verbs (cf. (9a), (10a) for Korean; see Lee and Lee 2003 and references cited there). This fact is expected if we assume that RS-NOM must be licensed within an adjunct-type resultative and that Japanese lacks such a resultative. Specifically, I assume that -ni resultatives in Japanese are merged as a complement of the main verb, so they obey Simpson’s law (unlike adjunct -key resultatives in Korean). I further assume that a resultative subject in Japanese is externally merged within the resultative clause, and that the main verb assigns accusative Case to the resultative subject.

If the premises stated above are on the right track, we make predictions for Japanese resultatives which are quite different from the predictions for Korean resultatives. As described in (21), we expect the RS and its NQ to obey the EG, since they are externally merged on the edge of an RP. In particular, it is expected that the resultative predicate cannot intervene between the RS-ACC and its NQ (cf. predictions for (17) in Korean).

(21) RS-ACC in Japanese (cf. (16) for Korean)

```
RP

nP  RS-ACC  NQ  predicate  RELATOR-ni
```

The data in (22) suggest that this prediction is indeed upheld in Japanese. For instance, the accusative-marked resultative subject kuruma-o cannot be separated from its NQ ni-dai by the resultative predicate in (22a). Neither in (22b) can the accusative-marked resultative subject kodomo-o be separated from its NQ san-nin by the resultative predicate. The ungrammatical examples from Japanese in (22) contrast with their grammatical counterparts in (17) from Korean. Given the assumption that Simpson’s law correlates with the complementation analysis of resultatives, we can explain these otherwise unexpected contrasts between the two languages in the distribution of resultatives and floating NQs.

(22) *Transitive object<resultative predicate<NQ

John-NOM  car-ACC deep.red-RES 2-CL painted
‘John painted two cars red.’

John-NOM  children-ACC admirable-RES 3-CL raised
‘John raised three children to be admirable.’
(Takezawa 1993; I. Takayoshi, S. Miyagawa, p.c.)
Note also that the unaccusative subject and its NQ cannot be separated by a resultative predicate, as shown in (23). This is expected if we assume that the unaccusative subject in (23) is externally merged as the subject of the resultative predicate, just like the accusative-marked RS in (22).8

(23) \*Unaccusative subject < resultative predicate < NQ_{SUBJ}

   shirt-NOM 3-Cl muddy-RES became.dirty
   ‘Three shirts became dirty with dirt.’

b. \*Syatu-ga dorodarake-ni san-mai yogoreta.
   shirt-NOM muddy-RES 3-Cl became.dirty

It may also be useful to mention that the examples in (22) and (23) show again that the object is not exempt from ordering restrictions in licensing floating NQs. As seen in (24), the object/unaccusative subject seems to strand its associate NQs more freely than the transitive subject (as extensively discussed in Chapter 2). When the object and its NQ are merged at the edge of a predicational domain, however, they show the same type of ordering restriction as the transitive subject. With the oversimplified stipulation that the object may always license floating NQs, the contrast between (22, 23) vs. (24) would remain a mystery.9

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8 It seems that the ungrammaticality of (22) and (23b) is somewhat weaker, and subject to much speaker variation. Hideaki Yamashita (p.c.) notes that some speakers find the sentences in (22) acceptable in certain contexts (e.g., a question–answer pair). Until I conduct a large-scale experimental study on judgements, I cannot definitively answer why such variation occurs. One possibility is that speakers may assign focus to the NQ so that the NQ is interpreted as an adverbial. Another possibility is that speakers may employ a null subject strategy for these constructions, with varying degrees of acceptance for the null subject (similar to (23) for Korean episodic verb constructions in Ch. 4). It is also unclear whether judgement variation is crucially affected by the type of verb. For now, I leave these issues open.

9 Note that the data captured by the EG cannot be explained under the previous proposals that rely on the mutual c-command condition (cf. Miyagawa 1989). Takezawa (1993), for instance, argues that the sentences in (22) are ungrammatical because the -ni resultative predicate must be base-generated below the object and the NQ_{OBJ} to meet the mutual c-command condition, as in (i) (assuming a ternary branching structure). As in (iii), however, the resultative predicate can undergo scrambling and the object is also movable. Hence, under (i), it is unclear how the derivation in (ii) can be ruled out where the object and the predicate undergo multiple scrambling. Additionally, however, the data in (iii) indicate that a null subject strategy may be employed for Japanese resultatives (cf. (23); n. 8 above).

(i) (NP-ga) [VP NP-o NQ_{OBJ} X-ni V]
(ii) [NP-ga NP-o X-ni, [VP t_1 NQ_{OBJ} t_2 V]]
(iii) Massiro-ni Mary-ga [John-ga kabe-o t_1 nutta to] itta.
   White-RES Mary-NOM [John-NOM wall-ACC painted C] said
   ‘Mary said that John painted the wall white.’ (Takezawa 1993)
Transitive object and unaccusative subject in Japanese

a. Hon-o gakusei-ga go-satu katta.
   book-ACC student-NOM 5-CLbook bought
   ‘A student bought five books.’

b. Gakusei-ga ofisu-ni 2-ri kita.
   student-NOM office-to 2-CL came
   ‘Two students came to the office.’ (Miyagawa 1989: 43)

Lastly, we expect that a subject and subject-oriented NQ cannot be separated by the resultative predicate in Japanese, as in Korean. We expect to observe the EG in the vP domain in both languages. This prediction is borne out, as demonstrated in (25). Thus, the convergence and divergence between Korean and Japanese in the interactions of resultatives and floating NQs cannot be explained away by an assumption that Korean and Japanese resultatives are simply different. The observed pattern should be understood as a matter of structure, not of the grammatical function of a particular argument in a particular language.10

Japanese: *subject < resultative < NQ_SUBJ

a. Gakusei-ga san-nin kuruma-o makka-ni nutta.
   student-NOM 3-CL car-ACC deep.red-RES painted
   ‘Three students painted a car red.’

b. *Gakusei-ga makka-ni san-nin kuruma-o nutta.
   student-NOM red-RES 3-CL car-ACC painted
   ‘Three students painted a car red.’ (I. Takayoshi, p.c.)

Before closing this section, a note on the nature of the small-clause subject is in order. My arguments so far suggest that there is a certain relationship between the Case of a small-clause subject and the argument-hood of the small clause. If the small clause

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10 It is worth noting that Korean has another type of resultative phrase marked by -lo, as in (i). Interestingly enough, the -lo type resultatives do obey Simpson’s law (1983). The subject of lo resultatives must be either an object or unaccusative subject, in contrast to the pattern seen with -key resultatives in Korean. The transitive subject cannot be interpreted as the subject of -lo resultatives, unlike -key/-tolok resultatives. This suggests that -lo resultatives are merged as a complement of a verb, like Japanese -ni resultatives. We then expect that -lo resultatives would be subject to the EG, in contrast to the -key/-tolok resultatives in (17). The grammaticality of (i.a) and (i.b) seem to support this prediction. The -lo resultative predicate cannot intervene between the RS and its NQ. I leave it for future research, however, to establish how exactly -lo resultatives must be analyzed, and in what aspects they are similar to and different from -ni resultatives in Japanese.
is merged as a complement of the main verb (e.g. small-clause complement, *-ni* resultative in Japanese (21)), the small-clause subject is marked with accusative Case. If a small clause is merged as an adjunct (e.g. resultatives in Korean (13a)), the small-clause subject is marked with nominative Case. My analysis also implies that there is some relationship between licensing a null subject and the argument-hood of a small clause. The adjunct type of small clause may employ a pro-subject (e.g. (13b)) so that an accusative-marked noun can be analyzed as the direct object of the main verb, which is related to pro within an RP. In those cases, we obtain apparent obviation of the EG (e.g. (17)). (We will see more of this correlation with depictive predicates in 5.2.)

Although this work is not based on a particular hypothesis regarding the relationship between Case and the argument-hood of a small clause, the consequences described above do not seem to be accidental. If the small-clause subject is marked with accusative Case, the most natural source of the Case is the main verb. It is not surprising, then, that the subject of complement-type small clauses, but not of the adjunct type, receives accusative Case. This generalization is also in line with the previous proposal that Korean (adjunct) resultative phrases are independent Case domains, which license nominative Case. For instance, Jang and Kim (2001) argue that this is the default Case strategy in Korean. Shim and den Dikken (2009) argue that Korean resultatives contain a Tense projection that licenses nominative Case.

If the pro subject is licensed only in independent Case domains, it is also expected that pro can be readily licensed in small clauses of an adjunct type such as Korean resultatives. It is noteworthy that a wide range of judgement variations is observed exactly when speakers are forced to choose a null-subject analysis for complement clauses (e.g. small-clause complements of episodic verbs, *-ni* resultatives in Japanese). This suggests that the null subject strategy is most felicitous with small clauses of an adjunct type, and is adopted for complement small clauses with much variation.

### 5.2 Depictive secondary predication

I now consider the consequences of CL for depictive predicational domains. I propose that depictive phrases are merged as an adjunct to a verbal projection and contain a null subject in Korean and Japanese. Specifically, I argue that subject-oriented depictives are vP-external, whereas object-oriented depictives are vP-internal. On the basis of this argument, I explain how various factors may interact with each other in linearization—in particular, factors of subject scrambling, object scrambling, quantifier stranding, scrambling of depictives, and resultatives.

#### 5.2.1 The structure of depictives

A depictive secondary predicate describes the state of the referent at the time when the action denoted by the primary predicate occurs. In Japanese, depictive phrases
are marked with the -de suffix. The following sentences are typical examples of -de depictive constructions. For convenience (and following Koizumi 1994), I call a subject-oriented depictive phrase an SDP, and an object-oriented depictive phrase an ODP. Some examples are given in (26) and (27).

(26) **Subject-oriented depictive phrases (SDP) in Japanese**
   a. Taro-ga hadaka-de hon-o yonda.
      Taro-NOM naked-DEP book-ACC read
      'Taro read a book naked.'
   b. Hanako-ga kimono-sugata-de odotta.
      Hanako-NOM kimono-dress-DEP danced
      'Hanako danced in a kimono.' (Koizumi 1994: 27)

(27) **Object-oriented depictive phrases (ODP) in Japanese**
   a. Taro-ga katuo-o nama-de tabeta.
      Taro-NOM bonito-ACC raw-DEP ate
      'Taro ate the bonito raw.'
   b. Hanako-ga kuruma-o tyuuko-de katta.
      Hanako-NOM car-ACC secondhand-DEP bought
      'Hanako bought a used car.' (Koizumi 1994: 27)

Koizumi (1994) argues that SDPs and ODPs are base-generated in different positions, as described in (28). In particular, SDPs may be base-generated outside a verbal projection 'VP', which contains internal arguments such as an indirect object and a direct object. The ODP, on the other hand, must be base-generated inside 'VP'. Specifically, Koizumi proposes that the ODP must be base-generated as a sister of V and the object, assuming a ternary branching structure. Koizumi provides supporting arguments for (28) from various types of VP-constituency tests such as VP-preposing, pseudo-clefting, and VP replacement.

(28) \[
\begin{array}{c}
TP \quad \text{SUBJ} \\
\quad \text{SDP} \quad [VP \quad \text{SDP} \quad [VP \quad \text{OBJ} \quad \text{ODP} \quad V] \quad T]
\end{array}
\]

I reproduce his arguments for (28) with a VP-preposing test in (29). As shown in (29), VP-preposing is possible if the preposed 'VP' contains all the internal arguments.\(^\text{12}\)

\(^\text{11}\) Koizumi (1994) does not assume the vP-internal subject hypothesis. To avoid potential confusion due to the differences in terminology, I will use 'VP' to represent the VP in Koizumi's structure.

\(^\text{12}\) As Danny Fox (p.c.) notes, Koizumi’s argument tacitly assumes that there is no trace of the subject or trace of internal arguments in the preposed VPs in (29). Norvin Richards (p.c.) raises the question of how the order in (29) can be derived under CL. I suggest that John-ga is externally merged higher than [Spec,vP] (as an argument of sita) and the fronted 'VP' in (29) may in fact be a vP that contains pro associated with John-ga.

a. \[\text{[Sono hako-no naka-ni ringo-o ire-sae], John-ga t, sita.} \]
   \[\text{that box-GEN inside-in apple-ACC put-even John-NOM did} \]
   \[\text{‘Even put an apple in that box, John did.’} \]

b. \[\text{*[Ire-sae], John-ga [sono hako-no naka-ni ringo-o t,] sita.} \]
   \[\text{put-even John-NOM that box-GEN inside-in apple-ACC did} \]
   \[\text{‘Even put an apple in that box, John did.’} \]

c. \[\text{*[Ringo-o ire-sae], John-ga [sono hako-no naka-ni t,] sita.} \]
   \[\text{apple-ACC put-even John-NOM that box-GEN inside-in did} \]
   \[\text{‘Even put an apple in that box, John did.’} \]

As in (30), the SDP may optionally be included in a preposed ‘VP’. The ODP, on the other hand, must be included in a preposed ‘VP’, as shown in (31). Given the constraint on VP-fronting in (30), Koizumi argues that the contrast between the SDP and the ODP in (30) and (31) implies that the SDP can optionally be base-generated outside ‘VP’. In contrast, the ODP must be merged within ‘VP’ together with its internal arguments (cf. English depictive phrases in (3)).

(30) **Japanese: SDP and VP-preposing** (Koizumi 1994: 34)

a. \[\text{[Katu-o tabe-sae], Taroo-ga hadaka-de t, sita.} \]
   \[\text{bonito-ACC eat-even Taro-NOM naked-DEP did} \]
   \[\text{‘Even eat the bonito, Taro did naked.’} \]

b. \[\text{[Hadaka-de katu-o tabe-sae], Taroo-ga t, sita.} \]
   \[\text{naked-DEP bonito-ACC eat-even Taro-NOM did} \]
   \[\text{‘Even eat the bonito naked, Taro did.’} \]

(31) **Japanese: ODP and VP-preposing** (Koizumi 1994: 35)

a. \[\text{*[Katu-o tabe-sae], Taroo-ga nama-de t, sita.} \]
   \[\text{bonito-ACC eat-even Taro-NOM raw-DEP did} \]
   \[\text{‘Even eat the bonito, Taro did raw.’} \]

b. \[\text{[Nama-de katu-o tabe-sae], Taroo-ga t, sita.} \]
   \[\text{raw-DEP bonito-ACC eat-even Taro-NOM did} \]
   \[\text{‘Even eat the bonito raw, Taro did.’} \]

Let us now consider the implications of Koizumi’s argument for the present proposal. Under the framework assuming the vP-internal subject hypothesis, Koizumi’s observations may be roughly translated into the following:

(32) The SDP may optionally be externally merged outside or inside vP, but the ODP must be externally merged within vP. More specifically, the ODP must be merged within a verbal projection containing the object and the verb (roughly corresponding to VP).
5.2.2 Predictions and analysis
The hypothesis in (32) directs us to a set of predictions regarding the interactions of depictive predicates and scrambling in Japanese. Consider first an immediate prediction concerning subject scrambling. If (32) is on the right track, we predict that the subject and the subject-oriented NQ can be separated by the SDP, but not by the ODP—which is by now a familiar instance of the EG. If the subject and the SDP can be merged in separate Spell-out domains, as hypothesized in (32), the subject can move over the SDP without causing any contradictions. On the other hand, the ODP must be merged in the same domain as the subject and the NQ_{SUBJ}, so we predict that the subject cannot be separated from its NQ by the ODP, obeying the EG. Schematic representations are given in (33) and (34).

\[(33) \quad S < SDP < NQ_{SUBJ} \quad \quad \quad \quad (34) \quad *S < ODP < NQ_{SUBJ} \]

The predictions in (33) and (34) are borne out, as illustrated in (35) and (36). The contrast between the SDP and the ODP in (35) and (36) again supports my proposal for the EG in the vP-domain (see also discussion on (40) for an alternative account of (36b)).

\[(35) \quad \text{Japanese: subject-oriented NQ and SDP} \quad [S < SDP < NQ_{SUBJ}] \]
\[\text{a. Gakusei-ga san-nin hadaka-de katuo-o tabeta.} \quad \text{‘Three students ate the bonito naked.’ (Koizumi 1994: 32)} \]
\[\text{b. ‘Gakusei-ga hadaka-de san-nin katuo-o tabeta.} \quad \text{‘Three students ate the bonito naked.’ (Koizumi 1994: 32)} \]

\[(36) \quad \text{Japanese: subject-oriented NQ and ODP} \quad [*S < ODP < NQ_{SUBJ}] \]
\[\text{a. Gakusei-ga san-nin nama-de katuo-o tabeta.} \quad \text{‘Three students ate the bonito raw.’} \]
\[\text{b. ‘Gakusei-ga nama-de san-nin katuo-o tabeta.} \quad \text{‘Three students ate the bonito raw.’} \]
b. *Gakusei-ga\  nama-de\  san-nin\  katuo-o\  tabeta.
   student-NOM\  raw-DEP\  3-CL\  bonito-ACC\  ate
   ‘Three students ate the bonito raw.’ (Koizumi 1994: 32)

Korean depictive phrases, marked with the -lo suffix, lend further credence to the
EG. Koizumi’s arguments for (32) straightforwardly extend to Korean. As expected,
the subject in Korean can be separated from its NQ by an SDP, but not by an ODP,
just like Japanese (35) and (36). This is illustrated in (37).

(37)  Korean: a subject-oriented NQ and depictive predicates
      a. *Haksayngtul-i\  nachey-lo\  sey-myeng\  chamchi-lul\  mekessta.
        students-NOM\  naked-DEP\  3-CL\  tuna-ACC\  ate
        ‘Three students ate the tuna naked.’ [S < SDP < NQSUB]
      b. *Haksayngtul-i\  nal-lo\  sey-myeng\  chamchi-lul\  mekessta.
        students-NOM\  raw-DEP\  3-CL\  tuna-ACC\  ate
        ‘Three students ate the tuna raw.’ [S < ODP < NQSUB]

Let us now turn to the interaction of object scrambling and depictive predicates.
Since Koizumi employed a ternary ‘VP’ structure in (32), it is not obvious how to
make precise predictions for the object and an ODP under the binary structure
assumed here. However, the distribution of the ODP with respect to the object and
the NQOBJ provides us with an initial clue as to the finer structure of ‘VP’. As shown
in (38), an ODP may intervene between the object and the NQOBJ. This fact at least
suggests that the object and the ODP have not been merged in the same Spell-out
domain. If the object and the ODP were merged as domain-mates in base structure in
which the object functions as the subject of ODP, we would wrongly predict (38) to be
ungrammatical.

(38)  Japanese: object < ODP < NQOBJ
      Taroo-ga\  katuo-o\  nama-de\  san-biki\  tabeta.
      Taro-NOM\  bonito-ACC\  raw-DEP\  3-CL\  ate
      ‘Taro ate three pieces of bonito raw.’ (S. Miyagawa, I. Takayohi, p.c.)

To explain the grammaticality of (38), I hypothesize that depictive secondary
predicates in Japanese are merged as an adjunct to a verbal projection, unlike resulta-
tive phrases as seen in section 5.1.2.13 All the other arguments provided by Koizumi can
then be incorporated into the binary structure (39) without any substantial changes.

13 Note that this hypothesis is not novel. As discussed in 5.1, English is known to employ the same
strategy as Japanese: depictives occupy adjunction positions, while resultatives are placed in the comple-
ment domain of the verb. As discussed in Hoekstra (1988), English depictives may take either the transitive
subject or the object as their subject (e.g. John, brought Bill, home PROι, drunk), unlike resultatives as seen
in (4). Note that the same contrast holds in Japanese: the subject of resultatives in Japanese must be the
(deep) object, while the subject of depictives can be either the transitive subject (SDP) or the object (ODP).
Revised hypothesis: depictive predicates in Japanese

$$[FP \ SDP \ [v_P \ [S \ NQ_{Subj}] \ O_1 \ [v_P \ ODP \ [t_1 \ NQ_{Obj}] \ V] \ V] \ F]$$

To be more specific, the object is merged as a complement of the main verb and the ODP is merged as an adjunct within VP. The object is not merged on the edge of the ODP. Hence, we would not expect order-preservation effects for the object and the ODP. The object may move to the left of the ODP via scrambling. Whether object scrambling targets [Spec,VP] or [Spec,vP], we obtain the correct results, explaining (38). Under the hypothesis of (39), we further predict that the object and the NQ_{Obj} can be separated by an SDP as well, since the object may move over an SDP. This prediction is also borne out, as shown with (40b).

(40) Japanese: $O < SDP < NQ_{Obj}$ (I. Takayoshi, p.c.)

a. Taroo-ga hadaka-de katuo-o san-biki tabeta.
   Taro-NOM naked-DEP bonito-ACC 3-CL ate
   ‘Taro ate three pieces of bonito naked.’

   Taro-NOM bonito-ACC naked-DEP 3-CL ate
   ‘Taro ate three pieces of bonito naked.’

The grammaticality of (40b) is also important to rule out an alternative hypothesis regarding the ungrammaticality of (36b), with an ordering of $S < ODP < NQ_{Subj}$.\(^\text{14}\) One might argue that (36b) is ungrammatical because of some processing difficulty: when the depictive is surrounded by the subject and NQ_{Subj} on both sides, it may be difficult to assign an object-related reading for the depictive, as in (36b). The grammaticality of (40), however, shows that this approach is incorrect. In (40b), the depictive receives a subject-oriented reading even though it is surrounded by object-related materials. One may also assume that (36b) is ungrammatical because the object follows the ODP, whereas in (40b), the subject precedes the SDP. Note, however, that such an account explains neither the grammaticality of (36a) nor the ungrammaticality of (41). In (36a), the sentence is grammatical even though the ODP precedes the object. In (41), the sentence is ungrammatical even though the object precedes the ODP.

(41) *Katuo-o gakusei-ga nama-de san-nin tabeta.
   bonito-ACC student-NOM raw-DEP 3-CL ate
   ‘Three students ate bonito raw.’ (cf. (36b)) (I. Takayoshi, p.c.)

\(^{14}\) I thank Marcel den Dikken (p.c.) for directing my attention to the difference between (36) and (40).
The present analysis captures the depictive paradigms without any further stipulation. The examples in (36b) and (41) are instances of the EG: the elements merged on the edge as a constituent cannot be separated by their domain-mate. As shown in (36a), a depictive phrase in general may precede the noun phrase that it is associated with. This is expected if a depictive phrase may be adjoined higher than the noun it is associated with, or if the SDP or ODP may undergo fronting to the left of its associate. Either way, the derivation is compatible with my analysis of depictives presented here.

The linearization patterns of the sentence that contain both a resultative and a depictive phrase also support the current proposal. For instance, consider a case in which an object, an NQ\textsubscript{OBJ}, an ODP, and an object-oriented resultative predicate all appear in one clause, as in (42). If the current proposal is on the right track, we expect that the ODP may intervene between the object and the NQ\textsubscript{OBJ}, but the resultative predicate cannot. Specifically, the object may move over the ODP, stranding its NQ (recall (39)). By contrast, a resultative phrase is externally merged in the same Spell-out domain as the object, which is analyzed as the subject of the resultative phrase (recall (21)). Thus, we expect that a resultative predicate cannot intervene between the object and its NQ. This prediction is borne out, as shown in (42).

(42) \textit{Japanese: object, an ODP, and a resultative predicate}

a. Taroo-ga \textit{sakana-o hanbun-ni nama-de} kit-ta.

\begin{tabular}{llll}
Taro-NOM & fish-ACC & half-RES & raw-DEP cut-PAST \\
\end{tabular}

‘Taro cut fish in half raw.’ [O < RES < ODP]


\begin{tabular}{llll}
Taro-NOM & raw-DEP & fish-ACC & half-RES 2-CL cut-PAST \\
\end{tabular}

‘Taro cut two pieces of fish in half raw.’ [*ODP < O < RES < NQ\textsubscript{OBJ}]

(K. Takezawa, p.c.)\textsuperscript{15}

The depictive phrases in Korean behave in the same way as Japanese for object scrambling. The object and the object-oriented NQ can be separated by an SDP or ODP, as shown in (43) and (44). This is expected if the object, SDP, and ODP are base-generated in different predication domains, as argued for the Japanese counterparts.

\textsuperscript{15} One of my informants found (42b) easier to process than (i), though (i) is quite degraded (I. Takayoshi, p.c.). In Ko (2011), I assumed that this is due to a processing factor which favors a resultative predicate to be closer to a main verb. It seems, however, that a syntactic factor is involved here. If the resultative predicate \textit{hanbun-ni} is merged in the same Spell-out domain as the resultative subject \textit{sakana-o}, it is predicted that the predicate \textit{hanbun-ni} will not be able to undergo fronting to the left of its subject. Since neither \textit{sakana-o} nor \textit{hanbun-ni} may undergo movement within the resultative domain, it is expected that \textit{hanbun-ni} cannot precede its subject under CL.

(i) \textit{Taro-ga hanbun-ni sakana-o nama-de ni-hiki} kit-ta.

\begin{tabular}{llll}
Taro-NOM & half-RES & fish-ACC raw-DEP 2-CL cut-PAST \\
\end{tabular}

‘Taro cut two pieces of fish in half raw.’ [RES < O < ODP < NQ\textsubscript{OBJ}] (I. Takayoshi, p.c.)
Chelswu-ka thokki-lul nachey-lo/maynson-ulo sey-mali capassta.

‘Chelswu caught three rabbits naked with bare hands.’ [O < SDP < NQ_{Obj}]

Chelswu-ka chamchi-lul nal-lo sey-cokak mekessta.

‘Chelswu ate three pieces of tuna raw.’ [O < ODP < NQ_{Obj}]

Resultative phrases in Korean, however, show a different distribution from their Japanese counterparts, as in (45). Unlike Japanese (42b), the resultative predicate may intervene between the object and NQ_{Obj} regardless of the presence of an ODP in Korean, as in (45b). This is expected, since Korean resultatives are merged as an adjunct, unlike in Japanese. Thus, we expect that a resultative phrase in Korean may intervene between the object and NQ_{Obj} as illustrated in (45b).


‘Chelswu cut two fish in half raw.’ [O < ODP < NQ_{Obj} < RES]


‘Chelswu cut two fish in half raw.’ [ODP < O < RES < NQ_{Obj}] (cf. Japanese (42b))

Summing up, depictive phrases are merged as an adjunct to a verbal projection both in Korean and Japanese. They must contain a null subject co-indexed with the main subject or the object. The SDP can be merged external to vP, so that it can intervene between the subject and its NQ, or between the object and its NQ. Just as with vP-external adverbs, the intervention by the SDP does not cause a problem for the linearization of vP-internal elements. By contrast, the ODP must be merged internal to vP. Therefore, the ODP cannot intervene between the subject and its NQ, just like vP-internal adverbs seen in Chapter 2. This is an instance of the EG again.

The ODP may separate the object and its NQ, however. This is because the object is merged separately from the ODP and undergoes vP-internal movement to the left of the ODP. The current proposal captures ordering interactions between scrambling and depictives by assuming that a depictive phrase undergoes CL as an adjunct predication, separately from its associate noun in vP.

5.3 The edges of decomposed VPs

In this section, I provide further support for my proposal from a previously unnoticed correlation between the interpretation of the adverb ‘again’ and order-preservation effects in small-clause domains within a decomposed VP.
5.3.1 Background: the syntax of ‘again’

It is well known that the meaning of the adverb ‘again’ is ambiguous (when combined with telic predicates). The distinctions are commonly called the ‘repetitive’ and ‘restitutive’ readings. For instance, the English sentence (46) is ambiguous between the two readings listed in (46a) and (46b) (but see (62) for further discussion). On the repetitive reading, it asserts that Sally opened the door twice. On the restitutive reading, it merely denotes that the door returned to the state of being open (see e.g. Bale 2007; Beck and Johnson 2004; Dowty 1979; Nam 2005; von Stechow 1996; J.-H. Yoon 2007).

(46) Sally opened the door again.
   a. Sally opened the door and that had happened before. (repetitive)
   b. Sally opened the door and the door had been open before. (restitutive)

(62) (Beck and Johnson 2004: 106)

Von Stechow (1996) argues that ‘again’ has basically one meaning in semantics, and that the ambiguity observed with ‘again’ must be attributed to scopal differences (cf. semantic/lexical ambiguity analysis of ‘again’, e.g. Dowty 1979; Jäger and Blutner 2003; J.-H. Yoon 2007). Specifically, the semantic contribution of ‘again’ is always repetition, but ambiguity arises depending on what event is repeated. This proposal is sketched with the informal structure of vP in (47). When again is merged higher than the BECOME verb and takes scope over it, again expresses the repetition of the whole event, as in (46a). When again takes scope under BECOME, on the other hand, it indicates the repetition of the original state, as in (46b).

(47) \[ vP \text{ Subj } v-\text{CAUSE } [vP \text{ BECOME } [SC \text{ the door open } again_{\text{REST}}]] \text{ again}_{\text{REP}} \]

The same type of ambiguity is observed with Korean tasi ‘again’, as shown in (48). More interestingly, in Korean the two readings of ‘again’ can be disambiguated by using a different lexical item. The adverb tto ‘again’ represents a repetitive reading of ‘again’, but not a restitutive one. Conversely, the adverb tolo ‘again’ is compatible only with a restitutive reading. (When tolo is forced to be interpreted as repetitive ‘again’, speakers find awkwardness.) Thus, when tasi is replaced with tto in (48), it unambiguously denotes a repetitive reading. With tolo, (48) is felicitous only with a restitutive reading (see J.-H. Yoon 2007 for further discussion of the three types of ‘again’ in Korean).

(48) Sally-ka ku mwun-ul tasi/tto/tolo yel-ess-ta.
    ‘Sally opened that door, and she had done that before.’ (repetitive tto ‘again’)
    ‘Sally opened that door, and the door had been in the state of being open before.’ (restitutive tolo ‘again’)

(62) [vP Subj v-CAUSE [vP BECOME [SC the door open again_{REST}]] again_{REP}]
The three-way distinction of ‘again’ in Korean can be more clearly seen in a context where one of the two readings is implausible to derive. For instance, it is extremely odd to use tolo with verbs of creation, since the relevant event does not contain an original state that can be repeated, as in (49a). It is also infelicitous to use tolo with pure activity predicates such as ‘play the violin’ for which it is hard to set an original state for the event. If (49b) is ever possible, it means that Irene resumed playing the violin after some disruption. Crucially, however, tolo in (49b) lacks the repetitive reading ‘Irene played the violin once more’, which tto clearly carries.

(49)  

Chelswu-NOM cookie-Acc again baked  
‘Chelswu baked cookies again.’ (repetitive, #restitutive)

b. Irene-ka paiollin-ul tasi/tto/#tolo yencwuhayssta.  
Irene-NOM violin-Acc again played  
‘Irene played the violin again.’ (repetitive, #restitutive)

Conversely, we can also find contexts where the repetitive tto is absurd to use. For instance, if the preceding context makes it clear that the agent was not involved in the preceding event, it is not acceptable to use tto, but one can still use tasi or tolo felicitously. This is shown with (50). (I use ‘#’ to indicate unacceptable sentences with ‘again’, based on the claim that the unacceptability comes from presupposition failure. See von Stechow 1996 and Bale 2007 for presupposition of ‘again’.)

(50)  
[Context: This beautiful cave had never been closed before the avalanche in 1929. But the great avalanche closed the cave completely. Everybody worked very hard to open the cave, and finally …]  
Kwunintul-i ku tongkwul-ul tasi/tolo/#tto yellessta.  
soldiers-NOM that cave-Acc again opened  
‘Soldiers opened the cave again.’ (restitutive, #repetitive)

Adopting the structural analysis of ‘again’ by von Stechow (1996), I argue that the three different types of ‘again’ in Korean originate from their different merge sites (cf. J.-H. Yoon 2007). In particular, tasi can be merged either below or above the BECOME verb, just like English again. In contrast, tolo must be merged below BECOME, whereas tto must be merged higher than BECOME.16

16 Von Stechow (1996) notes that wieder ‘again’ in German lacks the restitutive reading if it precedes the object, as in (i). The same pattern does not hold in Korean, however. As in (ii), tasi/tolo ‘again’ may retain the restitutive reading when it precedes the object (see (65) for further discussion). Thus, I do not adopt his claim that the object must ‘overtly’ raise to AgrO-P out of vP for Case-checking so that ‘again’ must receive a repetitive reading when it precedes the object. Instead, I adopt the Agree approach of Pesetsky and Torrego (2007). More specifically, I assume the Case theory developed in Ko (2009a; 2009b), which adopted Pesetsky and Torrego’s (2007) proposal that Case is a Tense feature on a nominal head and is valued when it shares the T-feature with a Tense head (which bears unvalued interpretable [iT]) and a verbal head (which contains a valued uninterpretable [uTvall]). Under this proposal, the object does not
5.3.2 The syntax of ‘again’ and order preservation

5.3.2.1 Korean ‘again’ The different types of ‘again’ provide us with a probe into the fine internal structure of vP, which has consequences for my proposal on edges. Following von Stechow (1996) and Beck and Johnson (2004), let us assume that different readings of ‘again’ are represented by different syntactic positions of ‘again’. Suppose also that the direct object of the verb, along with ‘again’, originates from the subject position of an abstract small clause, which denotes the original state of the event (see Baker 2003; Beck and Johnson 2004; von Stechow 1996).

We then expect order-preservation effects for the object with respect to a particular type of ‘again’. Specifically, we predict that the object and its NQ can be separated by the repetitive ‘again’, but not by the restitutive ‘again’. To be concrete, the prediction is represented in (51).

![Diagram](image)

As depicted in (51), the object and its NQOBJ belong to the same predication domain as the restitutive ‘again’. Under the probe-goal theory of movement, we expect that neither the edge elements, the object, nor the NQOBJ are able to undergo movement within RP. The restitutive ‘again’ may be merged higher or lower than the object and the NQOBJ, but it cannot be merged within the nominal complex containing the object and the NQOBJ. Thus, if the predicational domain is a Spell-out domain, we predict that the object and the NQ cannot be separated by their domain-mate, the restitutive ‘again’. In contrast, we expect that the repetitive ‘again’ can separate the object and the NQOBJ. After the Spell-out of RP, the object may undergo movement over the repetitive ‘again’, being probed by a higher head, say v. If the object-oriented NQ is stranded in [Spec,RP], we obtain object < repetitive ‘again’ < NQOBJ ordering without any contradiction.

To be more specific, if my proposal and the structural analysis of ‘again’ are on the right track, we predict that the readings of tasi will be disambiguated when tasi intervenes between the object and the NQOBJ—namely, that it will be compatible only

have to move to AgrO-P out of vP (overtly or covertly) for Case purposes. As long as the object is placed between V and v, it can receive accusative Case. For a general discussion of Case theory, I refer the reader to Ko (2009a; 2009b).

(i) Ali Baba wieder Sesam öffnete.  
Ali Baba again sesame opened  
‘Ali Baba opened the sesame (door) again.’ (only repetitive)

(ii) Sally-ka tasi/tolo ku tongkwul-ul yelestta.  
Sally-NOM again that cave-ACC opened  
‘Sally opened the cave again.’ (restitutive with tolo/tasi, repetitive with tasi)
with the repetitive reading. This means that \textit{tolo} (restitutive ‘again’) would be implausible to use when it is placed between the object and the NQ_{OBJ}. In contrast, \textit{tto} would be compatible with such orderings since \textit{tto} represents the repetitive reading of ‘again’.

This set of predictions was tested with (52) and (53). As shown in (52), it is in principle possible to get the two readings of ‘again’ with an object-oriented NQ. Notably, however, it is difficult to get the restitutive reading of ‘again’ in (53). In (53), \textit{tasi} and \textit{tto} represent the repetitive reading of ‘again’. Hence, it is most natural to assume that there were two avalanches, which closed two caves, on (at least) two separate occasions. It is unacceptable or awkward to use \textit{tolo} in (53). If (53) is ever possible, \textit{tolo} is forced to receive the same interpretation as \textit{tasi} or \textit{tto}, so that (53) is incompatible with a context such as (50).

(52) Sansathay-ka \textit{tongkwul-ul twu-kay} tasi/tto/tolo makassta.

avalanche-NOM cave-ACC 2-CL again closed

‘An avalanche closed two caves again.’ (repetitive, restitutive)

(53) Sansathay-ka \textit{tongkwul-ul} \textit{tasi/tto/#tolo twu-kay} makassta.

avalanche-NOM cave-ACC again 2-CL closed

‘An avalanche closed two caves again.’ (repetitive, #restitutive)

In (54), a preceding context is devised in such a way that it is incompatible with the repetitive reading of ‘again’. So, if the sentence can be felicitous, it may be acceptable only with the restitutive reading of ‘again’. The unacceptability of (54b) shows that when the repetitive reading is suppressed, ‘again’ cannot intervene between the object and its NQ_{OBJ}. Thus, the unacceptability of (54b) further supports my arguments for the EG in ‘again’ constructions.

(54) [Context: This is a brief history of two famous bridges. In 1940, the government started to build two bridges in a village. Unfortunately, before the government finished building the bridges, war broke out, so the bridges were left unfinished. Eventually, however, some UN soldiers came to the village and finished building the bridges by connecting their unfinished parts. Just before the war ended, however, the enemy invaded the village, and destroyed the two bridges.]


invaders-NOM bridge-Acc 2-CL again broke

‘Invaders destroyed the two bridges again.’ (restitutive, #repetitive)

b. Chimlyakkwun-i \textit{tali-lul} #tasi/#tolo/#tto \textit{twu-kay} kkunhessta.

invaders-NOM bridge-Acc again 2-CL broke

‘Invaders destroyed the two bridges again.’ (#restitutive, #repetitive)

In Chapter 2, we saw that an unaccusative subject can be separated from its NQ by a vP-internal adverb, in contrast to an unergative subject. The relevant data are repeated here with (55) and (56). This is because the unaccusative subject is merged below the v head so that it can move over a vP-internal adverb, unlike unergative subjects merged on the edge of vP.
If the current analysis is on the right track, however, we expect unaccusative subjects to show order-preservation effects observed on the edge when an RP-internal adverb intervenes between the subject and its NQ. In particular, we expect that an unaccusative subject cannot be separated from its associate NQ by the restitutive ‘again’ because they are RP domain-mates. This prediction can be tested with (counter)directional verbs, which show interesting meaning differences with respect to the different types of ‘again’.

When the unaccusative verb ‘fell down’ is combined with ‘again’, as in (57), it may mean that the aircraft fell down first and then fell down farther. This is a repetitive reading of ‘again’ for ‘fell down’. Interestingly, however, the sentence may also mean that the aircraft fell down first, and then went up, and fell down again. This is understood as a restitutive reading of ‘again’, which indicates the restitution to the previous state of having fallen ((57) is based on von Stechow’s (1996) discussion of German data).

Given the ambiguity of (57), we expect that only the repetitive reading of ‘again’ is possible when it intervenes between the unaccusative subject and its NQ, as an instance of the EG, and this prediction is borne out. As shown in (58), the sentence without a split between the subject and its NQ is compatible with both the restitutive and repetitive reading. In contrast, however, only the repetitive reading is allowed in (59). If tolo is ever acceptable in (59), it must be interpreted in the same way as tasi and tto. It cannot represent the restitutive reading seen in (57) and (58).17

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17 Marginally, (59) could mean that there were two discontinuous events of three aircraft that fell down. At first, three aircraft fell down and there was some disruption. After a while, it happened again that three aircraft fell down. I assume that this is distinct from the restitutive reading of ‘again’, but it is beyond the scope of this work how to represent it in semantics.
(58) Pihayngki-ka sey-tay tasi/tto/tolo hakanghayssta.
    aircraft-NOM 3-CL again fell.down
    ‘Three aircraft fell down again.’ (repetitive, restitutive)

(59) Pihayngki-ka tasi/tto/#tolo sey-tay hakanghayssta.
    aircraft-NOM again 3-CL fell.down
    ‘Three aircraft fell down again.’ (repetitive, #restitutive)

Finally, we can also test the current proposal with the subject of a transitive verb on the vP edge. If the subject and its NQ cannot be separated by a domain-internal element, as extensively discussed in Chapter 2, we predict that the restitutive ‘again’ cannot be placed between the subject and its NQ, either. This prediction is upheld, as shown by the unacceptability of the restitutive reading in (61) (to be precise, (60) is somewhat degraded for reasons unclear to me, but there is a clear contrast with tolo between (60) and (61) as indicated here).

(60) ?Kwunintul-i sey-myeng ku tongkwul-ul tolo yelessta.
    soldiers-NOM 3-CL that cave-ACC again opened
    ‘Three soldiers opened that cave again.’ (restitutive)

(61) #Kwunintul-i tolo sey-myeng ku tongkwul-ul yelessta.
    soldiers-NOM again 3-CL that cave-ACC opened
    ‘Three soldiers opened that cave again.’ (#restitutive)

The behavior of repetitive ‘again’ with respect to the subject of a transitive verb calls for special attention as well. Under von Stechow (1996), the repetitive reading of ‘again’ is obtained as long as ‘again’ is merged above the BECOME verb. Thus, ‘again’ may carry a repetitive reading whether it is merged outside vP or within vP as long as it is merged above BECOME. Von Stechow called the latter possibility an ‘intermediate reading’, but left it open as to whether there is a strong semantic motivation for it (von Stechow 1996: 99).

Bale (2007), however, convincingly shows that the two types of repetitive reading of ‘again’ are semantically distinct from each other. If ‘again’ is merged below the agent but above VP (which contains the verb and the object), ‘again’ denotes mere repetition of action, possibly by a different agent. If ‘again’ is merged above the agent (above vP), it denotes repetition of action by the same agent. Bale (2007) calls the former ‘subjectless presupposition’. For instance, the example in (46), repeated here as (62), is in fact three-way ambiguous, as described in (a–c) (see Bale 2007 for independent evidence that ‘subjectless presupposition’ is not a restitutive reading).

(62) Sally opened the door again.
    a. Sally opened the door twice. (repetitive ‘again’)
    b. Somebody opened the door twice. (subjectless presupposition of ‘again’)
    c. The door had been in the state of being open twice. (restitutive ‘again’)

The edges of decomposed VPs
More directly relevant to our discussion, Bale (2007) argues that the readings of ‘again’ interact with the scope of quantifiers within vP. If a QP scopes over ‘again’, the sentence is true when the participants identified by the QP’s variable in the presupposed event are the same as the participants identified by the QP’s variable in the asserted event, as in (63a). If ‘again’ scopes over a QP, the participants identified by the QP’s variable in the presupposed event can be different from those identified in the asserted event, as in (63b).

(63)  *Esme hugged some dolls again.*
   a. For some dolls, it is the case that Esme hugged them again.
   b. Again, Esme hugged some dolls.

The two different sites of repetitive ‘again’ lead us to make different predictions for ordering patterns in small clauses.18 If the repetitive ‘again’ in Korean must be merged within vP (but above BECOME), we would expect that the repetitive ‘again’ cannot intervene between the subject and its NQ, as an instance of the EG within vP. If repetitive ‘again’ may be merged outside vP, we would expect that tto or repetitive tasi would be able to intervene between the subject and its NQ, but that ‘again’ must scope over the subject, as in (63b). In other words, the quantification domain of the QP in the presupposition may be different from the one in the assertion. This prediction is tested with (64).

(64)  (#)? Kwunintul-i tasi/tto sey-myeng ku tongkwul-ul yelessta.
      soldiers-NOM again 3-CL that cave-ACC opened
   ‘Three soldiers opened that cave again.’ (%repetitive, #restitutive)

Korean speakers varied as regards the judgement of ‘again’ with a repetitive reading (e.g. tto, tasi) in (64), but in the expected ways. Some speakers (2/7) found the sentence in (64) with tto/tasi to be quite degraded. Others accepted the sentence with tto/tasi in (64) (5/7). Crucially, all the speakers who accepted (64) reported that the participants identified by the QP’s variable in the presupposed event can be different from those identified in the asserted event. (In fact, some speakers (3/5) preferred the different-agent reading over the same-agent reading.) In other words, it is a possible reading of (64) that two different sets of three soldiers opened the cave.

This result shows that speakers either consistently reject (64) or accept it when ‘again’ scopes over the indefinite ‘three soldiers’. This is exactly what we expected. If my argument is on the right track, we expect either that the speaker rejects (64) as an instance of the EG in vP, or that, if the speaker accepts it, ‘again’ must scope over the subject QP since the ‘again’ must be merged outside vP (like a high adverb as seen

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18 I thank Marcel den Dikken (p.c.) for directing my attention to the two different types of repetitive ‘again’. Thanks also to Yu-mi Jo for bringing my attention to Bale’s (2007) work.
in Chapter 2). Thus, the overall result supports my proposal for the EG and Bale’s fine-grained semantic theory of ‘again’.

If we extend Bale’s (2007) analysis of subjectless presupposition to small-clause domains, we can make a further prediction for object QPs and two types of restitutive ‘again’. As in (65), if restitutive ‘again’ is merged higher than an object QP, the different-object reading may be possible, where the quantification domain of the QP in the presupposition may be different from the one in the assertion (similar to (63b)). In contrast, if restitutive ‘again’ is merged lower than the object QP, the same-object reading must be obtained (similar to (63a)). Furthermore, since both types of restitutive ‘again’ are merged on the edge of the same RP as the object, the ordering in RP must be fixed under CL. In other words, the linear order between the restitutive ‘again’ and object QP must reflect their scope relationship in base position.

(65) [RP again\textsubscript{Rest2} [object (NQ)] again\textsubscript{Rest1} PREDICATE R]

The predictions described above are indeed borne out. As shown in (66), when tolo/tasi ‘again’ precedes tongkwul-ul, the different-object reading is possible. As shown in (67), when tongkwul-ul precedes ‘again’, only the same-object reading is possible. Moreover, the point still remains that restitutive ‘again’ cannot intervene between the object and NQ whether it is merged higher or lower than the object, as shown in (68).19

(66) Kwunintul-i tolo/tasi tongkwul-ul (twu-kay) yelessta.
soldiers-NOM again cave-ACC 2-CL opened
‘Soldiers opened two caves again.’ (restitutive2: different-object reading possible)

cave-NOM again 2-CL open-INCHOATIVE-PAST-DEC
‘Two caves opened again.’ (√restitutive, √repetitive reading assuming implicit agent)

(i) Tongkwul-i tasi twu-kay yel-li-ess-ta.
cave-NOM again 2-CL open-INCHOATIVE-PAST-DEC
‘Two caves opened again.’ (√restitutive, √repetitive reading assuming implicit agent)

(ii) Kwunintul-i tongkwul-ul tasi twu-kay yel-ess-ta.
soldiers-NOM cave-ACC again 2-CL open-PAST-DEC
‘Soldiers opened two caves again.’ (#restitutive reading, √repetitive reading)

19 I acknowledge that interactions between ‘again’ and other types of construction (e.g. inchoatives, passives, double-object constructions) require much more research. For instance, if inchoative-causative counterparts are transformationally related in syntax, we would expect that the inchoative subject and its NQ cannot be separated by a restitutive ‘again’. Contrary to the expectation, restitutive ‘again’ may intervene between the inchoative subject and NQ, as in (i). The contrast between (i) and (ii) seems to suggest that inchoatives and causatives are not transformationally related (cf. an unaccusative approach by Baker 1988; and a detransitivisation approach by Levin and Rappaport Hovav 1995). Rather, they are different constructions which share the same verbal root, as argued by Pylkkänen (2002). Furthermore, the grammaticality of (i) suggests that the inchoative subject and the restitutive ‘again’ do not seem to obey the EG, which is puzzling to my account. At this moment, I do not have a developed explanation for this. Adopting den Dikken (2007a), I may assume that the verbal root undergoes head-raising to the inchoative head so that the Spell-out domain is extended to vP (from RP). The inchoative subject may then undergo domain-internal movement to the left of the restitutive ‘again’ before Spell-out of vP. I admit, however, that this claim is stipulative unless I show independent evidence that inchoative verbal roots undergo head-raising (while transitive verbal roots do not).
Lastly, a note on ‘again’ constructions and Simpson’s law. In this section, I have argued that the distribution of ‘again’ and floating NQs supports a decompositional analysis for telic predicates like ‘open’ in Korean. On the surface, this may seem to fit in somewhat poorly with the discussion of resultatives in section 5.1. In section 5.1, I argued that Korean resultatives introduced by -key/-tolok involve adjunction. The discussion on ‘again’, however, suggests that the resultative state introduced by the decomposition of a verb involves a complement structure of the abstract verb BECOME. Thus, I must qualify the claim that Korean resultatives are adjuncts in cases where the resultative is introduced by a small-clause predicate marked by -key/-tolok (see also n. 10 above on -lo resultatives in Korean).

In a more general sense, however, the current claim does not conflict with the overall argument in section 3.3. Unlike resultatives marked by -key/-tolok, the subject of the small clause containing the restitutive ‘again’ and the decomposed verb must be the underlying object (i.e. an object of a telic verb or unaccusative subject). Neither a transitive subject nor an unergative subject may be the subject of a small clause containing the restitutive ‘again’ (see Bale 2007 for further evidence). In other words, the data discussed in this section do in fact obey Simpson’s law. Thus, the overall claim that a complementation structure correlates with Simpson’s law is still tenable.

This directs us to the more interesting issue of why there is a structural difference between a resultative phrase introduced by a lexical item such as -key/-tolok and a result state introduced by general cause–effect constructions (see Rappaport Hovav and Levin 2001 for insightful discussion on the differences between inchoatives/resultatives and causatives in event structure). I leave this issue for further research.

5.3.2.2 Japanese ‘again’  In section 5.1.2, we saw that Japanese resultative constructions behave differently from Korean resultative constructions. The former involve complementation, whereas the latter represent adjunction. Note, however, that this asymmetry disappears with respect to ‘again’ constructions. As shown in (69), Japanese mata and hutatabi ‘again’ may have both repetitive and restitutive readings, like Korean tasi.20

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20 Mata is more colloquial than hutatabi, but there is no significant meaning difference between the two words. My informant also reports that there is no lexical item like tolo ‘restitutive again’ in Japanese. For instance, (i) is grammatical with mata/hutatabi, unlike tolo in Korean (49b).
Sally-ga sono doa-o mata/hutatabi hiraita.
Sally-NOM that door-ACC again opened
‘Sally opened that door, and she had done that before.’ (repetitive ‘again’) ‘Sally opened that door, and the door had been in the state of being open before.’ (restitutive ‘again’) (I. Takayoshi, p.c.)

Just as in the Korean counterparts, the orderings among the object, NQ_{Obj}, and restitutive ‘again’ obey the EG. As illustrated in (70), when ‘again’ intervenes between the object and the NQ_{Obj}, it has the repetitive reading only.

(70)  
\begin{enumerate}
\item a. Yamakuzure-ga doukutu-o huta-tu mata/hutatabi husaida. 
\hspace{1cm} avalanche-NOM cave-ACC 2-CL again closed
\hspace{1cm} ‘An avalanche closed two caves again.’ (repetitive, restitutive)
\item b. Yamakuzure-ga doukutu-o mata/hutatabi huta-tu husaida. 
\hspace{1cm} avalanche-NOM cave-ACC again 2-CL closed
\hspace{1cm} ‘An avalanche closed two caves again.’ (repetitive, #restitutive)
\end{enumerate}

As also expected, the subject of an unaccusative verb cannot be separated from its associate NQ by restitutive ‘again’, just like the Korean counterparts in (59). This is illustrated in (71). The subject cannot be separated from its NQ by the restitutive ‘again’, as shown in (72).\(^{21}\) Since Korean and Japanese show the same type of distribution with respect to ‘again’, I conclude that the current analysis for Korean extends to Japanese. This is expected if the semantics of ‘again’ is the same in Korean and Japanese.\(^{22}\)

(i) Irene-ga baiorin-o mata/hutatabi ensousita. 
Irene-NOM violin-ACC again played
‘Irene played a violin again.’ (repetitive)

\(^{21}\) My informant reports that it is in general better to place mata/hutatabi near the verb to facilitate the restitutive reading of ‘again’. Thus, one may attempt to attribute the differences between (a) and (b) in (72) to mere proximity/processing effects. Crucially, however, there is a difference between (72b) and (i) without an NQ. In contrast to (72b), it is possible, if not perfect, to obtain a restitutive reading of ‘again’ with (i) when the offending numeral is missing.

(i) Gunzin-ga hutatabi/mata sono doukutu-o hiraita. 
soldier-NOM that cave-ACC 2-CL opened
‘Soldiers opened the cave again.’ (?restitutive, repetitive) (I. Takayoshi, p.c.)

\(^{22}\) In Ko (2005a), I explained some of the facts in Ch. 5 adapting a VP-shell analysis (cf. Bowers 1993; Embick 2004; Hale and Keyser 1993; Larson 1988). There, I assumed that VP is a Spell-out domain and that the object is merged in [Spec,VP] when it functions as a (local) subject of the VP. In this book, I have been led to a small-clause analysis for several reasons (cf. den Dikken 2006a; Hoekstra 1988; Kratzer 2005): (i) The evidence collected in Ko (2005a) comes from the context where the object functions as a secondary subject. In fact, I had no convincing evidence that VP forms a Spell-out domain when the object is a complement of a simple transitive V such as an activity verb. Thus, it is more precise to say that we observe order-preservation effects with small clauses and secondary predicates, rather than with VPs in general. (ii) Given that resultatives are adjuncts in Korean (which Ko 2005a did not take into account), the EG observed within Korean resultatives cannot be straightforwardly accommodated under the VP-as-phase analysis. (iii) The VP-as-phase analysis somewhat obscured the semantics of restitutive ‘again’ as well. In Ko
(71) a. Hikouki-ga san-dai hutatabi kakousita.
    aircraft-NOM 3-Cl. again fell.down
    ‘Three aircraft fell down again.’ (repetitive, restitutive)

    b. Hikouki-ga hutatabi san-dai kakousita.
    aircraft-NOM again 3-Cl. fell.down
    ‘Three aircraft fell down again.’ (repetitive, #restitutive)

(72) a. Gunzin-ga san-nin sono doukutu-o hutatabi/mata hiraita.
    soldier-NOM 3-Cl. that cave-ACC again opened
    ‘Three soldiers opened that cave again.’ (repetitive, restitutive)

    b. Gunzin-ga hutatabi/mata san-nin sono doukutu-o hiraita.
    soldier-NOM again 3-Cl. that cave-ACC opened
    ‘Three soldiers opened that cave again.’ (repetitive, #restitutive)

The linearization patterns of the sentences that involve object scrambling, a resultative, a depictive, and ‘again’ further confirm the current approach. In (73), the sentence is ambiguous in two ways: under the repetitive reading, it means that John bought an old (second-hand) car twice. Naturally, the two cars may be different from each other. Under the restitutive reading, it means that John bought a car (so he owned it), and somehow he lost it, and bought it again. On this reading, the old car is the same car which was possessed by John in two distinct time periods.23

(73) John-ga (sono) kuruma-o tyuuko-de mata katta.
    John-NOM that car-ACC used-DEP again bought
    ‘John bought (that) car second-hand again.’ (restitutive, repetitive)

Under the analysis of ‘again’ presented here, we predict that the object and the NQ, can be separated by an ODP, but not by restitutive mata ‘again’. Since the object and the ODP are not domain-mates, their relative orderings can be shifted. By contrast, the object and restitutive mata ‘again’ are RP domain-mates and so their

(2005a), I argued that restitutive ‘again’ is merged within a verbal component denoting the original state, and that the object must be in [Spec,VP] outside the domain that contains ‘again’. Semantically, however, the restitutive reading must come from a domain containing both the object and ‘again’. In Ko (2005a), I had to make some departure from von Stechow’s (1996) analysis of ‘again’ to reflect this discrepancy. All these issues can be resolved if we adopt the small-clause analysis and predication-as-phase-model.

23 Von Stechow (1996) notes that lexical decomposition is necessary to explain the scope ambiguity of ‘again’ with a monomorphemic verb. For instance, fing ‘catch’ in the German example (i) is decomposed into CAUSE BECOME in the state of a PRISONER, as described in (ii) (see von Stechow 1996). Similarly, my arguments for (73,74) necessarily assume that ‘x buy y’ is decomposed into ‘x CAUSE y to BECOME in the possession of x (by purchasing y)’. The judgements are admittedly very subtle, however. When verbs like ‘look for’ are employed, the judgement tends to get stronger.

(i) Randi den Bockhirsch wieder fing. (restitutive/repetitive)
    Randi Bockhirsch again caught

(ii) [again [VP Randi [again [SC Bockhirsch PRISONER]] BECOME] CAUSE]
relative orderings cannot be changed later in the derivation. The contrast between (74a) and (74b) shows that this is indeed the case. *Mata* ‘again’ in (74a) is ambiguous between repetitive and restitutive readings, and it is possible to get the restitutive reading in which John bought and owned the same old car twice. By contrast, (74b) strongly suggests that John bought two different old cars (maybe of the same type).

(74) a. John-ga **kuruma-o** tyuuko-de iti-dai mata katta.
   \hspace{0.2in}John-NOM car-ACC used-DEP 1-CL again bought
   ‘John bought one car second-hand again.’ (repetitive, restitutive)

b. John-ga **kuruma-o** tyuuko-de mata iti-dai katta.
   \hspace{0.2in}John-NOM car-ACC used-DEP again 1-CL bought
   ‘John bought one car second-hand again.’ (repetitive, #restitutive)

(I. Takayoshi, p.c.)

To sum up, the restitutive *mata* and the resultative predicate in Japanese behave in the same way with respect to object scrambling. Neither the restitutive *mata* nor the resultative predicate may be an intervener for the object and its NQ. This naturally follows from the analysis that the object is merged on the edge of the same predication domain with the restitutive *mata* and the resultative predicate in Japanese. The object, restitutive *mata*, and the resultative predicate are all RP domain-mates, and the space within the RP is so limited that they cannot undergo RP-internal movement. Moreover, their relative orderings cannot be shifted in the later stages of a derivation due to CL. Thus, neither the restitutive *mata* nor the resultative predicate may be an intervener for the object and its NQ. By contrast, the ODP is an adjunct and does not form a constituent with the object within the same RP. Hence, the object may scramble over the ODP, stranding the NQ\textsubscript{Obj}. Under my proposal, it is naturally explained why Japanese depictive phrases behave in the same way as Korean *-key* resultatives: they are both adjuncts.

The overall discussion presented in this section firmly supports von Stechow’s structural analysis of ‘again’ over the semantic/lexical ambiguity approaches (cf. Dowty 1979; Jäger and Blutner 2003; J.-H. Yoon 2007). If non-syntactic lexical ambiguity of ‘again’ were responsible for its diverse interpretations, we would not expect such intricate interactions among the position of ‘again’, scrambling, and quantifier stranding. By assuming that the semantic ambiguity of ‘again’ originates from structural ambiguity, we can provide a unified account for the various interactions between word order and the interpretation of ‘again’ observed here. Moreover, my overall arguments for ‘again’ constructions can be naturally tied into a general theory of secondary predication presented in Chapters 4 and 5.
5.4 Implications for ditransitive constructions

I now consider some implications of my claim for ditransitive verb constructions. The literature on ditransitive verb constructions is extremely rich, and I do not intend to present a comprehensive overview here. However, some interesting questions naturally arise from my proposal for the EG, which guide us to certain choices among available analyses of ditransitives. In particular, I focus on the implications of my arguments for the position of the indirect object (IO) in argument structure.24

It has been proposed that the IO may be merged either as a subject of the small clause that contains the direct object or as a separate argument within vP (e.g. McGinnis 2001; Pylkkänen 2002/2008; Seidl 2000; see Beck and Johnson 2004 for an overview). In particular, Pylkkänen (2002) argues that there are two types of applicative argument in languages: one type of IO is an argument of a high applicative head, separate from the DO, and the other type of IO is merged as an argument of the same (low) applicative head with the DO.

In this section, however, I suggest that the IO can be merged both in high and low applicative positions simultaneously. In particular, I present a case where the IO appears to occupy both high and low applicative positions, where one of the IOs is realized as a pro (see Georgala et al. 2008 and Miyagawa and Tsujioka 2004 for potential predecessors).

To set the baseline for my argument, let us first consider the paradigm where a dative-marked IO intervenes between the DO and the NQDO in Korean and Japanese. Representative examples are given in Korean (75) and Japanese (76).

John-NOM book-ACC Mary-DAT 3-Cl give-PAST-DEC
‘John gave three books to Mary.’

(76) John-ga hon-o Mary-ni san-satu age-ta.
John-NOM book-ACC Mary-DAT 3-Cl give-PAST
‘John gave three books to Mary.’ (adapted from Hoji 1985; K. Takezawa, p.c.)

As illustrated in (75) and (76), the direct object and its NQ can be separated by the indirect object in Korean and Japanese. The facts in (75) and (76) are compatible with the two extant hypotheses for the position of the IO. One is that the IO is merged outside the VP domain in which the DO is externally merged, as sketched in (77) (in the spirit of the high applicative argument in Pylkkänen 2002). The other is that the IO is merged in the same domain as the DO, as described in (78) (in the spirit of the

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24 For convenience, I call the goal argument IO, the direct object DO, and the floating NQ associated with the direct object NQDO. I leave aside the issue of whether a goal argument is a dative argument of a PP or an indirect object of the main verb, but nothing hinges on the issue (cf. Miyagawa and Tsujioka 2004).
low applicative argument in Pylkkänen 2002). I call the head introducing the IO an applicative head \( \text{APPL} \), and assume that \( \text{APPLP} \) forms a Spell-out domain since the \( \text{APPL} \) head functions as a RELATOR (see McGinnis 2001 for the claim that high applicatives, but not low applicatives, form a phase).

(77) **High applicative approach**

(78) **Low applicative approach**

As depicted in (77) and (78), whether or not the IO is merged in a separate domain from the DO, the DO may undergo \( \text{APPLP} \)-internal movement over the IO. Thus, the ordering in (77) and (78) is expected to be grammatical in either of the existing analyses. The two hypotheses, however, cannot explain the case where the ditransitive construction is combined with ‘again’.

As shown in (79) and (80), a ditransitive verb may co-occur with ‘again’ in Korean and Japanese, and the sentences are ambiguous between the repetitive and restitutive readings of ‘again’. Specifically, on the repetitive reading, ‘again’ modifies the main event, and denotes repetition of the whole event involving the main subject. On the restitutive reading, ‘again’ modifies the predicational structure which includes the IO and the DO, and denotes the repetition of the event/state related to the goal argument and the direct object (see Beck and Johnson 2004 for the syntax and semantics of ‘again’ in double-object constructions).

\[ \text{(i) Mary-ka John-hanthey kapang-ul cap-ass-ta.} \]

\[ \text{Mary-NOM John-DAT bag-ACC hold-PAST-DEC} \]

‘Mary held a bag for John.’ (Pylkkänen 2002: 25)

25 Pylkkänen (2002) originally argues that Korean allows low applicative IOs only, based on the fact that Korean lacks unergative/stative applicatives, as in (i). The ungrammaticality of (i), however, may not be strong evidence for Pylkkänen’s claim. It may be the case that Korean allows high applicatives but that the high applicative must bear a particular morphology when it combines with unergative/stative verbs. In fact, (i) is grammatical if the dative marker hanthey is replaced with a benefactive postposition wihayse ‘for’.

26 The term ‘applicative’, however, has been used to denote a variety of arguments (locative, benefactive, malefactive, goal, etc.). See Baker (1988), Bresnan and Moshi (1990), Doggett (2004), Lee (2004), Marantz (1993), McGinnis (2001), Pylkkänen (2002), Seidl (2000), Ura (1996), and references therein for discussion on the syntax of applicatives. In this chapter, I limit my discussion to IOs which can be seen as a goal argument.

27 Beck and Johnson (2004) show that two different readings of *again* are obtained with English ditransitive verb constructions. A representative example is given in (i). Beck and Johnson argue that the
In (79) and (80), the sentence is compatible either with a scenario in which John bought a car for Mary twice (repetitive reading) or with a scenario in which Mary had a car, lost it, and John bought the (same) car for Mary (a restitutive reading). In contrast to (79) and (80), however, the sentences in (81) and (82) are not ambiguous. In (81) and (82), ‘again’ intervenes between the DO and NQDO, and the restitutive reading is not obtained. Unlike (79) and (80), the sentences in (81) and (82) are not compatible with a scenario in which John bought a car for Mary only once. Speakers find that John bought a car for Mary twice in (81) and (82).

  John-NOM Mary-DAT again car-ACC 1-CL buy-PAST-DEC
  ‘John bought one car for Mary again.’ (Korean) (repetitive, restitutive)

(82) John-ga Mary-ni kuruma-o iti-dai kat-ta.
  John-NOM Mary-DAT car-ACC again 1-CL buy-PAST
  ‘John bought one car for Mary again.’ (Japanese) (repetitive, #restitutive)

(K. Takezawa, p.c.)

The crucial difference between (79, 80) and (81, 82) is whether or not the DO strands its NQ to the right of ‘again’. Interestingly, neither of the hypotheses presented in (77) and (78) can explain the facts properly.

ambiguity of again in (i) can be understood by adopting a small-clause analysis such as (ii). In (ii), the indirect object Satoshi is merged as the subject of the small clause HaveP. The sentence has a restitutive (i.a) reading when again is merged inside the small clause (i.e. HaveP). When again is merged outside the small clause, the sentence has a repetitive reading (i.b): The same account extends to dative constructions such as (iii). In presenting my analysis for ditransitive constructions in Korean and Japanese, I adopt Beck and Johnson’s claim that ‘again’ must be merged within the same small-clause domain as the IO and the DO when it denotes a restitutive reading.

(i) Thilo gave Satoshi the map again.
   a. ‘Thilo gave Satoshi the map, and Satoshi had had the map before.’ (restitutive)
   b. ‘Thilo gave Satoshi the map, and that had happened before.’ (repetitive)

(ii) [v [VP give [BECOME [HaveP Satoshi [HAVE the map] againRef]]] againRef]]

(iii) Thilo sent the plane to Yubara again.
   a. ‘Thilo sent the plane to Yubara and the plane had been in Yubara before.’ (restitutive)
   b. ‘Thilo sent the plane to Yubara and that had happened before.’ (repetitive)
Consider first the high applicative approach depicted in (77). To explain the fact that restitutive ‘again’ may intervene between the DO and the IO in (79) and (80), it is necessary to assume that restitutive ‘again’ is externally merged below the IO at the edge of APPLP, as described in (83). Under (83), ‘again’ modifies the predicational domain that contains the IO and DO, and thus the restitutive reading is available. The ordering IO < restitutive ‘again’ < DO in (79) and (80) is also expected to be grammatical.

(83)  High applicative approach and restitutive ‘again’

\[
\begin{array}{c}
\text{APPLP} \\
\text{IO} \\
\text{‘again’} \\
\text{VP} \\
\text{APPL} \\
\text{DO (NQDO)} \\
\end{array}
\]

A thorny problem arises when we try to explain the data in (81, 82) together with (79, 80). As discussed above, the restitutive ‘again’ cannot intervene between the DO and NQDO in (81) and (82), but it is not obvious how to account for the fact with the analysis in (83). If the restitutive ‘again’ can be merged at the edge of APPLP, as in (83), there is no reason to block APPLP-internal movement of the DO over the restitutive ‘again’, as depicted in (84). Moreover, we have already seen that APPLP-internal movement of the DO to the edge is independently possible in (77). Thus, if the high applicative approach in (77) is correct, the derivation in (84) must also be allowed, contrary to the facts in (81) and (82).

(84)  High applicative approach and restitutive ‘again’

\[
\begin{array}{c}
\text{APPLP} \\
\text{IO} \\
\text{DO} \\
\text{‘again’} \\
\text{VP} \\
\text{APPL} \\
\text{V} \\
\text{tDO NQDO} \\
\end{array}
\]

The low applicative approach in (78) faces the same problem. To explain the data (79) and (80) where restitutive ‘again’ intervenes between the IO and the DO, it is
necessary to assume that ‘again’ is merged below the IO at the edge of APPLP. Once we allow the structure where restitutive ‘again’ is merged together with the IO and the DO, it is not clear how to explain the fact that restitutive ‘again’ cannot intervene between the DO and NQDO in (81) and (82). As depicted in (85), there is no reason to block APPLP-internal movement of the DO over restitutive ‘again’.

(85)  **Low applicative approach and restitutive ‘again’**

It seems that the ordering puzzles addressed above are not easily amenable to existing theories of ditransitive constructions. The problem originates from a situation in which the DO must be able to undergo movement over the IO, but not over restitutive ‘again’. Crucially, however, this is a paradoxical requirement for both approaches in (77) and (78). On the high applicative analysis (77), if the DO can move to the left of the IO on the edge of APPLP, it must also be able to move to the left of restitutive ‘again’, which is also assumed to be merged on the edge of APPLP. The same problem arises for the low applicative analysis in (78).

To resolve the puzzles addressed here, it is important to understand that the DO behaves as if it is on the edge of the same predicational domain as restitutive ‘again’, whereas the DO functions as a non-edge element or domain-external element with respect to the IO. If the IO and restitutive ‘again’ must be merged in the same predicational domain as APPLP, the puzzles at hand cannot be explained in any straightforward way.

Though I cannot provide a fully developed answer for the puzzles, the data collected here point to the possibility that the IO and restitutive ‘again’ can be merged in separate Spell-out domains. For concreteness, imagine that the IO can be a null element merged on the edge of a predicational domain that contains the DO, and that the covert IO is anaphorically related to the overt IO merged outside. This is described in (86) and (87), where two applicative heads appear in the same clause. In principle, restitutive ‘again’ can be merged above the DO as in (86), or below the DO as in (87). In either case, we can derive the fact that ‘again’ modifies the predicational structure concerning the IO and the DO (accommodating Beck and Johnson’s 2004 insight on ‘again’ in double-object constructions; see n. 27 above).
As described in (86), if ‘again’ merges on the edge of the predicational structure that contains the covert IO and DO, the fact that restitutive ‘again’ may intervene between the IO and the DO can be explained (e.g. (79) and (80)). If the DO can be merged higher than restitutive ‘again’, as in (87), we can explain the fact that the IO may intervene between the DO and the NQDO, as seen in (75) and (76).

Finally, whenever restitutive ‘again’ intervenes between the DO and NQDO, we get an ordering contradiction (under either (86) or (87)). If ‘again’ is merged on the outer edge, as in (86), it must precede both the DO and NQDO. If it is merged on the inner edge, as in (87), it must follow both the DO and NQDO. Under the assumption that movement is triggered by probe-goal Search, there is no way of deriving the ordering DO < restitutive ‘again’ < NQDO within the predicational structure, regardless of the presence of an overt IO in a higher domain. This can be explicated as an instance of the EG.28

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28 The proposed structures in (86) and (87) are not entirely new. It has been proposed that the goal argument may appear both in the high and low applicative head in the same clause. Extending Marantz’s (1993) proposal, Miyagawa and Tsujioka (2004) argue that Japanese ditransitive constructions are
By assuming combinatory applicative structures such as (86) or (87), we may capture the syntactic distribution and semantic relationship among the internal arguments in ditransitive constructions. I acknowledge, however, that the suggestions described in (86) and (87) are only tentative, and that the main purpose of this section is not to defend the particular claims sketched in (86) and (87). Rather, my goal is to show that the extant theories of ditransitives cannot easily explain the ordering patterns which involve ‘again’ and floating NQs. Future research may show that the puzzles addressed above may follow from other independent considerations; and even if (86) and (87) are on the right track, much substantial research is required to verify the existence of pro in the lower small clause. It is also undeniable that there is significant overlap between the semantic functions of the high IO and pro within the lower domain. Until these issues are resolved, I offer (86) and (87) as a tentative suggestion.

5.5 Conclusion

We have seen various sub-extraction phenomena out of secondary predication domains. We observed that the distribution of an accusative-marked element which functions as the subject of a small clause is crucially affected by its underlying structure. An array of facts regarding floating NQ constructions crossed with resultative secondary predications, depictive secondary predications, and ‘again’ constructions has been closely examined. Some important facts discussed in this chapter are summarized in (88).

(88) Ordering patterns in adjunct and secondary predicational domains

- A resultative predicate in Korean may not intervene between a nominative-marked resultative subject and its NQ, while it may intervene between an accusative-marked resultative subject and its NQ.
- A resultative predicate in Korean cannot be fronted to the left of a nominative-marked resultative, but it may precede an accusative-marked resultative subject.
- A resultative predicate in Japanese may not intervene between an accusative-marked resultative subject and its NQ (with some variations).

ambiguous between PP datives and double-object constructions, and that one clause may contain both a PP dative (low goal) and an indirect object (high goal). More recently, Georgala et al. (2008) propose an ‘expletive applicative structure’, and argue that the expletive high applicative head may license an argument in VP, instead of introducing a new argument. The role of the expletive applicative is similar to that of the high IO in (86) and (87) in that the IO licenses another IO in a lower domain. It is also worth noting that Beck and Johnson (2004) argue that the DO may be anaphorically related to the subject of a small clause that contains a goal. In (86,87), I hypothesize that the IO is anaphorically related to the small-clause subject instead of the DO being anaphorically related to the small-clause subject.
A transitive subject cannot be separated from its NQ by a resultative predicate either in Korean or in Japanese.

The aspectual adverb ‘again’ may intervene between the object and its NQ when it carries a repetitive reading, but may not intervene between the object and its NQ when it bears a restitutive reading. This holds for transitive and unaccusative verb constructions in Korean and Japanese.

The adverb ‘again’ may intervene between the subject and its NQ only when it has a particular type of a repetitive reading—i.e. when it outscopes a subject quantifier.

A subject-oriented depictive phrase in Korean and Japanese may intervene between the subject and the subject-oriented NQ, but an object-oriented depictive cannot intervene between the subject and the subject-oriented NQ.

An object-oriented depictive, however, may intervene between the object and the object-oriented NQ in Korean and Japanese.

A dative-marked IO may intervene between the DO and the NQDO in Korean and Japanese. Restitutive ‘again’ may intervene between the IO and the DO, but it may not intervene between the DO and NQDO.

I have argued that the seemingly heterogeneous types of fact in (88) can be understood as the same phenomenon if we extend the EG to small-clause domains and adopt independently required assumptions for argument structure.

In particular, by assuming that a predication structure forms a Spell-out domain, we predict that the edges of a small clause will be temporarily frozen, just like the edges of the primary predication vP domains. Under probe-goal Search, the elements merged on the edge of a small clause (or a decomposed verb) as a constituent cannot undergo movement within the small clause onto which they are externally merged. If Spell-out applies to predicational domains, the edge elements cannot be separated by a predicate-internal element. Under anti-locality, a small-clause predicate cannot undergo predicate fronting within its own RP, and this ordering restriction must be preserved under CL. I also show that when an object can be separated from its NQ by a small-clause predicate, the object is not a subject of the small clause, but a true argument of the main verb, which is anaphorically related to a null subject in the small clause.

The current proposal not only captures the dynamic relationship between edge elements and their domain-mates but also has some interesting consequences for argument structure. My claims imply that resultative phrases are complements in Japanese, but adjuncts in Korean. The overall discussion supports Shim and den Dikken’s (2009) approach to Korean resultatives and Simpson’s (1983) typological approach to resultatives. The arguments presented here also lead us to assume that pro and nominative-marked subjects are licensed within adjunct-type secondary predication. I have also shown that the multiple readings of ‘again’ are derived
from structural ambiguity, not from lexical ambiguity, further supporting von Stechow (1996). The observed contrast between an SDP and an ODP further supports Koizumi’s (1994) claim that the two types of depictive phrase occupy different structural positions. It also supports the claim that depictive phrases are adjuncts both in Korean and in Japanese, unlike resultatives.
6

Concluding remarks

This book has argued for three research programs in cyclic syntax. First, syntactic structure undergoes cyclic Spell-out and linearization at the PF–syntax interface. As a consequence of CL, the linear ordering of syntactic units is fixed once and for all after Spell-out (Fox and Pesetsky 2005a; 2005b). Second, a predicational unit undergoes Spell-out as a whole (cf. den Dikken 2007a). Thus, the linear orderings of the elements within the same predicational unit must be preserved after Spell-out. Third, the probe-goal theory restricts movement in the narrow syntax (Chomsky 2000; 2001). As a result, an element cannot undergo movement or sub-extraction from an inner edge to an outer edge of the same head. Additionally, anti-locality regulates movement of the complement to the edge of its own head (e.g. Abels 2003; Boeckx 2007; Bošković 1994; 2005; Doggett 2004; Grohmann 2003a; 2003b; Lee 2004; Saito and Murasugi 1999).

In the preceding five chapters, I have shown that the characteristics of syntactic edges in linearization and movement can be derived from general theories in cyclic syntax, with independently motivated principles in the grammar. In this concluding chapter, I evaluate my proposals against the other influential model of cyclic syntax reviewed in Chapter 1. In particular, I consider the impact of my arguments for Chomsky’s proposition-based phase model (Chomsky 2000; 2001; 2004; 2008, in particular). I then wrap up the discussion with an overall summary. I also discuss implications of my proposal for principles in the narrow syntax such as locality in movement, scrambling, and argument structure.

6.1 Challenges in cyclic syntax

One major difference between Chomsky’s phase model and CL lies in the domain of Spell-out. Chomsky (2000, and subsequent works) argues that Spell-out must be limited to the complement of a phase head, and that edges and complements are spelled out separately, as depicted in (1). This is a necessary consequence of the Phase Impenetrability Condition (PIC) (2), which makes the complement domain become inaccessible to syntactic operations after Spell-out, in contrast to the edge and head of a phase.
Phase of HP

Spell-out domain of HP

(1) \([ZP \quad Z \quad \ldots \quad [\text{HP} \quad \alpha \quad [H \quad \text{YP}]]\]\\)

Phase Impenetrability Condition (Chomsky 2001: 13)

[For a strong phase HP with a head H,] the domain of H is not accessible to operations outside HP; only H and its edge are accessible to such operations.

The series of arguments developed in this book, however, presents evidence against the PIC approach. We have seen a number of examples which show that the edge must be spelled out together with its complement. For instance, one of the most important generalizations defended in this book, the Edge Generalization in (3), cannot be accommodated under the PIC approach in any straightforward way. If edges are spelled out separately from complements, edges would be linearized separately from them as well. Even if X and Y in (4) cannot move over Z within \(\alpha P\), it is in principle possible for X and Y to be fronted to the left of Z in later derivations if they are linearized in different domains. Under the PIC approach, there is no obvious reason to block the linear ordering such that a domain-internal Z intervenes between the edge elements X and Y, contrary to the EG in (3).

(3) Edge Generalization (EG)

If X and Y are dominated by a specifier \(\gamma P\) of a Spell-out domain \(\alpha P\), X and Y cannot be separated by an \(\alpha P\)-internal element Z that is not dominated by \(\gamma P\).

(4) Domain-internal movement out of syntactic edge

We have seen a good deal of evidence which confirms the EG. Sub-extraction out of syntactic edges is more restricted than sub-extraction out of the complement, and a variety of order-preservation effects on syntactic edges can be subsumed into the EG. The PIC approach would not account for the cases understood as instances of the
EG in this book: recall, in particular, the distribution of a subject and its adnominal quantifier, the distribution of an object analyzed as the subject of an embedded predicate, the distribution of a Major Subject with respect to Sentential Predication, the distribution of a resultative subject, and the distribution of an object interpreted as the subject of small clauses in a decomposed VP.

This book also showed that edges are not an opaque domain for sub-extraction in general. In particular, sub-extraction out of an edge in a configuration like (5) is in fact possible (cf. e.g. Boeckx 2003a; Chomsky 2008; Gallego 2007; Gallego and Uriagereka 2007; Jurka 2010; Lasnik and Saito 1992; Lohndal 2011; Müller 2010; Polinsky et al. 2013; Rizzi 2006; Stepanov 2007; Surányi 2009; for a ban on extraction out of subject domains). Moreover, it has been shown that sub-extraction in (5) must target the domain-external Λ'-position (see Chapters 2 and 3). If edges were opaque for sub-extraction, the fact that edges are transparent when they undergo domain-external movement would not be explained in any straightforward way. Thus, the contrast between domain-internal and domain-external movement out of edges as well as the EG would present challenges for the PIC approach (which relies on a general ban on sub-extraction out of edges) (see Chomsky 2008 for subject islands).

(5) Domain-external movement out of a syntactic edge

Moreover, the PIC approach has no particular prediction for or against movement out of multiple edges. For instance, there is nothing inherent about the PIC approach that forces X and Y at the edge in (6a) to preserve their relative orderings in the next domain. If ungrammatical, derivations like (6c) must be ruled out by other mechanisms. As reviewed in Chapter 2 (Appendix 2A), Richards’s (2001) Tucking-In generalization may achieve this goal in some cases, but it is too weak to cover the overall data presented in this book. Thus, the evidence in support of order-preservation effects in multiple edges would present non-trivial challenges for the PIC approach as well.
Multiple movement out of multiple edges

(6) a. \[ \alpha P X Y [\alpha' Z \alpha]]: X < Y < Z < \alpha \]

b. \[ \beta P X_1 Y_2 [\beta' [\alpha P t_1 t_2 [\alpha' Z \alpha]] \beta]]: X < Y < \alpha P < \beta \Rightarrow X < Y < Z < \alpha < \beta \]

c. \[ *[\beta P Y_2 X_1 [\beta' [\alpha P t_1 t_2 [\alpha' Z \alpha]] \beta]]: Y < X < \alpha P < \beta \Rightarrow Y < X < Z < \alpha < \beta \]

In particular, we have seen that the prediction in (6) holds whether or not X and Y target multiple specifiers of the same head. As soon as X and Y are spelled out together in the same predicational domain, they must preserve their relative orderings regardless of their landing sites. When the object is scrambled over the subject, the relative ordering between the scrambled object and the subject on the edge (O < S) must be preserved in higher domains (Chapter 2). It has also been shown that an adverb on the edge of a small clause must preserve its relative ordering with respect to the subject of the small clause (see, in particular, sections 5.3 and 5.4).

Another major difference between this work and Chomsky’s phase model is what counts as a cyclic node. Chomsky (2000; 2001) hypothesizes that phases are characterized as semantically propositional and phonologically isolable. Chomsky claims that only transitive v*Ps and CPs pass phasehood tests, and thus that they are the only units that undergo Spell-out. As reviewed in section 1.2, this proposal has some internal inconsistency and theory-internal problems. The set of data presented in this book further show that it is empirically incorrect as well.

In this book, we have seen that order-preservation effects are observed not only in primary predicational domains but also in non-primary predicational domains as well. The general predicational structure in (7) undergoes linearization, and the edges of RP show rigid ordering patterns, obeying the EG. Moreover, the predicate cannot be fronted to the left of its own subject. The set of evidence for linearization of the structure in (7) constitutes counterarguments against the approach which limits phases into a subset of vPs and CPs. In particular, under the proposition-based model, the uniform ordering restrictions observed in small-clause complements, Raising/Control complements, Sentential Predication, adjunct small clauses, and decomposed VPs would be a surprising coincidence.

(7) \[ \text{RELATOR-P (RP)} \]

subject \hspace{1cm} \text{RELATOR' }

predicate \hspace{1cm} \text{RELATOR}
The fact that linearization patterns are strongly affected by the presence of a null subject on the edge cannot be easily accommodated under the proposition-based model, either. If small clauses do not undergo cyclic Spell-out, there is no obvious reason why the presence of pro on the edge of a small clause should affect linearization of the secondary predication. In this book, we have seen that in configurations like (8), quantifier stranding, predicate fronting, and scrambling of the object are much freer, in comparison to cases where the small clause contains (a trace of) an overt subject. A series of contrasts between overt subjects and null arguments in linearization provides empirical support for the CL approach. This, in turn, presents unresolved puzzles for the proposition-based model. Recall in particular the contrast between two types of small clause in 4.2, the contrast between a proleptic/Control object vs. raised object in 4.3, the contrast between two types of resultative in 5.1, and the contrast between complement resultatives and depictives in 5.3.

(8)  **Null subject on the edge of a predicational domain**

\[
\text{VP} \\
[\text{object}_1 + \text{NQ}_{\text{Obj}}] \xrightarrow[]{} \text{V'} \\
\text{RP} \xrightarrow[]{} \text{V} \\
\text{pro}_1 \xrightarrow[]{} \text{R'}
\]

Given the strength and complexity of the evidence, it is not clear how the proposition-based PIC approach would be able to accommodate all the evidence adduced here. As it stands, it is not obvious how the PIC approach would incorporate the dynamic interactions between the edges and the intervening items in a principled way. The ultimate goal would be to derive a generalization that elements may change their orderings only in the smallest predicational domain that they are externally merged into—which is exactly what the current CL model predicts. It surely remains a research question whether the order-preservation effects presented in this book can be derived in a simpler way without CL. Further research might show that a variant of the PIC approach could resolve the ordering puzzles in some interesting way. Under the current development of theories in cyclic syntax, however, the evidence seems to converge to the conclusion that interactions between movement and linearization can be most naturally captured by the CL model.
6.2 Overall summary

This book began the discussion with a debate on the nature of cyclic Spell-out in the grammar. I closely reviewed two major models in cyclic syntax which hold different perspectives on successive cyclicity. On the one hand, Chomsky’s (2000; 2001) phase model argues that an escape hatch needs to be postulated due to the Phase Impenetrability Condition (PIC), and that elements must stop at the edge of every phase to undergo phase-external movement. On the other hand, Fox and Pesetsky’s (2005a) Cyclic Linearization model argues that the notion of an escape hatch is unnecessary, and that successive cyclicity follows from the monotonicity of the linearization process. Crucially, the two approaches have divergent predictions for the typology of movement, but arguments for either of the two models are inconclusive unless the characteristics of domain-internal movement are properly understood.

This book is one such attempt to study the relationship between the syntax proper and syntax–phonology mapping at the interface. I have shown that interactions of cyclic Spell-out and a constraint on domain-internal movement lead us to predict otherwise unexpected restrictions for (sub-)extraction out of syntactic edges. The book shows that a variety of predictions of the CL model coupled with the probe-goal theory are consistently upheld. In particular, we have seen that the results of scrambling are severely restricted in the way predicted by the CL model. Especially, order-preservation effects are strongly obtained in predicational domains.

As initial evidence for my proposal, I examined a long-standing puzzle concerning a subject–object asymmetry in scrambling in Korean and Japanese (dubbed the Subject Puzzle). After I established that previous accounts for the Subject Puzzle could not be maintained, I proposed that the puzzle is in fact subsumed into a general constraint on syntactic edges, which follows from an interaction of the probe-goal theory and CL. In particular, a subject and subject-oriented adnominal NQ are merged on the edge of vP, and thus they cannot undergo movement within vP (given probe-goal Search). The object may precede or follow the subject and the subject-oriented NQ, but may not intervene between them. Under the assumption that vP is a Spell-out domain as a primary predicational structure, it follows under the CL model that the subject and its NQ cannot be separated by the object in higher domains either.

It naturally follows from the proposal that the subject and its NQ cannot be separated by other vP-internal elements (e.g. an indirect object, PP argument, vP-internal adverbs), but can be separated by vP-external elements (e.g. vP-external adverbs, matrix subject). My proposal also explained the fact that the object and its NQ can be separated by a vP-external or vP-internal element rather freely. It provided a natural account of why the unergative subject can be separated from its NQ by vP-external adverbs, but not by vP-internal elements. The reason why the
unaccusative subject can be separated from its NQ by either a vP-external or vP-
internal adverb was also explained. I also showed that my arguments are further
supported by facts about NQ fronting in Japanese and the subject–object asymmet-
ries in sub-extractions in Russian.

After showing that the puzzles concerning subject scrambling and quantifier
stranding can be resolved by my proposal, I turned to the question of how underlying
constituency affects linearization at the interface. In particular, I compared the syntax
and semantics of two types of floating quantifier, advFQs and adnFQs, building on
Fitzpatrick’s (2006) theory. AdvFQs have some characteristic properties that make
them distinct from adnFQs. First, advFQs carry an exhaustive, identificational,
presuppositional reading. By contrast, adnFQs are most compatible with a non-
specific, cardinal, partitive meaning. Second, the associate of advFQs may undergo
A-movement, but not A’-movement. The host noun of adnFQs, on the other hand,
may undergo A’-movement, but not A-movement. Third, advFQs cannot precede
their associate unless the associate is a pronoun which can function as a variable. In
contrast, certain types of adnFQ may precede their associate noun. Fourth, advFQs
may stand alone without the support of an overt associate, whereas adnFQs must
appear together with an overt associate in the sentence.

I have shown that bare NQs (out of focus) in Korean and Japanese (e.g. sey-myeng
‘3-Ci.’ in Korean) are semantically non-exhaustive and show the syntax of typical
adnominals. Quantifiers such as motwu ‘all’, amwuto ‘anyone’, exhaustive focus-
marked NQs (e.g. -man ‘only’), and Case-marked NQs in Korean belong to the
adverbial type. In Japanese, quantifiers like minna ‘all’, zen’in ‘all’, and exhaustive
focus-marked NQs (e.g. -dake ‘only’, -sika ‘only’) belong to the adverbial type.
Floating quantifiers such as all, both, each in English, tous ‘all’ and chacun ‘each’ in
French, kol ‘all’ in Hebrew also belong to the adverbial type.

I have proposed that the set of differences between advFQs and adnFQs can be
captured by assuming different underlying structures for them, which also have
significant consequences for linearization. Specifically, I argued that advFQs contain
an exhaustive quantifier adjoined to a null pronoun which binds a variable linked to
its associate noun (following Doetjes 1997 and Fitzpatrick 2006). I claimed that
advFQs are not just vP-adjuncts, but are projected in a special type of focus
projection which assigns an exhaustive reading to the quantifier. Under this proposal,
I explained why advFQs receive an identificational focus, just like preverbal focus in
Hungarian as presented in É. Kiss (2010). AdnFQs, on the other hand, are directly
merged with a non-specific noun within a nominal projection. This captures the fact
that adnFQs are most compatible with cardinal, non-presuppositional readings.

Following Fitzpatrick (2006), I argued that the associate for an advFQ must also
undergo A-movement due to the presence of a null pronoun inside the advFQ. The
host for an adnFQ, on the other hand, must undergo A’-movement because sub-
extraction cannot target an A-position. This has the surprising consequence that the

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**Overall summary**

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subject must target an A'-position when it strands an adnominal NQ. The discussion in this book provides empirical support for this consequence based on anaphor binding and Weak Cross-Over data. Moreover, it was shown that a subject-oriented advFQ may be separated from its associate by domain-internal elements such as the object and vP-internal adverbials, in sharp contrast to adnFQs. I argued that this is in fact predicted because the EG holds only when the elements on the edge are constituent-mates.

I also considered contexts where identificational focus falls on a bare NQ, and proposed that in exactly those contexts, the bare NQ shows the same syntactic and semantic properties as advFQs. Bare NQs, by default, are interpreted as non-exhaustive adnominal quantifiers, but may be reanalyzed as exhaustive quantifiers when the background pragmatic context forces such an interpretation (e.g. ‘how many’ contexts, gapping contexts). It was shown that judgement variations concerning the Subject Puzzle may receive a principled account by this proposal in that numerals with exhaustivity have the syntax and semantics of an advFQ.

In the second half of the book, I focused on the consequences of CL for the linearization of non-primary predicational domains. Adapting den Dikken (2007a), I claimed that a predicational structure as a whole constitutes a Spell-out domain, and showed that my proposal for transitive vPs directly extends to secondary predicational domains, with an interesting twist due to the possible presence of a null subject on the edge of a secondary predication.

First, I looked into the distribution of an object when it is interpreted as the subject of a small-clause complement. It was shown that an object of an epistemic verb behaves differently than an object of an episodic verb. The object of an epistemic verb cannot be separated from its associate NQ by a small-clause predicate. Moreover, the small-clause predicate cannot be fronted to the left of the object. In sharp contrast to this, the object of (some) episodic verbs may be separated from its NQ by a small-clause predicate, and predicate fronting over the object seems quite acceptable as well (at least for some speakers). I argued that the contrast between these two types of object follows from my proposals on edges.

In particular, I have proposed that small-clause domains undergo cyclic Spell-out and linearization as a predicational unit. The syntactic structure of a small clause is so impoverished that neither its specifier nor the complement predicate may undergo movement within an RP: the specifier cannot undergo domain-internal movement because it is already on the edge and cannot be probed by the RELATOR head (under a probe-goal theory). The predicate cannot undergo RP-internal movement due to anti-locality. Thus, under the CL model, we predict extremely rigid order preservation for small-clause domains: the argument structure within the small clause is fixed once and for all, even in scrambling languages like Korean and Japanese.

The object of an epistemic verb must be analyzed as the subject of the following small clause, and thus strong order-preservation effects are conspicuous. By contrast,
the object of an episodic verb may be analyzed as the true argument of the main verb (as an affected theme) and a null subject can be postulated within the small clause. This explains why the object may enjoy considerable freedom in terms of its orderings with respect to the small-clause predicate. Additionally, I showed that advFQs are not compatible with predicate fronting out of epistemic verbs because a legitimate binding configuration cannot be established when a small-clause predicate is fronted.

Next, I examined ordering puzzles related to predicate fronting out of Raising complements. It was shown that predicate fronting is impossible when the embedded subject is Nom-marked, whereas predicate fronting becomes possible when the subject is Acc-marked and licensed as a proleptic object of the main verb. Predicate fronting over a proleptic object is expected to be grammatical because the proleptic object is not a domain-mate with the embedded predicate. The embedded predicate may move to the left of the proleptic object without ordering contradictions. Predicate fronting over a raised object, on the other hand, is predicted to be impossible because the raising object is merged within the same predicational domain as the embedded predicate in base structure.

Specifically, I assume with J. H.-S. Yoon (2007) that Subject-to-Object Raising in Korean contains double predicational structures. One is a primary predication projected from the lexical predicate, and the other is a Sentential Predication which describes a property of a Major Subject. Since the Major Subject precedes Sentential Predication in base structure, the Major Subject must continue to precede the elements merged within Sentential Predication regardless of its Case morphology. This explains why the embedded predicate cannot precede the raised Major Subject. From this proposal, it naturally follows that the Grammatical Subject cannot precede the Major Subject either. Furthermore, my proposal also captures the fact that predicate fronting is possible when a null pronoun can be postulated in place of the raised object. I also presented syntactic and semantic reasons why my approach is superior to alternatives based on the Proper Binding Condition or affixal status of inflectional morphemes (cf. Chung 2007; 2011).

By extending my proposal for Raising constructions, I examined the ordering patterns in Control constructions and multiple nominative constructions in Korean. The object of a Control construction is analyzed as the direct argument of the main verb, and thus predicate fronting over the object is possible, in contrast to Raising constructions (replicating Ahn and Cho’s 2008 observation). Interestingly, some causative constructions are ambiguous between causative complement vs. purposive adjunct clause. Only the latter allows predicate fronting over the object, as predicted by the current proposal. It was also shown that even a low adjunct PP or a thematic object must precede the Grammatical Subject when they function as a Major Subject. This was analyzed as a consequence of CL for Sentential Predication. This proposal also explains why advFQs can be readily associated with the Major Subject, while
adnFQs cannot, on the basis of J. H.-S. Yoon’s (2007) Characteristic property condition.

In the remaining parts of the book, I focused on possible interactions between underlying predicational structure and linearization. In particular, the ordering patterns in/out of adjunct and secondary predicational domains were closely examined.

Capitalizing on the observation that resultative subjects in Korean and Japanese behave differently, I posited two types of resultative in underlying structure. Resultatives headed by -key in Korean are merged as an adjunct to the main verb, and the NOM-marked resultative subject must be merged within the resultative phrase. As in the case of epistemic verb constructions, RP-internal movement is impossible given a probe-theory and anti-locality. Therefore, the relative orderings between the resultative subject and its predicate must be preserved as established in the RP. This explains why the resultative predicate cannot precede its subject or intervene between the subject and its NQ.

The distribution of a NOM-marked resultative subject contrasts with that of an ACC-marked resultative subject in Korean. ACC-marked resultative subjects are in fact direct objects of the main verb, and thus the resultative predicate can be fronted to the left of the object. Since they are not domain-mates, their relative orderings can be shifted later.

Japanese -ni resultatives, on the other hand, lack NOM-marked resultatives altogether, and must obey Simpson’s (1983) law. I argued that Japanese -ni resultatives must be analyzed as a complement of the verb. The subject of -ni resultatives is externally merged within the resultative phrase. Hence, it follows that the resultative subject of -ni resultatives must precede its predicate even if it is ACC-marked.

The validity of my proposal was also tested with ordering patterns of depictive predicational constructions. I proposed that, unlike resultatives, depictives are merged as an adjunct to a verbal projection both in Korean and in Japanese (supporting Koizumi 1994), and that a null subject must be postulated within depictive phrases. Following Koizumi’s (1994) theory of depictives, I argued that a subject-oriented depictive can be merged in a vP-external position, whereas an object-oriented depictive must be merged in a vP-internal position. The array of facts concerning the distribution of depictives with respect to subject scrambling, object scrambling, quantifier stranding, and resultatives was explained by my proposal for edges. In particular, the proposal explains why an object-oriented depictive phrase cannot intervene between the subject and its NQ\textsubscript{Subj} whereas it can intervene between the object and its NQ\textsubscript{Obj}. The fact that a subject-oriented depictive phrase may intervene between the subject and its NQ\textsubscript{Subj} as well as between the object and its NQ\textsubscript{Obj} also follows from the proposal.

In the final sections, I provided further support for my proposal from some interesting correlations between the interpretation of ‘again’ and order-preservation
effects within a decomposed VP. The adverb ‘again’ in Korean and Japanese is ambiguous between repetitive and restitutive readings. Assuming that the ambiguity of ‘again’ originates from the diverse syntactic positions of ‘again’, I explained why restitutive ‘again’ cannot intervene between the object and its NQ while repetitive ‘again’ can. Extending my proposal to small-clause domains, I also accounted for some correlations between the presupposition of repetitive ‘again’ in semantics and the distribution of a subject-oriented NQ in syntax. My proposal was extended to ditransitive constructions, with the theoretical consequence that a ditransitive clause may contain both high and low applicative arguments in one clause.

My proposals for syntactic edges not only capture the dynamic relationship between edge elements and their domain-mates but also have some interesting consequences on argument structure. My analysis on the edges implies that depictive phrases are adjuncts in Korean and Japanese, but that resultative phrases are complements in Japanese while they are adjuncts in Korean. The overall discussion supports Shim and den Dikken’s (2009) approach to Korean resultatives as well as Simpson’s (1983) typological approach to resultatives.

The evidence collected here also leads us to assume that pro or a nominative-marked subject is licensed with secondary predicates of an adjunct type. I also showed that the multiple readings of ‘again’ are derived from structural ambiguity, not from lexical ambiguity, further supporting von Stechow (1996). My arguments also support the claim that lexical decomposition of a verbal predicate into an adjective head and an empty predicate is necessary (e.g. Baker 2003; Hale and Keyser 1993; Larson 1988). The observed contrast between subject-oriented and object-oriented depictive phrases further supports Koizumi’s (1994) claim that the two types of depictive phrase occupy different structural positions. It was also suggested that the indirect object in Korean and Japanese can be externally merged in both high and low predicational domains (cf. Pylkkänen 2002/2008).

The diverse restrictions in the distribution of NQs present evidence against the approach that floating NQs are simply adverbials or simply adnominals. Instead, the evidence collected here suggests that a hybrid approach to floating quantifiers is necessary, supporting the line of approaches adopted in Fitzpatrick (2006). One type of floating quantifier (e.g. NQs) forms a constituent with its host NP in the underlying structure (e.g. Kuroda 1983; Sportiche 1988; Ueda 1990). The other type of floating quantifier (e.g. Case-marked NQ, focus-marked NQ, group-denoting maximizers, negative-polarity items) does not (e.g. Doetjes 1997; Dowty and Brodie 1984; Kayne 1975; Nakanishi 2003a; 2003b). If my analysis is successful, the cluster of properties predicted by the current proposal can be used as a diagnostic to determine the underlying constituency of floating quantifiers.

My arguments also contribute to the formal theory of scrambling by providing evidence that scrambling occurs in a legitimate probe-goal configuration. Under my proposal, it is crucial to assume that an element cannot undergo scrambling when it
is placed in the specifier of a potential probe. If scrambling occurred freely regardless of the locality condition of movement, the evidence for my proposal would remain a mystery. This book thus provides further support for the line of approaches arguing that scrambling is a feature-driven movement (e.g. Grewendorf and Sabel 1999; Kitahara 2002; Miyagawa 1997; 2001; Sabel 2001; 2005).

This poses challenges to the approach that scrambling occurs rather freely without an attracting head (cf. Fukui 1993). My approach to scrambling also crucially assumes that elements must be externally merged in their theta positions prior to scrambling. This in turn challenges the view that scrambled elements are externally merged in their pronounced positions and then undergo lowering to their theta position at LF (cf. Bošković and Takahashi 1998; see Bailyn 2001 for extensive discussion). Overall, my arguments show that linear ordering in scrambling is not flexible, but rigid to the extent that only a particular type of word order variation is allowed as a consequence of cyclic Spell-out.

My arguments provide evidence for the claim that the domain of cyclic Spell-out must include the Specs of a Spell-out domain (Fox and Pesetsky 2005a; 2005b). If edges are escape hatches and thus do not undergo Spell-out with the complement of the same phase head, there is no principled reason to expect that the orderings between edges and their domain-mates are fixed at Spell-out (cf. e.g. Chomsky 2000; 2001; 2004; 2008; Nissenbaum 2000).

Under the assumption that predication is a cyclic unit for Spell-out, as understood here, small clauses and transitive or intransitive vPs are all understood to be Spell-out domains (den Dikken 2007a; cf. Matushansky 2000). Hence, my arguments also present some challenges to the view that only propositions are phases (cf. Chomsky 2000 and its successors). My proposal is crucially based on the assumption that domain-internal movement of an edge element is impossible due to the condition on the probe-goal theory of movement (Chomsky 2000; 2001). If Spec-head agreement is a possible source of movement, the facts discussed in support of rigid ordering at the edges would not be explained in a coherent way (cf. Koopman 2006; Rezac 2003; Richards 2004; Ura 1996).

Many interesting issues are left uncovered in this book. I have argued that a predicational domain must be a Spell-out domain, but I have left it open whether other syntactic domains may also constitute a Spell-out domain. I have confined my interest to predicational phrases within verbal projections, but one may also explore whether non-verbal predications would show the same type of effect at the edges. One could also evaluate the current claim with respect to information structure where the topic in general is considered as the subject of the comment. The evidence in this book mainly comes from scrambling data in Korean and Japanese, though I tried to extend some of my arguments to other languages. The scope of the proposal, however, should not be limited to a particular language or to a particular construction. If the current proposal is on the right track, one should be able to find
evidence for my proposal from other types of split constructions or sub-extraction constructions in languages.

With the present study, I hope to have contributed to the discussion on the properties of cyclic syntax and their consequences for the interfaces in a constructive manner, and therefore to a better understanding of language in general.
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