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The Syntax of Adjuncts

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THE SYNTAX OF ADJUNCTS

This book proposes a theory of the distribution of adverbial adjuncts in a Principles and Parameters framework, claiming that there are few syntactic principles specific to adverbials; rather, for the most part, adverbials adjoin freely to any projection. Adjuncts' possible hierarchical positions are determined by whether they can receive a proper interpretation, according to their selectional (including scope) requirements and general compositional rules, whereas linear order is determined by hierarchical position along with a system of directionality principles and morphological weight, both of which apply generally to adjuncts and all other syntactic elements. A wide range of adverbial types is analyzed: predicational adverbs (such as manner and modal adverbs), domain expressions like *financially*, temporal, frequency, duration, and focusing adverbials; participant PPs (e.g., locatives and benefactives); resultative and conditional clauses, and others, taken primarily from English, Chinese, French, and Italian, with occasional reference to others (such as German and Japanese).

Thomas Ernst, who has lectured widely in East Asia, Western Europe, and the United States, is currently a visiting scholar at the University of Massachusetts–Amherst. His many published articles have appeared in, among other journals, *Natural Language and Linguistic Theory* and *Linguistic Inquiry*.

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Acknowledgments

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1

Introduction

1.1 Introduction

1.1.1 The Main Goal

Nobody seems to know exactly what to do with adverbs. The literature of the last 30 years in formal syntax and semantics is peppered with analyses of the distribution or interpretation (or both) of small classes of adverbs but has few attempts at an overall theory; there have been popular proposals for other phenomena based crucially on assumptions about adverbial syntax that have little or no foundation; and almost everyone who has looked at the overall landscape has felt obliged to observe what a swamp it is. The situation for the larger class of adverbials, including PPs, CPs, and other adverb-like phrases, is yet more complex and difficult. This book is intended as a response – an attempt to formulate a comprehensive theory of the distribution of adverbial adjuncts, one based on a wide range of data from the majority of semantic types of adverbials, culled from a large and diverse range of languages, and focused on accounting for the major distributional facts by means of a relatively small number of general principles, most of which are already necessary to account for other areas of syntax. Within this framework there are several specific goals.

1.1.2 Specific Goals

1.1.2.1 Base Positions and Licensing

When formal grammars standardly included Phrase Structure rules of the sort elaborated by Chomsky (1965) and other scholars of the 1960s, the free distribution of adverbs like *stupidly* or *quickly*, shown in (1.1)–(1.2), created an obvious problem: one needed rules like those shown in (1.3) to express their distribution.

(1.1) (Stupidly,) they (stupidly) have (stupidly) been (stupidly) buying hog futures (, stupidly).
(1.2) Albert (quickly) pushed the hammer (quickly) up (quickly) onto the roof (quickly).
(1.3) a. S → (AdvP) NP (AdvP) Aux (AdvP) VP (AdvP)
b. VP → (AdvP) V NP (AdvP) Prt (AdvP) PP (AdvP)

As was recognized quickly, this is a rather ungainly and redundant way to express the simple generalization that, for the most part, English adverbs occur freely under the appropriate (S or VP) node for the subclass in question. For this reason Keyser (1968) argued for, and later works assumed, a unique base position for a given adverb (say, VP-initial position) plus some sort of free movement for these "transportable" adverbs.

Stowell 1981 and subsequent work, however, showed that grammars are more restrictive and less redundant if phrase structure facts are parceled out to existing mechanisms in other modules, such as Case theory, Theta theory, and principles of Spec-head agreement. On this view, the generation of items in D-Structure and subsequent movements are free in principle, but phrases must meet licensing conditions of various sorts.[1] Typically, complements are licensed when selected by some head, moved items are licensed by features of their landing sites, an element base-generated in Spec position must have features matching those of its head (or is there as part of a general mapping from the Theta Hierarchy to Specs of "shell" VPs), and so on. However, there has been little consensus on how adjuncts are licensed. And they must be licensed; many proposals in the literature make assertions that an adverbial phrase X has a particular base position, but this is only the second half of the story: in a formal grammar, there must be specific principles to account for those positions.

It is important to remember that base positions are not fixed by phrase structure theory per se. The base position of a direct object in early Government-Binding (GB), for example, was determined by Theta and Case theories, which together ruled out any NP bearing an internal theta role of V but not governed by (and adjacent to) V. Similarly, a subject's base position, if VP-internal subjects were adopted, was fixed by the requirements that theta roles be assigned under government, that arguments of V not be adjoined (and thus they were in Spec, however this was ultimately stated), and that the subject's theta role be assigned to an NP c-commanding the object (assuming the Theta Hierarchy). That there was a unique base position was the consequence of narrowly formulated principles of these modules; they were so formulated because there was good evidence, such as from the locality of selection and Case assignment, that there was a unique base position.

This observation is important, because there has sometimes seemed to be an uncritical assumption that adjuncts must have unique base positions. Since many adjuncts seem to have multiple surface positions, the null assumption in current theory ought to be that they also have correspondingly multiple base positions; this is what is predicted by the free choice of items from the lexicon in the course of building up a tree. Note in particular that none of the reasons for positing unique base positions for arguments apply in general to adjuncts, such as the need to preserve locality of selection and locality of Case assignment, or to preserve the simplest set of PS rules.

This is not to say that one might not have other reasons for unique base positions; it is only to say that they must be different reasons and that they must be articulated, since they go against the null assumption. One possible reason is given by Cinque (1999): if adverbs are licensed in a one-to-one relation with a functional head, we restrict the possible types of licensing relations for them in Universal Grammar (UG). If this view of a unique base position for a given adverb is adopted, there must either be subsequent movements (of the adverb or other elements) to account for surface positions or the appearance of multiple positions for one adverb must be the result of different, "homophonous" adverbs. I argue at length that the need for such movements, as well as loss of restrictiveness in other modules, favors an approach where adjuncts may have multiple base positions. Regardless of the outcome, an adequate theory of adverbial distribution must do what PS rules were designed to do but did far too parochially and redundantly: to predict correctly the possible positions for any adverbial (with a given interpretation) in any given sentence. A primary goal of this book is to provide such a theory.

1.1.2.2 The Nature of Interfaces

A second important specific goal of this work is to flesh out a hypothesis about the interfaces between syntax and semantics on the one hand, and syntax and phonology on the other. Although the proposals made in the following chapters (previewed in section 1.1.3) posit certain syntactic mechanisms for adjunct licensing, the more important principles are constraints on mapping Logical Form (LF) onto semantic representations and constraints on Phonetic Form (PF). Most centrally, there are two main claims, one for each interface. First, the hierarchical arrangement of adverbials is primarily determined by the interaction of compositional rules and lexicosemantic requirements of individual adjuncts, as semantic representations are built up according to syntactic structure. Relatively little pure syntax is involved, such as licensing features specific to adverbs, feature-driven or "meaning-driven" movements

at LF, or systematic and widespread movement of heads around adverbs to account for alternate orders. Second, the linear order of adjuncts and related elements (such as modals, aspectual auxiliaries, passive markers, etc.) follows from their hierarchical positions, plus (a) Directionality Principles, including a language's parameterization for basic direction of complements and (b) Weight theory, which requires, rules out, or (dis)favors certain linear orders according to the "weight" of constituents in a sentence. Both of these are verified primarily at PF.

This is not a claim that no syntax is involved.[2] The Directionality Principles, while their effect is realized at PF, are a version of the traditional view that languages are either head-initial or head-final, plus the assumption that Spec positions are universally leftward, or at least heavily so. Another important device is a set of features that collectively define *extended projections*, in the oft-used sense first articulated by Grimshaw (1991) (and echoed in the "phases" of Chomsky [1999]). Finally, certain movements and principles of feature checking play a role in determining the ultimate linear order of adjuncts. It is crucial that none of these are specific to adjuncts; they all help determine the positions of arguments and verbs as well. Thus these proposals together embody the claims that, in general, relatively little syntax is *specific* to adverbial syntax and that in particular cases the semantic and PF-side principles, not the purely syntactic ones, have the greatest voice in determining adverbial distribution.

1.1.2.3 Generality and Restrictiveness

A third specific goal of this book is to reduce the degree of stipulation in current theories of adjunct syntax, making the overall theory more general, modular, and restrictive. Stipulative proposals abound, perhaps understandably, because there has been little in the way of an overall theory to use as a guide.

As examples, consider proposals by Ernst (1985) and Cinque (1999:29–30, following ideas in Nilsen [1998]). The first of these, in trying to account for the wider distribution of domain adverbs with respect to manner adverbs (see (1.4)) does no more than restate the facts in a formal way: it posits rules that license manner adverbs only within VP but that allow base positions for domain adverbs anywhere in S (= IP).

(1.4) a. (Psychologically,) this result (psychologically) may (psychologically) signal a change (psychologically).
b. (*Loudly,) this result (*loudly) may (loudly) signal a change (loudly).

The second proposal suggests, albeit tentatively, that DP/PP modifiers like *every day* or *at the university* enter into a different syntactic structure than do

AdvPs; this structure allows alternative orderings for the first type, as (1.5a) shows, but not for the second, in (1.5b).

(1.5) a. They attended classes {at the university every day/every day at the university}.
b. They had {obviously quietly/*quietly obviously} attended classes.

Presumably, given a different sort of semantic interpretation for the two types of adjuncts, the structural difference can be made to follow from the semantic one, perhaps by requiring the adverbials in (1.5a) to be specifiers of iterated, unordered light v heads, while those in (1.5b) are licensed by semantically more specific heads like "Epistemic^0" or "Manner^0."

These analyses are stipulative in that neither follows from more general principles; they are also redundant in that independently necessary semantic differences can be made to account for the variations. In the case of domain adverbs, the narrower distribution of manner adverbs in (1.4b) follows from a general restriction of event-internal modification to the lower part of the clause, a restriction that also affects measure adverbs, restitutive *again*, and such PPs as instrumentals, benefactives, and locatives like *at the university* (on one reading). These modifiers combine semantically with their sister constituent, which (simplifying somewhat) is a VP representing an event. By contrast, domain adverbs do not modify via sisterhood; they need only bind a variable corresponding (roughly) to the position of the main predicate. Thus they are licensed as long as they c-command this predicate, and in general they may occur anywhere in the sentence. (Chapter 6 fleshes out these ideas in detail.) The difference in (1.5a–b) is rooted in the fact that adverbs like *obviously* and *quietly* have certain scope requirements that are violated if they do not occur in the order shown; while the DP/PP phrases in (1.5a) do not have the same type of lexical requirements, either order produces a well-formed semantic representation (see chapter 3 for discussion). In the first case (1.4), the stipulative PS rules (or their analogs) can be discarded in favor of a general principle governing broad classes of modification types. In the second (1.5), there is no need to posit a difference in the iterability of v as opposed to other heads, because the distinction shown follows from the adjuncts' differing lexical requirements.

This view of adverbial licensing makes the overall grammar more restrictive by banning reference to different syntactic structures for different semantic classes of adjuncts; instead, differences like those shown in (1.4)–(1.5) fall out from the different, and independently necessary, types of semantic representations in the lexicon. A second restrictive property is that UG disallows

movements of adjuncts solely to receive their proper interpretation, as has sometimes been proposed for modal adverbs like *probably* in (1.6).

(1.6) Dan has probably bought a microwave.

In Laenzlinger 1997, for example, the adverb can only be licensed in Comp and moves at LF for this to be possible. However, some further licensing constraint must be imposed on its surface position; otherwise all positions below Comp should be permissible, contrary to fact:

(1.7) Dan has bought (*probably) a microwave (*probably). (with no "focusing" reading or comma intonation)

Allowing modal adverb licensing in situ for (1.6)–(1.7) correctly accounts for the facts (see chapter 2), obviates the need for two separate licensing mechanisms (one at the surface and one at LF), and keeps adverbial-licensing principles more restrictive (by disallowing this sort of movement).

In sum, the specific goals of this book are (a) to posit grammatical principles that predict the base positions for all types of adverbial adjuncts; (b) by doing so, to illuminate the nature of the interfaces between LF and semantic representation, and (to a lesser extent) between syntax and phonology/morphology; and (c) to make the theory of adjunct licensing as restrictive and as general as possible.

1.1.3 Syntax and Semantics

1.1.3.1 A Syntactic Theory

This book is intended to sit largely at the syntax-semantics interface, and is meant partly to illuminate the nature of that interface. However, it is still primarily a syntax book: the most important goal is to account for the distribution of adverbial adjuncts. Semanticists will probably feel unsatisfied; although I propose or draw on various semantic analyses, these are often not fleshed out to a great level of detail, and many questions important to semanticists remain unaddressed.

Yet, nice as it would be to have a fully justified and elaborated semantic background for a syntax of adjuncts, I believe that its absence is the price one must pay, at this stage, for developing a plausible theory of semantically based licensing mechanisms that correctly predicts a wide range of empirical data and yet keeps the relevant principles relatively few, simple, and restrictive. In

a sense, the real goal of this book is to show that such a system is plausible, providing workable suggestions for syntax-semantics mapping that can be fleshed out and gradually corrected. It proceeds from the philosophical stance, as expressed in Jackendoff 1983 and elsewhere, that the syntactic and semantic systems of natural language dovetail to such an extent that robust results on either side can tell us something about the nature of the corresponding parts of the other. Specifically, the hope is that, despite any shortcomings of the semantic analyses herein, whatever good results they have for syntax will provide evidence that something about them is on the right track and that they can be shored up in a way to preserve those beneficial results.

1.1.3.2 Important Terminology

That both syntax and semantics are tightly involved here necessitates some care with terminology. I adopt the syntacticians' typical usage in most cases. Three sets of terminological distinctions are especially important. First, I refer to *arguments* and *adjuncts* rather than to *arguments* and *modifiers*:

(1.8) a. argument – a phrase semantically required by some predicate to combine with that predicate
b. adjunct – nonargument

The definitions in (1.8) are meant to apply to the core cases; there are certainly gray areas, questions of how *require* ought to be defined, and other issues; but this ought to be sufficient as a start. Note that adjunct is defined semantically, in opposition to argument. However, the use of this term over any other is meant to reflect a hypothesis about the mapping of such phrases to syntax: that they are situated in adjoined positions.

The second set of terms is shown in (1.9):

(1.9) a. adjunct – nonargument
b. adverbial – adjunct typically taking a Fact-Event Object (FEO) (proposition/event) or a time interval as its argument
c. adverb – adverbial of the syntactic category Adv

Adjuncts, defined in (1.8), include both adverbials and adjectivals (i.e., AdjPs and phrases that function like them, such as relative clauses), whose main function is to modify a nominal element.[3] *Adverbials* normally modify verbs or "sentential" objects (IP, CP, and VP if the latter includes all arguments of V, etc.); both of these are assumed here to correspond to events or propositions

of some sort. (Some adverbials with appropriate meanings, such as *roughly* or *even*, may adjoin to nominal phrases like DPs, but they still have an adverbial function when doing so.) *Adverb* refers to phrases of the category Adv, defined primarily as those restricted to adverbial function. Thus in this terminology it is inaccurate, for example, to call *Tuesday* or *every time* an NP-adverb (e.g., as for Larson 1985 or Alexiadou 2000); such phrases are adverbials of the category NP, or DP in more current theory (or possibly PP, if a zero-preposition analysis is adopted).

Finally, within the event-based semantics adopted here it is important to distinguish the terms *event* and *eventuality* in (1.10). I use the syntactician's typical usage, in which the former term covers all the aspectual types of accomplishment, achievement, process, and state.

(1.10) a. event – state, process, accomplishment, achievement
b. eventuality

The semanticist's normal usage takes only the first three as events, in opposition to states, with events and states together making up the category of eventualities. For the semanticist's narrower grouping of accomplishment/achievement/process, I use the term quantized event (or q-event). Although this is sometimes unwieldy, adopting the semanticist's grouping would be even more unwieldy where the distinctions among these subtypes are unimportant, which is the case most of the time in the following chapters.

1.2 Overview of Data and Approaches

1.2.1 Why?

In this section I provide a brief overview of some of the most important data to account for and outline the different types of licensing theories and classifications of adverbials in the literature. This will help to make sense of a set of standard problems for adjunct distribution and provide a framework for understanding some of the arguments about the architecture of adjunct-licensing theory.

1.2.2 The Classification of Adverbial Adjuncts

There are innumerable ways to classify adjuncts, but the consensus in (at least) current formal syntax is that the most important determinants of distribution

are semantic, on some level. I do not pretend that the classification I assume in this book is the best, nor the most definitive; it represents an informed working hypothesis about the semantic distinctions that are most relevant for predicting syntactic generalizations, to be revised as research proceeds. (For other classificatory schemes of a similar level of detail, see Quirk et al. 1972: chapter 8, and Ramat and Ricca 1998: 192. Delfitto 2000: 22ff. provides a useful discussion of past classifications.) (1.11) is divided up according to the way in which the adjunct combines semantically with an FEO, that is, events or propositions, or with some other semantic element.

(1.11) a. predicational
speaker-oriented: *frankly*, *maybe*, *luckily*, *obviously*
subject-oriented: *deliberately*, *stupidly*
exocomparative: *similarly*
event-internal: *tightly*, *partially*
b. domain: *mathematically*, *chemically*
c. participant: *on the wall*, *with a bowl*, *for his aunt*
d. functional
time-related: *now*, *for a minute*, *still*
quantificational: *frequently*, *again*, *precisely*
focusing: *even*, *just*, *only*
negative: *not*
clausal relations: purpose, causal, concessive, conditional, etc.

Predicational adverbs require their sister constituent to be their FEO argument, mapping them onto a gradable scale: mostly propositions for speaker-oriented adverbials, events for subject-oriented adverbials, and so on. Domain adjuncts bind a special sort of variable associated with the verb. Participant modifiers take a basic event argument in the same way that arguments of the main predicate do. Functional adjuncts are heterogeneous, differing from these others in being nongradable or in invoking focus-presupposition structures, for example (more work is needed to subclassify this large group than for the others). Some subclasses must be cross-classified; for example, domain adverbs share the open-class property of predicationals, and time-related and quantificational groups are closely related (as in the case of frequency adverbs). Similarly, *never* has both negative and aspectual characteristics, *scarcely* involves a mix of temporal and focusing properties, and so on. Ultimately, the most revealing classification will likely involve a small set of features based on the most important semantic properties for predicting syntactic distribution.

(1.12b–f) show rough correlations between the FEO labels to be assumed here – given in approximate association with syntactic categories in (1.12a) – and other adverb subclassification schemes:[4]

(1.12)

a.	[SPEECH-ACT CP	[PROPOSITION IP	[EVENT VP?	[EVENT-INTERNAL V]]]] VP
b. Jackendoff 1972	----speaker-oriented----		subject-oriented	manner
c. Quirk et al. 1972	conjunct	----------disjunct----------		process adjunct
d. McConnell-Ginet 1982	--------Ad-S--------		Ad-VP -------	Ad-V
e. Frey and Pittner 1999	frame	proposition	event	process
f. Various works	framing	clausal negative time	-----aspectual-----	

It has become widely recognized that such sets of base positions can be generally organized into "fields" or "zones," represented approximately in (1.12). Manner and measure adverbs occur in the lowest of these, roughly corresponding to VP; nonmanner adverbs like *cleverly, deliberately* (both subject-oriented for Jackendoff), or *already* are somewhat higher, normally around Infl and the auxiliaries, while sentential adjuncts like *maybe, unfortunately, now*, or *frankly* (speaker-oriented for Jackendoff) are in the highest zone.

I take the view that these distinctions are only partly to be predicted from information in an adjunct's lexical entry. While the lexical meaning of a given adjunct is fundamental to understanding its possible positions (and other syntactic behavior), at least some of the differences in (1.11)–(1.12) come from the application of different compositional rules to a unique lexical entry. Perhaps most salient is the clausal/manner distinction among predicationals, a major theme of chapter 2: these adverbs show a systematic dual occurrence as either a manner adverb or a clausal (speaker- or subject-oriented) adverb, and for a healthy subset of them the adverb is unspecified for the distinction (and for the rest, only minimally specified). The same holds in other cases; for example, frequency adverbs take different scopes that have sometimes been termed "sentential" versus "verb-modifying"; similarly, *again* has repetitive (event) and restitutive (event-internal) readings, and locatives can act as either participant PPs, eventive modifiers (somewhere in the middle of (1.12), left to right), or framing adverbials (Maienborn 1998). The stance taken here is that important distinctions are obscured if the effects of lexical entries versus those of compositional rules are not properly separated.

Finally, as noted, there is strong evidence that morphological factors also help determine the distribution of adverbs, thus representing a crosscutting classification (although there is a connection between semantics and

morphology, if only in that functional class adverbs tend to be lighter), and may vary cross-linguistically (e.g., in languages where true adverbs are a very small class and are all morphologically light). Thus three main factors determine the range of an adjunct's possible position in a sentence: (a) its lexical semantics, (b) the nature of the compositional rule system applying to it, and (c) morphological weight. These factors apply to determine the differences among adjunct subclasses represented in (1.11)–(1.12), with strong universal tendencies, perhaps completely universal for compositional rules (b) but with some variation across languages for the lexicon ((a) and (c)). The distribution (set of possible positions) for a given subclass is thus determined for a given language by (a)–(c) within a larger set of positions allowed in that language in general. This larger set is determined by (d) Directionality Principles and (e) extended projection features (this matter is taken up again in section 1.2.3.2).

1.2.3 Types of Theories of Adjunct Distribution

Given the recent debates in the literature on adjunct distribution, it is useful to examine the range of stances theories may take in the mapping between semantic properties and syntactic positions. There are at least two relevant issues. The first concerns the balance of syntactic and semantic principles responsible for licensing adjuncts in their range of positions.

1.2.3.1 Three Approaches

On one end of this syntax-semantics continuum, I ignore the extreme Structuralist view that denies any role for semantics, simply puts all adjuncts having the same possible range of positions into one class, and then (somehow) syntactically links the class to that set of positions. On the other end, I ignore the extreme semantic position claiming that an adjunct may appear wherever it can be interpreted, with no syntactic constraints; this view, plainly, is empirically inadequate. Between these two extremes lies a continuum, of which one end moves toward greater use of syntactic principles and the other toward greater emphasis on semantics.

One set of theories closer to the syntactic end is represented by Laenzlinger (1996), Alexiadou (1997), Xu (1997), and Cinque (1999). As discussed in detail in chapter 3, these theories assume an elaborated sequence of (often empty) functional heads, mandated and rigidly ordered by UG, each of which may license one specific class of adverb. For any two co-occurring adverbs,

there must be two separate licensing heads. By itself, this predicts a completely rigid ordering of all adjuncts and other (verbal, inflectional, aspectual, etc.) heads in a clause; but alternative orders may be derived by positing (a) additional heads to license "homophonous" adverbs with slightly different meaning, (b) rules to move adverbs away from the unique base position, or (c) movement of heads around adverbs (e.g., verb raising). Semantics does play a role in this schema but only indirectly and only insofar as it motivates the original rigid order of heads in UG.[5]

Frey and Pittner (1998), Frey (2000), and Tenny (2000) propose mixed systems, in which broad distributional zones for the major adjunct subclasses are fixed by syntactic principles, but possibilities for multiple occurrences or positions within these zones are determined by semantic interpretation. For example, for Tenny compositional rules apply in the presence of a small number of pivotal functional heads, such as Truth-Value, Point-of-View, or Tense; semantic principles are brought in to license adverbs within the same zone, such as *again* and *soon* (licensed with respect to Middle Aspect). Frey and Pittner do not use functional heads in a crucial way but instead invoke various structural conditions to establish the zones (e.g., event-related adverbials "c-command the base position of the highest argument and the base positions of event-internal adjuncts" [Pittner 2000:204]), and again semantic principles determine distribution within the zones.

On the semantic end of the continuum are ranged Rochette 1990, Ernst 1998d, Maienborn 1998, Shaer 1998, Haider 2000, and this book. Here, both the zones and their internal details are established by a combination of lexicosemantic properties and compositional rules. Syntactic principles are responsible, at most, for establishing the a priori range of possible positions for adjuncts in a given language (e.g., ruling out the position between verb and direct object in many SVO languages or postverbal positions in rigid SOV languages) and for a few unsystematic details (even if they involve important adverbs; e.g., requiring negation to be in Spec rather than adjoined or a head in certain cases). (See section 1.4.4 for further discussion of assumptions I make about mapping from syntax to semantic representation.) This book may be taken, in total, as an extended argument for this latter type of theory.

1.2.3.2 Basic Ranges of Adjunct Positions

The second issue relevant to the mapping between semantic properties and syntactic positions concerns the way an a priori range of adjunct positions for a given language is blocked out – that is, accounting for positions that

are absolutely barred for adjuncts of any kind in a given language. Again, a theory may make more or less reference to semantic principles in doing so.

This continuum may be conceptualized in terms of "specifying" or "filtering" syntactic mechanisms. In the former, a more syntactically oriented grammar may allow adverbials to adjoin only to (or be in Spec positions of) those projections where they are specifically licensed; if they are not, no adjunct may appear. In the latter, a more semantically oriented grammar may allow adjuncts to adjoin to (be in Spec of) any projection in principle but also allow certain semantic effects to filter out these cases, preventing adjunction for certain projections.

As might be expected, Cinque (1999) and the others on the syntactic end of the continuum are specifying in essentially listing every projection in which an adjunct may be licensed. A similar theory with less detail might give a smaller list of projections, perhaps saying that adjuncts attach only to VP and TP, with their movement being responsible for alternative positions; or, one might assume that the list of possible adjunctions is restricted to the space between the highest VP shell and TP, excluding any AgrP.

Filtering approaches start from the assumption that adjunction sites are not restricted in general but that certain projections ban adjunction for either syntactic or semantic reasons (although they vary in the severity of these restrictions). Those positing basically syntactic restrictions include the many current proposals for banning any adjunction to X′ nodes, although this is rarely presented as anything more than a stipulation (see chapter 8 for arguments against this ban), and Chomsky's 1986 proposal that no adjunction to arguments is allowed. More semantically oriented proposals include Zwart 1993, Neeleman 1994, Ernst 1998d, and Svenonius 2000, among others, again with variation in how much restriction is imposed. Sprinkled throughout the literature are various claims that adverbs do not adjoin to AgrP (see Svenonius 2000 for an attempt to explain this semantically), leaving other projections as fair game for adjunction; Chomsky (1995a:409–11, 421), more severe in this regard, outlines a way in which adverbials are barred from adjoining to semantically active maximal projections, such as VP, but are allowed to attach to AgrP, IP, and any X′ (in part, this seems to be an effort to derive the ban on adjunction to arguments in Chomsky 1986).

I assume in this book that adjunction is in principle quite free, that is, that there are no major syntactic restrictions on either the category or the level of a phrase to which something adjoins (thus adjunction to arguments and to both X′ and XP levels of structure are possible). In particular, there are empirical reasons to allow adjunction to arguments, especially cases like (1.13), where adverbs adjoin to DP and CP arguments, respectively.

(1.13) a. She told me [$_{DP}$ {just about/perhaps} the worst piece of news I'd heard that year].
b. Karen outlined [$_{CP}$ {only/more or less} how they would get into the canyon].

(See Chapter 5, section 5.3.2 for evidence that these adverbs are indeed adjoined to the projections indicated.) In addition, if we adopt the view of barriers in Cinque 1990 and the other alternatives to analyses invoking the segment/category distinction (as suggested in section 1.4.2.2), there is no compelling theoretical reason to ban this sort of adjunction. Moreover, since I deny the existence of AgrP projections in the following chapters, there is no need to bar adjunction in this case. Thus there is at least preliminary evidence for adopting free adjunction of adjuncts to any principle, albeit modulated by occasional interference effects from semantics.[6]

Two mechanisms are proposed below to restrict the a priori adjunct-licensing ranges for any given language: Directionality Principles and the feature [±C]. When a head is [−C], no basic compositional rule may apply to a nonhead; roughly speaking, projections above TP are [−C] and TP and below are [+C], with the effect of keeping base positions for adjuncts within TP. More important are the Directionality Principles, which include the often-assumed parameter for head direction, yielding the fundamental head-initial/head-final distinction, and require Spec positions to be to the left of heads. As far as adjuncts are concerned, they predict (among other things) that head-final languages require left-adjunction for all adjuncts and that in head-initial languages nothing may left-adjoin to VP (thus predicting that V and direct objects are adjacent once V moves to the functional head above VP).

1.2.4 Some (Non)Restrictions on Data

The adjunct classifications and theories just reviewed are (for the most part) based on data from a full range of positions in a clause. Two remarks must be made about the data set.

First, we must exclude at least some parenthetical expressions from consideration, because they show quite different properties from those pronounced with a normal, smooth intonation contour. The parentheticals in (1.14a–b), for example, are ungrammatical without comma intonation, and if considered to be simply adjoined where they appear to be in linear order, they would be not only assigned the wrong scope, but too "heavy" for the position.

(1.14) a. The new legislation, as simply as I can put it, aims to reduce taxes on small businesses.

b. Mollie has not always – fortunately for her – been rejected for good singing parts.
c. They don't understand what's going on, probably.

Similarly, *probably* in (1.14c) must be set off prosodically; such cases are frequently analyzed as afterthoughts, derived by some low-level movement from preverbal position. I make the same assumption here. I assume, however, that prosodically marked phrases in clause-initial position, as in (1.15), are at least potentially licensed as if actually in their apparent positions, since they do not violate semantic or morphological constraints in the way those in (1.14) do.

(1.15) a. Obviously, this idea is a big mistake.
b. They told me that, as far as could be determined, Paul would be reinstated.

(See section 1.4.3 and chapter 8.)

Second, I reject the notion that semantically or pragmatically marked utterances necessarily indicate the presence of *non*base positions for adjuncts. For example, (1.16) seems at least odd, if not unacceptable, to most people at first glance (cf. Cinque 1999:4ff).

(1.16) Usually, they generally build huts for the winter.

But in the right context it is fine; for instance, where *they* refers to a class of people (say, hunter-gatherers on various planets studied by future anthropologists) who have the general cultural pattern, in most cases surveyed, of building huts for the winter (perhaps not doing so in years of unrest). Thus markedness may arise merely from the need for an unusual context for interpretation. Consider also (1.17a–b).

(1.17) a. Carol had roughly handled the pots.
b. Carol had handled the pots roughly.

Speakers generally prefer (1.17b) to (1.17a), which has sometimes been taken as evidence that postverbal position is basic, with a movement rule deriving the other sentence (cf. Alexiadou 1997, 1998). But on the view adopted here, the difference in (1.17a–b) is the result of two phenomena: (a) that adverbs are most felicitously used in simple transitive sentences when the speaker has reason to make the adverb an important part of the assertion, coupled with (b) the fact that normal stress rules put stress on postverbal adverbs but not on preverbal ones. Thus there is a clash in (1.17a) between the

pragmatic tendency to foreground *roughly* and the lack of stress (phonological foregrounding).

Note especially that using marked readings as evidence for derived positions presupposes some mechanism by which movement induces a change (degradation) in an acceptability judgment. To my knowledge, such a principle, rule, or other device has never been proposed, and if the type of explanation just given for (1.17) is correct, it would be redundant. Moreover, such a principle would not be allowed to apply in all cases. For example, in Principles and Parameters (P&P) grammar, where it is almost universally accepted that the V – DP – PP – AdvP order of (1.18b) is basic and V – DP – AdvP – PP order derived, the latter one is less marked.

(1.18) a. The smell reminded her powerfully of home.
b. The smell reminded her of home powerfully.

Thus the assumption that marked orders are evidence for derived positions is implicitly based on the premise that the marked quality must be linked to movement, while it is in doubt both that movement is the right device to express markedness (given examples like (1.18)) and that anything is needed beyond pragmatic and morphological principles (given (1.17) and similar cases).

1.2.5 Some Major Phenomena

Finally, I present in this overview a list of some major phenomena that I believe an adequate theory of adjunct licensing must account for in a general and principled manner. It is meant merely as a sort of preliminary checklist; exemplification and discussion are postponed until the appropriate chapters.

(1.19) a. Predicational adverbs are mostly rigidly ordered.
b. Nonpredicational adverbials are usually not rigidly ordered.
c. "Subjective" adverbs (mostly predicationals) cannot adjoin to the right above VP in VO languages.
d. VO languages generally allow postverbal adjuncts; OV languages generally do not.
e. There may be restrictions on relatively heavy adjuncts in VO languages between the subject and verb.
f. Sentence-initial adjuncts are somewhat more restricted distributionally than postsubject adjuncts.
g. Predicational adverbs typically show two readings (clausal and manner readings), corresponding to higher and lower parts of clausal structure.

h. Generally, greater distance from V is interpreted as wider scope.
i. A more restrictive lexical semantics for a given adjunct class generally correlates with more restricted distribution.
j. Participant PPs and location-time adjuncts are higher in structure than manner/measure adverbs.
k. Languages may forbid adjuncts between V and O, or between subject and finite V.
l. The linear order of adjuncts and auxiliary verbs generally reflects scope relationships directly, although adjuncts are occasionally closer to V than this predicts.

1.3 Main Theses

The major thesis of this book is that the distribution of adverbial adjuncts is largely determined by a simpler, more general, and more restrictive set of principles than has often been supposed up to now, and that relatively little of this is purely syntactic and specific to adjuncts: either the dedicated mechanisms responsible for adverbial distribution are semantic, or the applicable syntactic mechanisms are set up for all elements, not just adjuncts, and the latter are affected just like any other phrase in a sentence.

The minor theses of this book are that the principles of adjunct licensing in UG take the form in (1.20)–(1.22).

(1.20) The LF Side:
a. a set of rules (the FEO Calculus) for the composition of events, propositions, times, and predicates,
interacting with syntactic positions for certain functional heads and abstract operators,
according to basic structural constraints on composition (sisterhood/c-command)
b. lexicosemantic requirements of individual adverbs (and derivatively, via composition, of phrasal adverbials), at least in part represented by a system of semantic types

(1.21) The PF Side:
a. Directionality Principles, including a basic head-initial/head-final parameter
b. Weight theory, which requires, disallows, or (dis)favors certain positions according to weight

(1.22) PS and Feature/Movement Theories:
- a. basic PS theory: in principle symmetric, with two basic nonhead positions (complement and adjunction), and Spec defined as a type of adjunction
- b. extended projections, defined by combinations of [±Lex], [±C], and [±Disc]
- c. movement and checking theory:
  movement is triggered by feature checking or by Weight theory;
  checking is normally allowed only at Spec (or above in a limited number of cases) (thus head- and leftward A′-movement work as standardly conceived)

Since the next several hundred pages are devoted to elaborating on (1.20)–(1.22), I provide only the briefest of examples here to show how they work in concert to predict some fundamental facts about adverbial distribution.

Starting with (1.20), I assume that there is a basic event denoted by the verb; (1.24) illustrates this basic event for (1.23a–b) in a "Neo-Davidsonian" notation (see, e.g., Parsons 1990).

(1.23) a. Theo cleverly bought flowers.
b. Theo probably bought flowers.

(1.24) ∃e [B(e) & Agt (e,t) & Th (e,f)]

(1.24) is read 'There is an event of buying whose agent is Theo and whose theme is flowers'; arguments of V are expressed as functions of the form "θ (e,x)," with θ representing a theta role. For (1.23a) *cleverly* has a clausal (nonmanner) reading, by which the sentence roughly means 'Theo was clever to buy flowers'. I take this adverb as a two-place predicate, its arguments being *Theo* and the event that manifests Theo's cleverness. On this reading, the adverb combines with the basic event of buying-flowers (1.24) and yields a derived event of cleverly-buying-flowers. The FEO Calculus then allows converting (raising) the event to its corresponding proposition (about the event), that is, the proposition denoted by (1.23a). For (1.23b), though, this raising takes place at a lower level. The basic event is first converted to a proposition, that Theo bought flowers. Once this is done, this proposition becomes the argument of *probably*, a modal adverb (saying something about the degree of likelihood that some proposition is true) that takes a proposition as its single argument. The result of combining *probably* with the basic proposition is the whole proposition denoted by (1.23b).

The FEO Calculus thus includes rules allowing events to be converted into events or propositions, or propositions to be converted (only) into propositions.

Individual adjuncts have the sort of specific lexicosemantic requirement illustrated for *probably* and *cleverly*. These are necessary, independent of syntax, to account for their semantic properties. Once this system is in place, most ordering restrictions fall out as a consequence. For example, (1.25a) is grammatical because its semantic representation is well-formed.[7]

(1.25) a. Theo probably cleverly bought flowers.
b. *Theo cleverly probably bought flowers.

This holds because *cleverly* takes an event to form an event; this latter event is then converted to a proposition; *probably* takes this proposition as its argument to form the "matrix" proposition. (1.25b) is ungrammatical because *cleverly* cannot take an event, as it must: because of *probably*'s requirements, the sequence *(Theo) probably bought flowers* must count as a proposition, and *cleverly* is unable to combine with this. It is this sort of mechanism that largely determines the hierarchical position of adjuncts in a clause.

The linear order of adjuncts is the province of (1.21), built on phrase structure theory (as summarized in (1.22)). I assume a phrase structure theory conforming to the traditional X′ schema for complements and Specs (although this configuration is derived, not primitive), with multiple adjunctions allowed to the X′ and XP nodes. It is symmetrical for adjunction, in that adjunction is possible to either the left or the right of heads, although Specs are universally to the left (or almost so); these results are predicted by the Directionality Principles. In principle, symmetrical adjunction permits adverbials either preverbally or postverbally in head-initial languages:

(1.26) Theo {often/probably} bought flowers {often/because they make the room look nice}.

Aside from keeping Specs to the left, the Directionality Principles invoke the traditional head-initial/head-final parameter for the position of complements with respect to heads. This helps account directly for the main positional options for adjuncts; in effect, adjunction is allowed according to the union of the complements' direction and Specs' direction. Thus while head-initial languages have complements to the right of heads, and therefore allow adjuncts on either side of the verb, head-final languages like Japanese disallow postverbal adjuncts in the normal case (as both complements and Specs are leftward):

(1.27) Taroo-wa tabun heya-ga hanayaka-ni mieru-node hana-o
Taroo-TOP probably room-NOM flowery-ADV appear-b/c flower-ACC
katta-no-daroo (*tabun).
bought probably
'Taroo probably bought flowers because the room looks nice.'

(1.28) Taroo-wa (yoku) heya-ga hanayaka-ni mieru-node hana-o
Taroo-TOP often room-NOM flowery-ADV appear-b/c flower-ACC
katta (*yoku).
bought often
'Taroo often bought flowers because the room looks nice.'

(1.29) Taroo-wa yoku (heya-ga hanayaka-ni mieru-node) hana-o
Taroo-TOP often room-NOM flowery-ADV appear-b/c flower-ACC
katta (*heya-ga hanayaka-ni mieru-node).
bought room-NOM flowery-ADV appear-b/c
'Taroo often bought flowers because the room looks nice.'

Weight theory is often assumed in some form to account for the relative ordering of freely ordered postverbal elements in English (see (1.30a–c), where the other three orders are possible to varying degrees of acceptability), including movement of heavy objects rightward across adjuncts.

(1.30) a. George brought all the painting equipment we'd ordered yesterday in his pickup.
b. George brought in his pickup yesterday all the painting equipment we'd ordered.
c. George brought yesterday in his pickup all the painting equipment we'd ordered.

Weight theory also accounts for the general ungrammaticality of heavy elements between subject and verb in VO languages (see (1.31)) and of light adjuncts in sentence-initial or sentence-final position (as in (1.32)).

(1.31) a. *Sally with shells decorated her bathroom.
b. Sally decorated her bathroom with shells.

(1.32) a. Sally just decorated her bathroom.
b. (*Just) Sally decorated her bathroom (*just). (temporal reading, not 'only' reading)

No adjunct-specific movement is allowed; that is, if an adjunct moves it does so as a subcase of more general movement types. One obvious case is the rightward movement shown in (1.30). For (1.30c) if we assume that the locative PP starts out closer to the verb than *yesterday*, then the former has moved rightward; but this process applies to phrases of any kind, not just adjuncts. This movement is motivated by a weight-theoretic template at PF. The other case is that of familiar, general A′ movements like *wh*-movement,

triggered by "morphological" features (in the sense of Chomsky (1995b)) that normally may only be checked once per head (in Spec positions), to the left of the head.[8] Thus *wh*-moved or topicalized adjuncts are sentence-initial:

(1.33) a. How$_i$ did you hold the wing t_i?
b. Tightly$_i$, they held on to the wing t_i.

In addition, the standard cases of verb movement around adverbs account for other deviations from the hierarchical and linear order established by the principles in (1.20)–(1.21), as illustrated in (1.34) with movement of *must* over *obviously*.

(1.34) She must$_i$ obviously t_i be a spy.

The adverb takes scope over *must*, and this movement masks the original position in which the modal is interpreted. These head movements are relatively limited, however.

To summarize, the theory proposed in this book can be considered in three parts: the semantically based mechanisms of the FEO Calculus and adjuncts' lexicosemantic requirements (1.20), which in conjunction with the basic phrase structure mechanisms in (1.22) largely determine the hierarchical positioning of adjuncts; the PF-based Directionality Principles and Weight theory (1.21), which are responsible for most of the linear order facts not covered by (1.22); and the theories of phrase structure and movement (1.22), which underlie the first two parts and also allow, via movement, deviations from the basic adjunct positions determined by those parts. Thus, to a large extent, the success of this book should be judged on how well the principles in (1.20)–(1.22) are motivated by the data and how well they provide a general and restrictive theory of adjunct licensing. Section 1.4 lays out some crucial assumptions about the syntactic and semantic theory behind these principles.

1.4 Aspects of Syntactic and Semantic Theory

1.4.1 Minimalism

1.4.1.1 Interface Conditions and Interpretability

I assume a version of the Minimalist theory in Chomsky 1995b, although the main proposals can be adapted to GB theory (Chomsky 1981, 1986) as well. The most Minimalist aspect is that all of adjunct licensing is ultimately a

matter of the two interfaces represented by LF and PF, the first with Semantic Representations (SRs), the second with phonology and morphology.

For both interfaces, the principles previously discussed can be subsumed under some notion of interpretability, where a given feature is or is not interpretable at one of the interfaces; in its broadest sense, interpretability is equivalent to well-formedness at a given level. Examine one of the standard instances: movement of subjects from their base position to Spec, TP (= Spec,IP). This movement is triggered by the need to check features on the subject DP and on Tense (= Infl). Assuming that N (nominal)-features of T are strong, if the DP does not raise to check them in the Spec-head configuration, they remain visible at PF; this causes the derivation to crash because N-features are uninterpretable at PF (i.e., they are not legitimate PF objects). If DP does raise, the N-features of T can be checked, and the derivation converges because the features are invisible at PF. (See Marantz 1995 for an overview of these notions.) In a similar way, Directionality Principles operate by verifying the presence of [+R] features in languages that allow nonheads to occur to the right of heads, for the most part head-initial languages. [+R] requires a phrase to be linearized to the right of its head; it is a PF feature, legitimate at that interface level, but is uninterpretable (not legitimate) at LF and so must be eliminated from the representation that goes to LF at Spell-Out.

On the LF side, we can extend the idea of interpretability to a more literal usage: if an adverbial's semantic requirements are not met, it is not interpretable, as was illustrated for (1.30b). In this case we are dealing not with the legitimacy of a particular type of feature at a given syntactic level but with the standard matter of semantic composition.

1.4.1.2 Case

Case assignment has a long-standing connection to adverbial distribution; in GB theory, it was often assumed that accusative case assignment by V to direct objects took place under head government and adjacency (thus accounting for strings like **Bill bought happily doughnuts* as a Case Filter violation). The adjacency condition, however, has always been problematic, if only because it could not be extended to nominative case assignment from Infl to subjects (and for other reasons as well) (see Ernst 1993 for an alternative view). I assume that there is no such adjacency condition. I also continue to take Case as assigned under head government in some contexts[9] and consider what was purely a matter of case in classical GB theory to be in reality a two-stage process of (a) marking and (b) licensing in Spec positions (see Ernst 1998a and references there for discussion). This decision, however, does little to affect

the rest of a Minimalist analysis, because head government is not incompatible with other mechanisms (although it does, of course, add complexity in the form of another structural configuration for licensing); in any case, adopting a fully Minimalist case theory would require only minor adjustments to the theory of adjunct licensing presented here.

1.4.1.3 Features and Movement

I assume a standard Minimalist view for the well-known cases of A′- or A-movement to Spec positions. The relevant functional head, such as Comp for *wh*, bears a feature that must be checked if the derivation is to converge, thus effectively forcing movement of some phrase to Spec under Last Resort. In general, features may only be checked once – in the unique Spec position.[10] I also assume some version of the Shortest Move principle (e.g., the Minimal Link Condition), which forbids formation of a longer link in a movement chain if there is a shorter possible link (see Chomsky 1995b:295). This principle plays a role as a diagnostic for types of phrasal A′-movement. It is also important that it apply to head movement; in the chapters that follow I take seriously the idea that a head may not move across another head (the Head Movement Constraint) except in very narrowly defined contexts.

Two other aspects of movement theory are relevant. First is the copy theory of movement, in which a "moved" element is actually just a copy of the original one at Spell-Out; separate principles from movement theory per se determine which of the two is deleted at LF and PF. This plays a role in discussions of adverbial syntax where linear order is at odds with straightforward scope interpretation, as in (1.34), because the base position of a V-to-I chain sometimes marks the scope position of an auxiliary verb. Second, I invoke bounding theory to help justify different types of A′-movement, with differing long-distance movement properties. For the classic cases of *wh*-movement, topicalization, and so on, I adopt not the system of barriers in Chomsky 1986 but rather one along the lines of Cinque 1990, which does not depend crucially on adjunction creating "segments" of a maximal projection (see section 1.4.2.2 for additional discussion).

1.4.2 Phrase Structure Theory

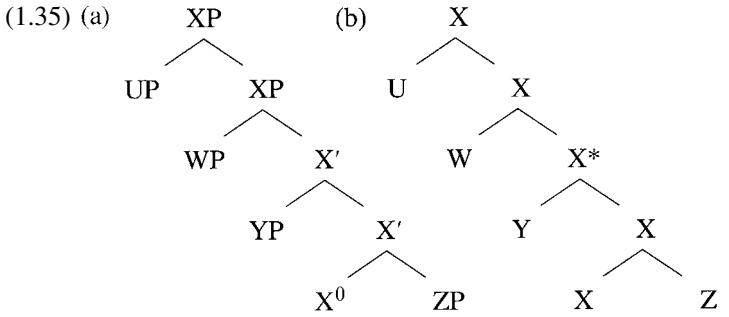
1.4.2.1 X′-Structure and Adjunction

In this subsection I address the issues of basic phrase structure theory, the role of segments in phrase structure, and the adjunction to X′ nodes.

I adopt strict binary branching and also the view that the X′-schema is not a primitive, but that nonhead position types like Spec, complement, and adjunct, and notions like X^{max} are read off the tree (or set structure) (Muysken 1982, Speas 1990, Ernst 1993, Chomsky 1995a). X^{max} is the highest node immediately dominated by a node of a different category (or a different token of the same category type, carrying a different index; see Speas 1990: chapter 2). The sister of a head (head = X^{min} or X^0) is called a complement; the node dominating the combination of head and complement (or the label for the set made up of head and complement [Chomsky 1995a]) can be called X′ for convenience, but it is in reality merely another token of X. Any phrase combined with some X node but that is not the sister of X^0 is defined as adjoined. Following Ernst (1993), one X node may be arbitrarily distinguished from the others, and Spec position is defined as the sister to this node (call it X*). (Though technically this is an adjoined position, I adopt the loose usage by which only non-Spec positions are referred to as "adjoined" where this causes no confusion.) If no such node is designated in a given XP, then there is no Spec position.

These notions are shown schematically in (1.35), with (1.35a) showing the notationally convenient version of the real structure in (1.35b). WP/W is in Spec,XP; UP/U and YP/Y are adjoined; ZP/Z is the complement of X^0:

(1.35)



1.4.2.2 Segments

Note that there is no problem here in defining adjunction, because it is the normal case of concatenation of a nonhead to a head: all noncomplements are adjoined (with Specs being a special subcase of adjunction; cf. Kayne 1994 on this point). This entails the rejection of segments (i.e., the idea, originating

with May 1985, that the two nodes labeled XP in (1.35) are segments of one category) and by extension the associated formulations of c-command and scope mapping. I do not offer a full-length defense of this shift here but do at least present the main reasons why I believe it is plausible and beneficial.

The notion of segments has been invoked for (to my knowledge) three main purposes, all depending on the definition of c- (or m-) command. First, May (1985:33–34) proposed that either of two phrases adjoined to the same projection may take scope over the other because they mutually m-command, as defined in (1.36) (his (9) with *c-* updated to *m-*).

(1.36) *α m-commands β* $=_{\text{def}}$ every maximal projection dominating α dominates β, and α does not dominate β.

This permitted the scope ambiguity of, say, (1.37) to be predicted by adjoining both quantified DPs to IP at LF, where they mutually m-command.

(1.37) Everyone admires someone.

Second, segments are crucial in the account of constraints on movement in Chomsky 1986, by which an XP that is normally a barrier to movement is (in effect) no longer a barrier when the moved phrase adjoins to XP. This follows on (1.38) (Chomsky 1986:7, adopted from May).

(1.38) α is dominated by β only if it is dominated by every segment of β.

Thus in (1.35a) if UP is a phrase α, extracted out of ZP and on its way out of XP (β), UP is not dominated by XP (because the lower of the two XP segments is a sister of UP); when UP moves to a higher position, XP does not intervene between UP and its trace and is not a barrier to that movement (see Chomsky 1986 for full details).

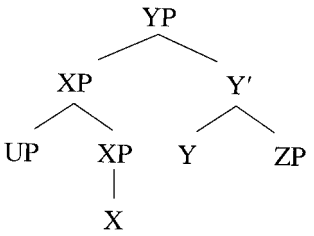
Third, Kayne (1994:16) defines c-command in such a way that an adjunct can c-command "out of" a maximal projection. His definition is as shown in (1.39) (his (3); italics are original).

(1.39) X c-commands Y iff *X and Y are categories* and X excludes Y and every category that dominates X dominates Y.[11]

In a structure like (1.40), with XP in Spec,YP and UP adjoined to XP, UP c-commands ZP. This occurs because the category XP does not dominate UP (since not all of its segments dominate UP), and thus every category that

dominates UP also dominates ZP:

(1.40)



Kayne uses this approach to account for why antecedents like *every girl* in (1.41) can bind out of the DP of which it is the specifier.

(1.41) Every girl's father thinks she's a genius.

The first argument for the existence of segments, from scope ambiguities as in (1.37), depends on m-command as in (1.36) rather than on c-command. However, m-command seems eliminable from the grammar elsewhere, in particular for its most important original uses: (a) nominative case assignment from Infl to Spec,IP and (b) locality of theta assignment within VP, if formulated as holding under m-command from V. These have been replaced by Case and theta assignment via Spec-head or head-complement relations. Since there is an alternative (and arguably superior) analysis of such scope phenomena in Aoun and Li 1993 and Ernst 1998a, May's analysis of scope based on segments can be dispensed with.

The second argument assumes that a segment-creating adjunction is necessary to account for long-distance movements that would otherwise cross a barrier. However, if we adopt the sort of system of barriers proposed by Cinque (1990), the most important statement of which is shown in (1.42) (his (113), p. 42; italics are original), this mechanism is unnecessary.

(1.42) Every maximal projection that fails to be *directly selected* by a category nondistinct from [+V] is a barrier for government.

As Cinque shows (1990:42–43), this sort of approach has a number of important advantages over Chomsky's, including avoidance of significant technical problems (such as the need to block adjunction to arguments), being a more restrictive theory of movement, and allowing a streamlined analysis of clitic left dislocation constructions. I do in fact adopt a Cinque-style proposal for barriers, with the result that the notion of segments derives no support from the theory of barriers to movement.

The third argument for segments rests on the assumption that an adjoined item (including one in Spec position) may c-command out of its maximal projection, but there is enough evidence to doubt that this should fall out as a general case. If c-command were possible out of maximal projections, for example, then focusing adverbs like *even* and *only* ought to be able to focus constituents in VP when sentence-initial (I assume, as is standard, that the focused item must be within the c-command domain of the adverb):

(1.43) a. Only customers with blue tickets may buy antiques.
b. Customers with blue tickets only may buy antiques.

In (1.43b) *only* may focus any constituent to its right; for example, the customers only *may* buy antiques (but are not obliged to), they may buy only *antiques* (but not other merchandise), etc. In (1.44b), however, the only possible foci are within the subject *only customers with blue tickets*.

(1.44) a. Only customers with *blue* tickets may buy antiques.
b. *Only customers with blue tickets may buy *antiques*. (with *antiques* as the focus of *only*)

In (1.43a) *only* could adjoin in principle either to IP or to the subject DP, but data like these show that it adjoins to the subject DP:[12] assuming the usual c-command condition on focus, banning IP-adjunction for *only* predicts the contrasts.[13] But if *only* is adjoined to DP or is in the Spec of some shell functional projection above DP (as required in Kayne's theory, which allows only one Spec and no [other] adjunctions per projection), then (1.44b) should be fine, contrary to fact (since it should be able to c-command out of the DP).

This conclusion is reinforced by considering examples like (1.45), which, as Kayne notes (1994:25–26), are predicted to be good if Specs can c-command out of their XP.

(1.45) *Every girl's father admired herself.

Although this is a complex issue, Kayne's solution requires positing an ad hoc empty D^0 node distinct from and above the normal D^0 head - '*s*; he claims (p. 27) that (1.41) is grammatical because *every girl* is in this higher Spec and that only from this higher position can it c-command the direct object. But, in his system, a focusing adverb would have to be in yet another higher functional projection, as shown in (1.46).

(1.46) Even every girl's *father* thinks she's a genius.

(1.46) should then be ungrammatical, because when *even* is present *every girl* is too deeply embedded to c-command out of the subject. By contrast, on a solution in which the QP *every girl* raises out of the DP subject at LF, the grammaticality of (1.46) follows; such an account predicts not only the grammaticality of both (1.41) and (1.46), but also that *even* and *only* in (1.43), (1.44), and (1.46) do not focus constituents outside their subject DP c-command domain. (See Aoun and Li 1993:92ff., for one such analysis.) Since some version of Quantifier Raising (QR) from within a DP handles all these facts more easily, I conclude that there is no compelling evidence for allowing Specs and adjoined elements to c-command out of their maximal projection.

Finally, there is one more possible reason to invoke segments on Kayne's analysis: given his formulation of the Linear Correspondence Axiom (LCA), Specs could not exist at all if they were not technically adjoined to a two-segment category (see 1994:16). However, this constitutes only a theory-internal argument for segments, and if the LCA is rejected on independent grounds, as we do here (if for no other reason than evidence for both a Spec position and adjoined positions in a single projection, which is impossible on the LCA; cf. Chomsky 1995a, Duffield 1999), then it holds no force.[14]

We have seen that none of the three arguments for treating categories as made up segments holds, since in each case the data that segments were designed to account for can be handled as well or better with a more traditional theory of categories. There is an additional argument for eliminating the segment approach: simplicity. Note first that both approaches apparently must account for two types of scope configurations, one where an element's scope is within its maximal projection, as for focusing adverbs, and one where it goes out of that projection, as for (1.41). But the segment theory also requires adding (a) the notion of segments and its associated notion of syntactic category, (b) a more complex notion of domination as in (1.38), (c) a more complex notion of c-command as in (1.39) with its added notion of exclusion, and (d) for Chomsky (1995b:338), a somewhat obscure additional type of syntactic category label for projections to which something has adjoined. Just as Larson (1998b), Kayne (1994), and many others have tried to simplify syntactic theory by eliminating a primitive notion of precedence, syntactic theory is simplified by eliminating the notions of segment, exclusion, and special category labels, and by simplifying the definitions of dominance, category, and c-command. Therefore, if the relevant data can indeed be handled in the more traditional theory, the latter should be adopted.

To conclude, if we (a) adopt an analysis of quantifier scope along the lines of Aoun and Li (1993), (b) reject a Chomsky-style theory of barriers in favor

of a Cinque-style account, and (c) have no need to permit c-command out of maximal projections, then there is no real evidence for segments, and in fact considerations of simplicity should lead us to reject them. That said, it would still be possible to pursue the approach to adverbial adjuncts in this book in a theory embodying segments, as long as it allows for the usual notion of sisterhood based on node geometry (so that segments of a category still dominate two sisters, in the traditional sense of dominate), and it allows at least one type of scope to be formulated in terms of the more traditional definition of c-command (where A c-commands B iff the first branching node dominating A also dominates B [Reinhart 1981]). I henceforth assume a phrase structure theory without segments on grounds of simplicity, but all that is really crucial is the existence of these notions of sisterhood and c-command.

1.4.2.3 Adjunction to the X′ Level

Many authors (e.g., Vikner [1995]) claim that adjunction to the X′ level of a projection should be barred. To some extent, this made sense under earlier conceptions of phrase structure in which the relatively peripheral positions of adjuncts, further from V than arguments, could be accounted for by adding them to the tree only after arguments were put in place at a "pure GF-theta" D-Structure level (Chomsky 1981). But in a minimalist theory there is no way to require a "theta-pure" D-Structure, as constraints may only be stated at the LF and PF interfaces; the buildup of initial structures by Merge should not distinguish arguments and adjuncts. And while, all things being equal, it would make for a more restrictive grammar if X′-adjunction were barred, all things are not equal: as discussed in chapter 8, adopting this restriction requires a compensatory addition of otherwise unnecessary empty functional heads. I proceed on the assumption that freely allowing such heads is a more dangerous loss of restrictiveness than is the rejection of this putative ban.

1.4.2.4 AdvP-Internal Structure

Adverbs always head an AdvP, although some adverbs disallow any complements or modifiers; I take this to be the result of some feature that forbids Adv from projecting (or "contributing its label," in Bare Phrase Structure) when any phrase is Merged with it. (I do not explore any further how this is to work technically.) Standard modifiers of Adv, mostly other adverbs, including negation and degree words like *very*, are adjoined. The assertion that adverbs do not take complements, occasionally made in the literature, is incorrect

as a generalization. While some types indeed disallow them (cf. (1.47a–b)), others, of the right semantic type, permit them as in (1.48).

(1.47) a. Clearly (*that he loved Maude), Harold cried at the funeral.
b. It is clear that he loved Maude.

(1.48) a. Similarly to what Bob postulated, the shape of the universe seems to be muffin-like.
b. Unfortunately for our hero, the horse decided to rear up at that very moment.

AdvPs normally take a range of degree modifiers, as in (1.49); I have little to say about them in this book (but see Quirk et al. 1972, Ernst 1984); many of the adverb subclasses that occur in clauses may also modify other adverbs in AdvP (see (1.50)).

(1.49) a. a very tired camper
b. the considerably overfed weasel

(1.50) a. an obviously restrictive theory
b. many politically dangerous ideas

I take these as being adjoined on the grounds that they can be iterated (e.g., *a very very tired camper*), although they (at least the degree adverbs in (1.49)) have sometimes been considered to be specifiers. I leave open the possibility that some AdvPs might allow PRO in a Spec position, for cases where the adverb takes an argument of V as one of its arguments (e.g., *cleverly*), although this is not crucial for the account in chapter 2. Thus AdvPs are normal phrases in every way, and nothing special needs to be said about their internal structure.[15]

1.4.2.5 Features and Projections

Minimalist discussions often discuss features only when addressing questions of case, agreement, or movement, but serious discussions of phrase structure require a somewhat more detailed theory of syntactic features. I assume the usual major category features [±N, ±V], with Adv technically being a subtype of adjective, and thus [+N, +V];[16] [±Lex] accounts for the standard division between lexical and functional categories, V being lexical and all other projections above it in a given clause being functional. Auxiliary verbs clearly have verbal properties, but are [−Lex], as are other functional heads normally occurring between subject and verb even when nonverbal (such as

negation or the Chinese passive [*bei*] and preverbal-object [*ba*] markers). Aux heads standardly include modal, aspectual, negative, and voice heads. I also assume the existence of a functional head just above V, adopting the label Pred for it from Bowers (1993) (roughly equivalent to Chomsky's ν or the earlier AgrO, though having a semantic function), to which the lexical verb obligatorily moves.

Given the possibly large number of functional heads between Tense and V, I use three features to define a set of extended projections made up of sequences of XPs, roughly corresponding to the older VP, IP, and CP. As noted, VP is [+Lex] while the other two extended projections above VP are [−Lex]. TP (normally) and projections below it bear [±C]: [+C] projections permit basic rules of the FEO Calculus to apply to nonheads, while [−C] projections do not; this in essence determines the range of possible base-generated nonheads. Some languages may mark TP [−C], with the complement of T being the highest [+C] category; TP and projections above it are marked [+Disc], meaning that they trigger speech-act- and other discourse-related interpretations, such as questions, focus, topichood, and so on.[17] (All of these assumptions, and related ones, are discussed in chapter 8.)

I also assume a theory that disallows AgrP (cf. Chomsky 1995b:349 ff.) and that imposes restrictions on the number and type of empty functional heads. AgrPs are disallowed, in principle, on the assumption that all primary features – those that provide their label for the maximal projection – must have either a semantic or pragmatic/discourse contribution to make. I assume the constraint in (1.51) on functional heads.

(1.51) Functional heads are legitimate iff (a) overtly realized or (b) they contribute to the semantic representation of a given sentence.

Although (1.51) undoubtedly needs sharpening, something like it is needed given that the proliferation of empty functional heads in many current syntactic analyses makes them extremely unrestrictive. (See also the Limited Diversity Hypothesis of Thráinsson 1996:257.)

1.4.3 The PF Side of the Grammar

Two sets of principles relevant to adverbial distribution operate on the PF side of the grammar, after Spell-Out: Weight theory and Directionality Principles. I have little to say about their precise place within the PF component, since so little has been said about the nature of post-Spell-Out derivations toward phonetic form. The formulations proposed in chapters 4–5 require

that some categorial information be available to the grammar here, and it is clear from other evidence that at least some syntactic information must be "processed" (e.g., the movement-created copies that correspond to traces in earlier theories must be erased; see Nunes 1999 for some discussion) and, in fact, eliminated before a derivation reaches the stage of pure phonology. Thus these mechanisms presumably must hold at an early part of PF that makes use of syntactic information, before the derivation enters the morphological component, which does not. (Thus on this view, as opposed to Chomsky 1995a, there is some space for syntactic information after Spell-Out on the PF side of the grammar.)

Weight theory is a filter that determines the relative acceptability of sentences according to the arrangement of light and heavy phrases, barring some in particular positions, and preferring lighter phrases closer to V and heavier ones further from V. It is sensitive to linear order, to syntactic features like [+Lite] and [+Heavy], and to the morphological considerations, such as number of syllables, that go into determining weight. I assume that such syntactic features come out of the lexicon (i.e., following Inclusiveness [Chomsky 1995b]) they are not added in the course of the derivation), randomly assigned, and that Weight theory checks them against morphological weight and the position of the constituent bearing them with respect to other phrases around them. Such movements of phrases occur before Spell-Out.[18] Weight theory then legitimizes or eliminates the result in the PF component.

Directionality Principles represent linearization algorithms. I assume that the pre-Spell-Out and LF parts of a derivation are concerned only with hierarchical position; although the feature [+R] may be assigned (randomly) to nonhead constituents in the lexicon, it plays no role in linearization until PF. [+R] constituents are linearized to the right of their head. In head-final languages, any derivation with [+R] features ends up as illegitimate; but in head-initial languages Directionality Principles allow derivations where [+R] occurs on a well-defined class of phrases, including complements, some adjuncts, and some [+Heavy] phrases (the latter licensed in concert with Weight theory).

Much work in current syntax attempts to restrict grammatical theory along the lines of Kayne's (1994) LCA, disallowing right-adjunction, thus claiming that phrase structure is asymmetric. While this is attractive, a major contention of the theory proposed here is that right-adjunction is indeed allowed. This is not to deny that there is a tendency toward asymmetric phrase structure, and the proposals herein attribute this to the universal leftwardness of Specs, the tendency for light elements to also be to the left of their heads, and a small number of other factors, all of which derive from Directionality Principles. The challenge facing syntactic theory is to account for this partial asymmetry

in a simple and empirically adequate way that affords a high level of restrictiveness in the overall grammar. I believe that the distribution of adverbials provides strong evidence that the LCA is untenable in its current form and that a limited parameter for head direction exists. (These matters are discussed in detail in chapters 3–5.)

Finally, I assume that there is legitimate movement after Spell-Out at PF but that this movement has different properties from pre-Spell-Out movement (the latter including weight theoretic-motivated movements like Heavy Shift). This is what creates parenthetical expressions. It appears (a) to allow downward movement, (b) to not represent scope interpretation by c-command relationships, and (c) to force the characteristic comma intonation of parenthetical expressions. The first two constitute evidence for post-Spell-Out movement, as the principles that ensure upward movement and scope mediated by hierarchical position (reflected in linear order) hold at LF; thus true PF movement is predicted not to conform to them. Observe (1.52), for example.

(1.52) a. She had missed, {apparently/frankly}, her sister's birthday.
b. *She had missed {apparently/frankly} her sister's birthday.
c. {Apparently/frankly} she had missed her sister's birthday.

The adverbs in (1.52a) take scope over the entire sentence and must be set off prosodically. The ungrammaticality of (1.52b) is accounted for by the adverbs not being able to take their proper scope in the very low position where they find themselves. If we assume that the structure of (1.52a) at LF is as indicated in (1.52c) and that true PF-movement (downward/rightward and triggering obligatory comma intonation) has applied to create (1.52a), the contrasts are accounted for.

Note in particular that this pattern is different from the various postverbal permutations motivated by Weight theory, which may alter LF representations. As Pesetsky (1995:266) shows, for example, Heavy Shift creates new environments for A-binding; on the standard assumption that such phenomena are explained by LF principles, Heavy Shift occurs before Spell-Out ((1.53a–b) (his (643a–b))).

(1.53) a. *We gave__ to him$_i$ on Friday [John's$_i$ brand new toy].
b. We gave__ to them$_i$ at the interviews [copies of reports on each other's$_i$].

Thus the type of parenthetical formation in (1.52) is post-Spell-Out movement, while Heavy Shift and similar weight-motivated rightward movements occur earlier (contra Chomsky 1995b:333) (see chapter 5 here for discussion).

1.4.4 The LF Side of the Grammar: LF, Semantic Representations, and Adjunct Licensing

1.4.4.1 LF and SR

Logical Form is not the same thing as Semantic Representation. As in the classic formulations (e.g., Chomsky 1981, May 1985), I take LF to be part of the computational system of syntax, specifically, the level where syntactic principles apply to syntactic representations, derived possibly by covert processes. Thus, as is often assumed, I take there to be covert analogs of overt verb raising (to check affixes with a higher head; e.g., V-to-T to check tense and agreement features) and of object shift (to check case features for direct objects in Spec,PredP, equivalent to Spec,AgrOP or Spec,vP in much recent work). Similarly, I assume a process of QR (see Ernst 1998a for the particular version in question) and raising of a DP associated with subject expletives like *there* (Chomsky 1995b).

However, I do not assume the existence of (nonquantificational) raising processes for adverbials, for example, that which might take a modal adverb like *probably* in (1.54) and raise it to sentence-initial position so that it takes scope over the whole sentence; such rules require a number of complications in the grammar.

(1.54) Dan could probably create his own website.

Similarly, raising of an adverbial like *because he was hung over* in (1.55) is barred.

(1.55) The technician didn't check twice because he was hung over.

Such raising would be required on a strictly "Larsonian" model, where *twice* and the *because*-clause must occupy postverbal positions in the Spec position of shell VPs, with the latter lower than *twice*. Since the interpretation is that *because he was hung over* obligatorily takes scope over *twice* and also optionally takes scope over negation, we would have to allow the former to raise at LF to two possible landing sites. Again, given rightward branching (so that the *because*-clause is higher than *twice* and possibly also higher than negation), neither raising nor specification of the complex conditions on it is necessary (see chapter 4). Thus there are no special movement rules for adverbial interpretation at LF.

SR is the representation of meaning derived from LF by the application of compositional rules and the "activation" of word-meanings (which are inaccessible to syntactic computation). Where movements have taken place,

represented by two copies of the moved element at LF, independent principles determine whether the copy in the landing or launching site is the relevant one for composition. In some cases, both are relevant, as when a topicalized quantified DP is interpreted in its base position for basic argument-predicate composition (i.e., its base position is the site of the variable bound by the quantifier), but the higher, clause-initial position determines the scope of the quantifier. In (1.56), for example, *some of these statues* is specific, and thus the quantifier takes scope over negation.

(1.56) Some of those statues, I really don't want around.

Similarly, movement of English auxiliaries from the head of ModP to Tense, across negation or other adverbials, in principle allows either wide or narrow scope with respect to the latter, as (1.57) illustrates, where *not* has scope over *may* in (1.57a) but has narrow scope under *must* in (1.57b).

(1.57) a. Tasha may not leave now.
b. Tasha must not leave now.

In such cases two SRs are generated from LF, and the differing lexical requirements of the two modals determine which one is the actual SR (since for each modal only one representation is well-formed, allowing the modal's lexical requirements to be satisfied).[19]

I assume an essentially Neo-Davidsonian event-based semantics along the general lines of Parsons (1990) for basic events, but one (a) enriched by the FEO Calculus, which takes the basic event and builds "layers" of event types and proposition types until the representation of the proposition for the whole sentence is completed, and (b) with event variables introduced in the style of Discourse Representation Theory (DRT, Kamp and Reyle 1993). The details of this system are introduced in chapters 2–3. What is important here is that the rules for building such representations interact with the semantic properties (requirements) of individual adverbials in such a way that certain combinations are not semantically well-formed (1.23). A sentence like (1.58) is not syntactically ill-formed, strictly speaking; LF conforms to all the relevant syntactic principles, as (1.59) illustrates, where *was* and *Karen* raise in overt syntax, and *going* raises covertly to check its affix by adjoining to the trace of *was* (irrelevant detail is omitted).

(1.58) *Karen wisely was probably going home.

(1.59) $[_{IP}$ Karen$_j$ wisely was$_i$ $[_{ProgP}$ going$_k$-t_i probably $[_{PredP}$ t_j t_k home]]].

The problem comes when (1.59) is mapped onto an SR like (1.60), which is derived from (1.59) (the ellipsis on the second line stands for the whole proposition on the first line; again, irrelevant detail is omitted for clarity).

(1.60) $[_{\text{PROP}}$ PROB $[_{\text{PROP}}$ $[_{\text{EVENT}}$ PROG $[_{\text{EVENT}}$ G(e) and Agt(e,k) & Goal (e,h)]]]]
& WISE (Karen, $[_{\text{PROP}}$ PROB [. . .]])

(1.60) is ill-formed because the predicate WISE, representing *wisely*, is forced to take the proposition containing PROB(ABLY) in its scope, yet it is specified to take only an event for its second argument (as noted, *probably* takes a proposition and yields another proposition). Thus (1.58) is syntactically well-formed at LF but has a semantically ill-formed SR. Thus I claim that, in many cases, a given adjunct is barred from certain positions because when it occurs in those places no legitimate semantic representation can result.

1.4.4.2 The FEO Calculus and the LF-SR Interface

In an event-based semantic system such as that adopted here, compositional rules may operate on (at least) individuals, events, propositions, and times. As discussed in section 1.4.4.1, the well-formedness of a representation depends in part on whether various predicates and modifiers (many of which are treated here as a type of predicate) can take the right sort of entity as their argument(s). Theories of the LF-SR interface may differ in whether and (if so) how syntactic structure places restrictions on what entities are available at a given point in a derivation.

In the case of arguments of a main predicate there is little disagreement: argument DPs at LF are mapped onto individuals, which combine with predicates in any one of several familiar ways; (1.61) shows the option used in this book, for a typical transitive verb (where F is the lexical content of the verb, e is the event variable, and θ_1, θ_2 represent theta roles, perhaps Agent and Theme).

(1.61) λ x λ y [F(e) & θ_1 (e,y) & θ_2 (e,x)]

If there is no DP at the point in structure where it is required, an ill-formed representation results (cf. Higginbotham 1985 and Heim and Kratzer 1998:47ff.). There also seems to be little disagreement for aspectual, modal, negative, and other such operators when they have fixed syntactic positions, such as when they head a functional projection or occur in some Spec position. Regardless of the actual semantic element they operate on, one assumes that the following constituent is mapped onto that element. For example, the XP complement

(AspP, VP, etc.) of an epistemic modal verb heading ModP should be mapped onto a proposition, because epistemic modals operate on propositions (see (1.62a), mapped onto the SR in (1.62b), ignoring tense and other parts of the representation not relevant at the moment).[20]

(1.62) a. Natasha $[_{TP}$ could$_i$ $[_{ModP}$ t_i $[_{AspP}$ be $[_{VP}$ running]]]]
b. $[_{PROP} \Diamond$ $[_{PROP}$ $[_{EVENT}$ PROG $[_{EVENT}$ R(e) & Agt (e,n)]]]]

Crucially, adjuncts raise a different question: is there this kind of fixed, specific constituent that translates to the semantic entity in SR with which the adjunct combines? Recall that the more syntactically oriented theories, those that license adjuncts strictly in a one-to-one, Spec-head relationship (like Cinque 1999 and Alexiadou 1997) or at least posit certain heads that trigger translation onto a particular semantic entity like propositions (like Tenny 2000), claim in essence that an adjunct has a fixed position because it is only there that it can combine with an appropriate semantic object. For such theories, the apparent flexibility of the adjunct's position in a sentence is often treated as the result of subsequent movements (either of the adjunct or of other elements moving around the immobile adjunct). By contrast, the assumption in this book is that individual syntactic projections are not necessarily always translated to the same sort of object at SR. In particular, the FEO Calculus permits some flexibility by allowing a given XP to map onto an event in some cases but onto a proposition in others. Thus in (1.63), with the interpretation 'Natasha is able to wisely avoid running,' ModP corresponds to an event in the SR.[21]

(1.63) a. Natasha $[_{TP}$ could$_i$ $[_{ModP}$ wisely not t_i $[_{VP}$ run]]]
b. $[_{PROP}$ ABLE $[_{EVENT}$ WISE $[_{EVENT\sim}$ $[_{EVENT}$ R(e) & Agt (e,n)]]]]

This assumption, then, is key to the enterprise undertaken here: there is not always a one-to-one correspondence between a given syntactic projection and a specific semantic type. The LF-to-SR translation is, however, no less rule-governed, as it is determined in part by the rules of the FEO Calculus.

Recall that adjuncts fall naturally into zones according to their meanings, schematized roughly in (1.12). For (at least partially) semantically oriented licensing theories as in Haider 2000, Tenny 2000, and here, it is also assumed that semantic composition proceeds in such a way that, once the representation for one zone is completed, it cannot be revisited – a sort of "strict cyclicity" in semantics. In the system proposed here, the existence and character of the zones and the cyclicity property are embodied in the FEO Calculus. Specifically, the latter imposes a mapping constraint requiring only

event-internal modification within the domain of L-syntax, in the sense of Hale and Keyser (1993) (i.e., VP). This is the lowest zone. Once above this domain, other kinds of modification become possible, which creates the middle zone. At some point above this, either the requirements of some functional head (such as a modal auxiliary) or the free raising of event to proposition, gives the effect of creating the highest zone. If formulated properly, this sort of system correctly predicts the existence of the three zones but also predicts that they may sometimes overlap; for example, the top position of the middle zone in some sentences (*cleverly* in (1.64a)) is above the lowest position of the highest zone in other sentences (*probably* in (1.64b)).

(1.64) a. She cleverly has hired a bodyguard.
b. She has probably hired a bodyguard.

It also requires no extra machinery (such as additional verb movements) beyond the independently necessary principles of the FEO Calculus.

1.4.4.3 Lexicosemantic Representations and Compositional Rules

Finally, recall the thesis advanced here that the major determinant of an adjunct's distribution is the aggregate effect of its lexicosemantic representation and the way it combines with another semantic element, in most cases an FEO, whose subtype is governed by the FEO Calculus. This means that the lexical entry for an adverbial may be underspecified, so that it may combine with different semantic objects according to different compositional rules, producing the clausal/manner ambiguities typical of predicational adverbs or allowing frequency, temporal, or locative adjuncts to take different scopes. This is opposed to theories requiring a different lexical entry for the two readings in these cases, in effect positing "homonyms" wherever an adjunct appears to have distinct readings in different positions. I thus make a hypothesis about the nature of language and its semantic system: there are generalizations (constraints) on the composition of SRs that are best stated outside the lexicon; if they are properly formulated, we will be able to make powerful predictions about the distribution of adjuncts and may dispense with quite a bit of purely syntactic machinery.

1.5 Organization

The following seven chapters, exclusive of the conclusion in chapter 9, can be divided into two parts. The first, consisting of chapters 2–5, provides an extended justification of the basic semantic and syntactic framework for adjunct

licensing: the formulation of lexicosemantic information for adverbs, justification of the semantically based approach to adjunct distribution, discussion of basic syntactic structure, and so on.

Chapter 2 is an intensive examination of predicational adverbs, such as *probably, oddly, differently, shrewdly, anxiously*, and *loudly*. It provides a semantic analysis of these adverbs as predicates taking events or propositions as arguments, and justifies the formulation of both lexical entries and compositional rules for them so as to account for their readings, especially their characteristic pattern of showing both clausal and manner readings in different positions in a sentence.

Chapter 3 provides a wide array of arguments that adjunct distribution is best accounted for primarily by the sorts of semantically based principles outlined in chapter 2 rather than by the theory advanced in Cinque 1999 and other recent work, in which adverbial subclasses are licensed in a strict one-to-one syntactic relationship with specific, often empty, functional heads. Among the arguments I make are that the latter approach cannot adequately account for multiple positions for many adverbial classes, for alternate orders of various pairs of adverbials, or for differences in subclasses' ability to occur in alternate orders, and that it also misses significant generalizations about scope phenomena. All of these and other phenomena are explained easily on the more semantically oriented approach.

Chapter 4 presents arguments that, despite the claims (starting essentially with Kayne 1994) that UG disallows right-adjunction, adjuncts normally and regularly adjoin to the right of maximal projections, at least in head-initial languages. I develop an alternative theory that embodies a version of the traditional head-initial/head-final parameter and arguments to show how this theory is superior to ones denying the existence of right-adjunction.

Chapter 5 addresses noncanonical orders of complements and adjuncts in head-initial languages, proposing a very limited role for verb raising and a more extensive role for rightward movement. I argue that theories denying right-adjunction become quite complicated and stipulative in accounting for such cases, while a constrained theory of rightward movement under Weight theory handles the data straightforwardly and generally.

The second part of this book consists of chapters 6–8, in which one finds specific analyses of adjunct licensing for a wide range of adjunct classes. Chapter 6 takes up several types of event-internal modifiers, including manner and measure adverbials, participant PPs, and restitutive *again*. I account for their ordering restrictions and points of attachment to lower clausal projections (VP and PredP) and present a broad spectrum of facts to follow from the type of semantically based principles introduced earlier.

Chapter 7 pursues this line of analysis into the AuxRange, the set of positions between the subject and verb in head-initial languages. I provide semantic analyses for a broad range of functional adverbials, including aspectual, location-time, duration, and frequency adverbials; and I demonstrate how the proper formulation of their lexical semantics, in concert with the FEO Calculus, accounts for their possible positions and co-occurrence restrictions with respect to other adjuncts, negation, and auxiliary verbs.

In Chapter 8 I discuss the distribution of adjuncts in clause-initial projections, giving special attention to topicalizations, especially the differences between topicalization of arguments and adjuncts, and to the I-Bar Restriction, the phenomenon of languages that categorically ban adverbials between the subject and the finite verb (such as French). This chapter also contains a brief discussion of the distribution of adverbials with respect to different subject positions in Germanic languages.

2

The Semantics of Predicational Adverbs

2.1 Introduction

2.1.1 Predicational Adverbs

Predicational adverbs are those that are not quantificational (as are *frequently* and *daily*, for example), that represent gradable predicates taking (at least) events or propositions as their arguments, and that in English are almost always composed of an adjective plus *-ly*, such as *probably*, *amazingly*, *similarly*, *cleverly*, *reluctantly*, or *loudly*.[1] Previous studies of predicational adverbs, dating back at least as far as Greenbaum 1969, have tried to account for their syntax by dividing them into classes and then specifying the range of positions where each class may occur, most often correlating this range with some aspect of meaning. Thus Jackendoff (1972), for example, proposes semantic interpretation rules for the three classes represented in (2.1).

(2.1) Jackendoff's (1972) main predicational adverb classes:
  a. manner: *loudly*
  b. subject-oriented: *cleverly*, *reluctantly*
  c. speaker-oriented: *probably*, *clearly*, *amazingly*, *frankly*

In Jackendoff's theory, each of these classes must be interpreted by a specific semantic rule corresponding to the constituent containing the adverb, such as VP for manner adverbs. If an adverb is attached to a constituent where the appropriate rule cannot apply, it receives no interpretation and the sentence is ungrammatical.

In this chapter I propose an account of the semantics of predicational adverbs that is very much in this spirit. However, rather than having each class of adverb trigger an interpretation rule when adjoined to some stipulated projection, the approach here takes these adverbs as selecting for a

specific type of semantic argument, namely, a proposition or an event (as well as a possible second argument), with particular additional properties. The object thus formed by combining the adverb and its argument is also of a particular semantic type, and functional items in the clause, such as modals, aspectual heads, and negation, have similar requirements. When semantic composition takes place, all these lexicosemantic requirements must be fulfilled for a sentence to be grammatical. That this mechanism by itself accounts for a great majority of facts about the distribution of adjuncts is a major thesis of this book. Since the semantic requirements of a given adjunct are needed independently of syntax, this approach allows eliminating much of the syntactic machinery that has often been proposed for them.

2.1.2 Some Data

There are several notable facts about predicational adverbs that a complete theory must account for. First, as is well known, they show certain entailments (as discussed in Thomason and Stalnaker 1973, Zucchi 1993, and Wyner 1994, among others); for example, (2.2a) entails (2.2b), while (2.3a) does not entail (2.3b).

(2.2) a. Boris obviously likes Natasha.
b. Boris likes Natasha.

(2.3) a. Boris possibly likes Natasha.
b. Boris likes Natasha.

This fact may be encoded in an adverb's selection for type of argument, so that *obviously* selects for a fact (a true proposition), while *possibly* selects for a proposition with no further requirement on its truth-value.

Second, predicationals typically show ambiguities, where one reading corresponds to manner and the other to speaker-oriented or subject-oriented (plus a few others, altogether giving clausal readings). (2.4a), for example, is ambiguous between the sole reading of (2.4b), where Alice is clever for having answered the questions, although the content of each answer may be stupid, and that of (2.4c), where she answered in a clever manner, although it might have been stupid for her to answer at all.[2]

(2.4) a. Alice has cleverly answered the questions.
b. Alice cleverly has answered the questions.
c. Alice has answered the questions cleverly.

For these clausal/manner ambiguities, a crucial assumption is that (in most cases) the adverb is the same adverb in both instances. Although precisely what "the same" means has to be determined, I take it as a working principle that any lexically encoded differences in the two readings should be kept to a minimum (thus, treating *cleverly* in (2.4b–c) as "homonyms" is to be avoided). Conversely, general, productive differences between readings of "the same" adverb should be encoded in general rules (either of semantic interpretation or lexical redundancy rules). (Henceforth I use the word homonyms to refer to two instances of "the same adverb" with different readings, without taking a stand on whether they have one or two lexical entries. Where necessary to refer to cases of two lexical entries I use "true homonyms.") Thus, we must look closely at adverbs' lexical semantics to be able to do this. Compositional rules must be formulated in such a way that adverbs' lexical entries may be substituted for variables in these rules so as to derive semantic representations of sentences.

The clausal/manner ambiguity can be seen for almost the full range of predicational adverb types:

(2.5) a. Roughly, the plan will fail because they are all inexperienced.
b. She laid out the plan roughly.

(2.6) a. Clearly, they saw the sign.
b. They saw the sign clearly.

(2.7) a. Strangely, Jessica was explaining it.
b. Jessica was explaining it strangely.

(2.8) a. Accordingly, they adjusted the angle.
b. They adjusted the angle accordingly.

(2.9) a. Rudely, she left.
b. She left rudely.

(2.10) a. Abruptly, there was someone on the stage.
b. The curtain rose abruptly.

This fact is central to the thesis I develop in this chapter. In (2.5)–(2.10) all the (b) sentences show manner readings, with the adverb modifying the verb and paraphrasable as 'in an ADJ manner'. Adverbs in all the (a) sentences take some sort of clausal entity as an argument. In (2.5a) *roughly* is a degree-of-precision adverb (see Ernst 1984:chapter 3), which says (roughly)

'I make the following proposition as an approximation'; it is equivalent to *roughly speaking* in this "speech-act" or "pragmatic" usage (cf. Mittwoch 1976). *Clearly* in (2.6a) is of the epistemic class (more specifically, of the evidential subtype) and in this case describes the truth-value of its propositional argument in terms of its perceptibility. *Strangely* (2.7a) takes a fact as an argument, saying that this fact is strange. *Accordingly* (2.8a) indicates that some state of affairs is in accordance with some other, contextually specified entity (perhaps a building requirement), and in (2.9a) (another example of the agent-oriented type seen in (2.4)), her action, the entire event of her leaving, is seen as rude. In (2.10a) *abruptly* indicates that the transition into the state of affairs described by the rest of the sentence is abrupt.

A close examination of the lexical semantics of adverbs shows that the patterns in (2.4)–(2.12) can be accounted for directly by treating the manner class not as a well-defined lexical class but as a collection of manner readings of various lexical classes that (except for the hard core of pure manner adverbs, lexically restricted to this reading alone) also have clausal readings. That is, for the most part, contrasts like these involve either one (lexical entry of an) adverb that may take either of two arguments, resulting in two readings, or homonyms, that are related by a very general rule deriving one reading from the other.

(2.11)–(2.12) are slightly different from (2.5)–(2.10). In (2.11) there is no manner reading, and in (2.12) there is no clausal reading.

(2.11) a. Bill probably bought a Lexus.
b. *Bill bought a Lexus probably.[3]

(2.12) a. *Tightly, she might have held the reins.
b. She might have held the reins tightly.[4]

A third fact that a theory of predicational adverbs should explain is why it is precisely these two classes (modal and pure manner, respectively) that do not show the characteristic ambiguity seen in the predicational group in general.

In addition to the semantic facts just outlined, at least three relevant syntactic facts should be noted. (Full discussion of these phenomena come in chapter 3, but they are worth mentioning now because the semantic facts at issue here underlie their eventual explanation.) First, predicational adverbs usually show a rigid order with respect to each other and to negation, shown in the template in (2.13) (with subclass labels in (a) and examples in (b)); (2.14a–c) provide illustrative examples.[5]

(2.13) a. discourse-oriented > evaluative > modal > evidential >
b. briefly surprisingly maybe obviously
subject-oriented > negative > manner
stupidly not tightly

(2.14) a. Briefly, the new manager surprisingly has not moved quickly.
b. *Surprisingly, the new manager briefly has not moved quickly.
c. *The new manager has not quickly surprisingly moved.

Some types, however, such as evidential and subject-oriented adverbs, may follow or precede negation.[6]

(2.15) a. She {clearly/cleverly} did not avoid finishing her work.
b. She didn't {clearly/cleverly} avoid finishing her work (as we had expected).

This means that (2.13a) should be revised, as in (2.16), where the parentheses represent (normally) mutually exclusive options for the position of negation (ignoring exocomparatives for the moment).

(2.16) discourse-oriented > evaluative > modal > (negative) > evidential > subject-oriented > (negative) > manner

An ideal theory ought to explain these ordering facts, both the cases of rigidity and of flexibility.

Second, predicational adverbs, on their clausal readings, in principle occur anywhere from sentence-initial position to immediately preverbal position.

(2.17) a. Probably, they could have gone a long way before stopping.
b. They probably could have gone a long way before stopping.
c. They could probably have gone a long way before stopping.
d. They could have probably gone a long way before stopping.

(2.18) a. Wisely, they had been hanging back whenever the pendulum swung near.
b. They wisely had been hanging back whenever the pendulum swung near.
c. They had wisely been hanging back whenever the pendulum swung near.
d. They had been wisely hanging back whenever the pendulum swung near.

In (2.17)–(2.18) the (a–c) examples represent productive patterns: predicational adverbs occur quite freely in English from clause-initial position up to the position immediately following a finite auxiliary. The pattern shown in the (d) sentences is more restricted; (2.17d) is not possible with a *have be*-sequence, for example, and the acceptability of (2.18d) depends on the presence of quantification (whether overt, as with a *whenever*-clause, or contextual). In chapter 7, these are shown *not* to be *syntactic* restrictions, but rather to be the result of semantic interference from the aspectual auxiliaries.

Third, only those predicationals with manner readings may occur to the right of the verb in English (aside from afterthoughts and parenthetical expressions, as always):

(2.19) a. The senators {luckily/probably/cleverly} delayed the vote.
b. *The senators delayed the vote {luckily/probably/cleverly}.
(for clausal readings)

(This holds also for languages like French and Italian, in which main verbs raise to Tense in finite clauses, before this movement; after V raises, the adverbs shown in (2.19b) may be postverbal.)

I have set out six phenomena that an adequate account of predicational adverbs ought to account for: in semantics, there are entailments, the characteristic pattern of clausal/manner ambiguity, and a particular exception to the ambiguity pattern; in syntax, generally rigid order with one exception, free distribution in principle to the left of the main verb, and the ban on postverbal clausal readings. Empirically, this chapter is dedicated to accounting for the first three; the explanation for the latter group, addressed in chapter 3, depends on the semantic analysis given for the former. The whole depends crucially on the proper formulation of (a) adverbs' lexicosemantic requirements and (b) the system of compositional rules combining them with their object and governing their interaction with modality, aspect, tense, and negation. Therefore, it is necessary to lay the groundwork with an examination of selection and the FEO Calculus responsible for the relevant composition, the topics of section 2.2.

2.1.3 Goals and Organization

Empirically, the goal of this chapter is to account for the three semantic facts noted: (a) various entailment patterns, (b) the clausal/manner ambiguity, and (c) the exception to the ambiguity pattern in a system that also captures the fundamental lexicosemantic properties of predicational adverbs.

Theoretically, the aim is to show (a) that Predicational adverbs form a system in which adverbs of each subclass have certain selectional requirements

for a given type of argument, (b) that these arguments are organized into a system of events, propositions, and facts that is independently necessary for the basic semantic composition of a sentence, and (c) that the characteristic pattern of clausal/manner reading homonymy of predicational adverbs is not an accident but rather represents (mostly) a unique lexical entry for each adverb, set for its clausal reading, plus a general rule deriving the corresponding manner reading.

Additionally, and most important for a syntactic account, there is a strategic goal: to provide the underpinnings for a semantically based analysis of the distribution of predicational adverbs, making only minimal use of syntactic mechanisms; that is, licensing of adverbs is mostly a matter of fulfilling selectional requirements, as mediated by the principles mapping the syntactic and semantic properties of adjuncts. This matter is taken up in chapter 3, based on the semantics developed in the following sections.

In section 2.2 I discuss two important preliminary matters: assumptions about adverbs' selectional properties encoded in the lexicon and assumptions about the system of compositional rules for events, propositions, and related entities. In section 2.3 I turn to subject-oriented adverbs, showing that they take event arguments and regularly have manner readings along with their clausal readings. To account for this, I propose the Manner Rule, which characterizes (and is generally responsible for) manner readings in terms of event modification with a special comparison class. In section 2.4 I move on to speaker-oriented adverbs, showing that they take either some type of proposition as an argument (differing as to whether it must be a true proposition, i.e., a fact) or a special type of event (which, loosely speaking, is the Speech-Act FEO). Again, the Manner Rule is responsible for their manner readings, although for this group the homonymy is less regular. I provide in section 2.5 a brief discussion of exocomparative adverbs, which may take either event or propositions, and have correspondingly freer distribution. I return to the role of selection in section 2.6 and pull together the various cases of clausal/manner homonyms to show that predicationals share a template for their clausal readings, from which manner readings are derived quite generally. Section 2.7 is a summary and statement of conclusions.

2.2 Preliminaries: Selection and the FEO Calculus

2.2.1 Two Types of Selection

Semantic selection is the phenomenon by which an item imposes certain requirements on its semantic argument. Two aspects of lexical meaning that go into selection must be distinguished – cognitive and formal. The first type is

purely lexical and therefore can be seen even with the adjectival counterpart of an adverb, without a complement. For example, *loudly* requires sound, *obviously* requires something perceivable, and *wisely* requires characterization of a mental quality of some sentient being. Similarly, *probably*, even if one tries to force a manner reading on it, must say something about the certitude that a proposition is true. *The way in which she will win is probable*, for example, if it is acceptable at all, means 'It is probable that she will win in this way', where *probable* takes a propositional argument.

The second type, formal selection, refers simply to the fact that a given lexical item may arbitrarily restrict its arguments to a subset of those fulfilling its cognitive selection requirements. For example, *want* and *desire* both select formally for either objects or events, while *covet* selects only for objects (**He covets that they/for them to buy him a Mercedes*). That verbs of this class tend so universally to select for both objects and events (while *move*, for example, does not) is the result of their common cognitive-semantic core. In the case of predicational adverbs, the distinction between two types of evaluatives shows the difference most strongly (see section 2.4.4 for full discussion): while *strangely*, *appropriately*, and *significantly* allow manner readings, *luckily*, *unfortunately*, and *amazingly* usually do not, even though that it is fine to say, for example, *The way Doris got the job was lucky/unfortunate/amazing*, which indicates cognitive compatibility with manner semantics.

I do not claim here that cognitive and formal selection can always be distinguished in practice, and it may be that they cannot be distinguished in theory. All that is crucial for present purposes is that there are some uses of adverbs that ought to be possible in cognitive terms but nonetheless are not allowed in ways that suggest formal semantic restrictions. That the formal properties of predicational adverbs should be understood to a large extent in terms of their cognitive selection is one theme underlying this chapter.

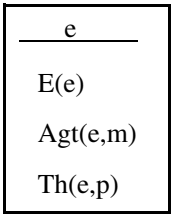
2.2.2 The FEO Calculus

To understand the distribution of adverbs, it is necessary to examine how the meaning of a sentence is built up from the most basic event, consisting only of a predicate and its arguments, to the proposition denoted by the whole sentence. I adopt a variant of the Neo-Davidsonian view that the basic event involves an event variable, in which a simple sentence like (2.20a) has been represented as (2.20b) (e.g., in Parsons 1990).[7]

(2.20) a. Mark ate the pudding.
b. ∃e [E(e) & Agt(e,m) & Th(e,p)]

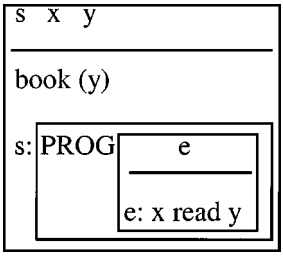
Ignoring tense, (2.20b) indicates that there is an event of eating, the agent of the event is Mark, and the theme of the event is the pudding.[8] More specifically, I assume Discourse Representation Theory (DRT, Kamp and Reyle 1993) in its essentials. In DRT there is no direct representation of an existential quantifier introducing a variable for the basic event. Event variables, such as those for individuals, times, and propositions,[9] are introduced in the universe of DRT representations (above the horizontal line in (2.21), equivalent to (2.20b)), each such introduction being equivalent to use of ∃e (likewise, ∃p for propositions, etc.).

(2.21)



In DRT, construction rules specify how such variables are to be introduced and how statements about them (like 'E(e)', 'Agt(e,m)', etc.) are added to the representation. Although construction rules are not stated in a DRT format in this book, it is important that they allow events and propositions to be built up from smaller events and propositions. In standard DRT, this is represented by means of boxes. Thus, for example, Swart (1998:355) takes *be reading a book* to be composed of *reading a book* as shown in the simplified form (2.22).

(2.22)



The progressive operator PROG represented by *be* converts a q-event (e) into a state (s); the boxes indicate the set of statements made about one variable.[10] (See Asher 1993:chapter 2 for a compact introduction to this sort of representation.) In order to focus on this buildup of events and propositions, which I term layering, I use a more linear notation that replaces boxes with brackets and replaces variables on the top line and to the left of boxes with

subscripted labels on the brackets. Thus (2.21) is equivalent to (2.23), and (2.22) to (2.24).[11]

(2.23) [$_{\text{Q-EVENT}}$ E(e) & Agt(e,m) & Th(e,p)]

(2.24) [$_{\text{STATE}}$ PROG [$_{\text{Q-EVENT}}$ R(e) & Agt(e,x) & Th(e,book)]]

I call events and propositions *Fact-Event Objects*, and, since the subset of construction rules responsible for the composition of events and propositions plays such a crucial role in understanding the syntax and semantics of adverbials, I refer to it as the *FEO Calculus*. The FEO Calculus is the set of rules for building events and propositions, starting from the basic event and constructing more complex FEOs by adding layers of adverbials, quantificational operators, aspectual operators, modality, and so on, each one either shifting the type or subtype of FEO. Each layer is added under sisterhood, that is, in a compositional, stepwise way, determined by the syntactic structure.[12] The two basic FEO types include subtypes; for example, propositions include (at least) true propositions (facts) and propositions with no determined truth-value. As noted, for any derived FEO representation a labeled bracket signals the presence of an FEO discourse referent in the universe of the representation, and the conjuncts within the bracket give conditions on that referent.[13]

There are three basic rules for the FEO Calculus (see (2.25)).

(2.25) The FEO Calculus:
- a. Any FEO type may be freely converted to any higher FEO type but not to a lower one, except:
- b. Any FEO (sub)type may be converted to another FEO (sub)type as required by lexical items or coercion operators.
- c. Events may be interpreted as Specified Events (SpecEvents) within PredP.

Something like (2.25a) is widely accepted (if only implicitly) in any theory making use of both events and propositions: for example, a minimal sentence like *Joe lied* involves a basic event of Joe lying, and if no modification occurs, this event is converted directly to the proposition that Joe lied. Higher types may not freely revert to lower types, for example, propositions to events. (2.25b) represents a generalization over specific construction rules for various aspectual or modal operators, negation, and the like. It allows mapping any FEO onto another: verbs taking a propositional argument map propositions onto events, modals may take propositions into propositions, and

many adverbials take events to yield events (FEO subtypes are discussed more fully in sections 2.3–2.5).[14] (2.25c) is responsible for manner readings, and its special status is what ultimately accounts for the two-way clausal/manner distinction that is characteristic of predicationals, and not, say, a consistent three-way ambiguity. It is phrased with a specific syntactic projection (PredP) for the moment, but this is revised in chapter 6 to eliminate this direct reference to syntactic structure.

Let us examine (2.25b) in somewhat more detail, since it plays the most important role in the analysis of predicational adverbs. Swart (1998) analyzes aspectual auxiliaries, negation, duration adverbials, and other items as operators that convert one type of event into another by a process of aspect shift (Smith 1995, Swart 1998), that is, the change of an event from one event description (state, process, q-event) to another. The different event types are shown in (2.26).

(2.26) Event classification:

HOMOGENOUS		QUANTIZED
State	Process	Event
STATIVE	DYNAMIC	

(Swart 1998:351)

This assumes a fairly standard taxonomy of aspectual types (as developed in a long literature, including Vendler 1957, Mourelatos 1978, Dowty 1979, Bach 1986, and Verkuyl 1993), in which states and processes are taken as homogenous event types, while processes and q-events are dynamic. To take one example: (2.27a) may be represented as in (2.27b), with a basic event of Mary-meeting-the-president, modified by tense (ignoring the more fine-grained representation of tense); this then becomes the proposition represented by the whole sentence, by the free raising of FEO type (2.25a).

(2.27) a. Mary met the president.
b. [$_{\text{PROP}}$ [$_{\text{Q-EVENT}}$ PAST [$_{\text{Q-EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]]

(Henceforth, for simplicity's sake, this final step is often omitted in representations.) (2.28a) involves the addition of the aspectual operator PROG, the meaning of the progressive *be*, which shifts the basic q-event to a state.

(2.28) a. Mary was meeting the president.
b. [$_{\text{STATE}}$ PAST [$_{\text{STATE}}$ PROG [$_{\text{Q-EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]]

Both negation and duration adverbials like *for an hour* similarly can convert an action into a process ((2.29)–(2.30)).

(2.29) a. Mark didn't kick the ball.
b. [$_{\text{STATE}}$ PAST [$_{\text{STATE}}$ ~ [$_{\text{Q-EVENT}}$ K(e) & Agt(e,m) & Th(e,b)]]]

(2.30) a. Mark kicked the ball for an hour.
b. [$_{\text{PROC}}$ PAST [$_{\text{PROC}}$ for-an-hour [$_{\text{Q-EVENT}}$ K(e) & Agt(e,m) & Th(e,b)]]]

Now consider how event layering can be applied to adverbs. (2.31a) provides a concrete example using *obviously* and *wisely*, with (2.31b) providing a simplified, early stage of representation where the adverbs are in their adjectival form but have not been "unpacked" further (among other things, the second argument of WISE is omitted in (2.31b)).

(2.31) a. Obviously, Mark wisely did not kick the ball for an hour.
b. [$_{\text{PROP}}$ OBVIOUS [$_{\text{PROP}}$ [$_{\text{STATE}}$ WISE [$_{\text{STATE}}$ PAST [$_{\text{STATE}}$ ~ [$_{\text{PROC}}$ for-an-hour [$_{\text{Q-EVENT}}$ K(e) & Agt(e,m) & Th(e,b)]]]]]]]

Kick the ball is a q-event, and the duration PP *for an hour* converts it to the homogenous event represented by *kick the ball for an hour*. Negation converts this to a state, *not kick the ball for an hour*,[15] and *wisely* takes this as (one of) its argument(s), yielding another state (namely, the absence of kicking of the ball by Mark for an hour). Tense converts an event into another one of the same type (this is modified in chapter 7, but the change causes no problems here). Finally, by (2.25a) this event is converted to a proposition, which becomes the argument of *obviously* (which requires its object to be true and thus a fact). The combination of the latter and this proposition yields the final proposition, the denotation of the whole sentence (2.31a).

Details of the FEO Calculus are fleshed out in the rest of this chapter and in chapter 3, and for functional adverbials, in chapter 7. Since the aspectual subclassification of events plays little role in the analysis of predicational adverbs, events (including states, except where the distinction between states and q-events is important) are often noted by a subscripted E in representations like (2.31b) and propositions by a subscripted P.

2.2.3 A Preview of the Analysis

As noted in chapter 1, the analysis to be proposed here follows the basic idea of Jackendoff 1972, with further antecedents in Ernst 1984, Ernst 1986,

Rochette 1990, Wyner 1994, and others. Its three central concepts are shown in (2.32), and the FEO Hierarchy is given in (2.33) (Specified Event is defined in section 2.3).

(2.32) Essential Points of the Scope-Based Analysis of Predicational Adverbs:
a. The adjectival predicates represented by Predicational adverbs select for certain properties of their arguments, including (but not limited to)
type of FEO,
"controllability", and
perceptibility.
b. Arguments of Predicational adverbs must be FEOs; compositional rules for adverbs are (in effect) ordered according to the FEO Hierarchy, in that lower FEOs are composed earlier than higher ones.
c. Sentences whose semantic representation does not allow one (or more) predicational adverb (more generally, any adjunct) to fulfill its requirements are ill-formed and ungrammatical.

(2.33) Speech-Act > Fact > Proposition > Event > Specified Event

As (2.32b) implies, (2.33) is not in itself a principle governing the order of composition of FEOs (as Ernst claimed [1998d]) but is rather a convenient description of the effect of general compositional rules and the lexicosemantic requirements of various adverb classes on the ordering of predicationals. It is important that no particular syntactic maximal projection must always correspond to a specific FEO (e.g., as in Bowers 1993); a functional projection like AuxP might represent a proposition if there is no inappropriate semantic material above it, and a higher projection like IP could denote an event if there is nothing inappropriate within it. In fact, it is precisely this fact that explains much of the wide range of positions and flexibility of adjunct ordering.

Aside from the basic system in (2.32), an important goal here is to capture the fact that there is a regular relation between clausal and manner readings, which is usually addressed in terms of homonymy. Regardless of the final analysis, it is necessary to somehow express the generalization about homonym patterns. To this end, I propose an analysis in which the SpecEvent is what represents manner readings. The characteristic patterns of homonymy seen in section 2.1.2 result from the fact that (leaving speech-act aside for the moment) the other items in (2.33) (fact, proposition, and event) are the three subtypes of clausal FEOs. Facts differ from propositions only in being true propositions. For any event, it is possible to make a proposition (and

thus also, a fact, if the proposition is true) about that event. Although events can be smaller than propositions/facts (because aspectual information can be added to an event to produce another event, something that does not hold of propositions/facts), an event that is fully specified aspectually is directly convertible to a proposition/fact. As a result, every proposition/fact corresponds directly to some event. In this way the three clausal FEOs are grouped together.[16]

However, when an adverb takes a SpecEvent as its argument, it has a very different reading from those produced by clausal FEOs. Since clausal FEOs are essentially interdefinable, an adverb (with one lexicosemantic entry) will not produce different readings for different clausal FEOs but will produce different readings when taking SpecEvent as opposed to a clausal FEO as its argument. This results in the dual readings of (2.5)–(2.10).

2.3 Subject-Oriented Adverbs

2.3.1 Examples

In this section I examine two related subclasses of predicational adverbs that share the property of taking an argument of the verb as one of their arguments, usually the subject (thus Jackendoff [1972] calls them "'subject-oriented"; Wyner [1994] names them "thematically dependent adverbs" or "TDAs"; for McConnell-Ginet [1982] they are "Ad-VPs"). Representative lists are given in (2.34) (and see Greenbaum 1969:210–11 and Ernst 1984:34ff. for further examples).

(2.34) Subject-oriented adverbs:
  a. agent-oriented: *cleverly*, *stupidly*, *wisely*, *tactfully*, *foolishly*, *rudely*, *secretly*, *ostentatiously*, *intelligently*
  b. mental-attitude: *reluctantly*, *calmly*, *willingly*, *anxiously*, *eagerly*, *frantically*, *absent-mindedly*, *gladly*, *sadly*

2.3.2 Agent-Oriented Adverbs

Agent-oriented adverbs indicate that an event is such as to judge its agent as ADJ with respect to the event.[17] (2.35)–(2.38) provide examples in the clausal/manner format.

(2.35) a. Foolishly, the senator has been talking to reporters.
  b. The senator has been talking foolishly to reporters.

(2.36) a. Louise cleverly had opened the vent (so that the poison gas would be pulled from the room).
b. Louise had opened the vent cleverly (with chewing gum and an old pool cue).

(2.37) a. Aggressively, KMC had bought out six companies.
b. KMC had bought them out aggressively.

(2.38) a. Graciously, Philip took her aside (to prevent her from feeling isolated).
b. Philip took her aside graciously (with a few well-chosen words).

In (2.35a) he was foolish to talk to reporters, irrespective of how he actually says anything, while in (2.35b) the way in which the senator talks is foolish. In (2.36a) Louise was clever to open it (as opposed to leaving it closed) regardless of the method she used; in (2.36) she shows great cleverness in the way she opens the vent, although it might have been wiser to leave it closed. The other pairs are interpreted in a parallel way.

Agent-oriented adverbs represent two-place ADJ predicates, the two arguments being an event and the agent. The event corresponds to the constituent the adverb immediately c-commands, that is, its sister. This is the case for all predicational adverbs; they adjoin to some XP projection and take as their argument the event or proposition designated by XP. For clausal readings the adverb's representation is expanded according to the lexical template for ADJ; in (2.39a) P_{ADJ} stands for the property P designated by the adjective, and (2.39b) shows how this is expanded in the more detailed semantic representation.[18]

(2.39) a. ADV (e) = e [$_{REL}$ warrants positing] P_{ADJ} in Agent.
b. P_{ADJ} (e, Agt)

The notion of agent relevant to agent-oriented adverbs is not that of the Agent thematic role (though all NPs bearing this role can be agents in the sense needed for (2.39); rather, it refers to entities that can *control* the eventuality in question in that they can choose not to do some action, enter into a state, and so on.[19] Thus, for example, alongside (2.40a) (where *Jim* is an agent in the theta role sense) we also have (2.40b), where Jim might have been placed on the bed, after which he simply decided to (passively) not move.

(2.40) a. Jim wisely got out of bed.
b. Jim wisely lay on the bed.

The agent is usually the subject except for the well-known phenomenon of "passive sensitivity," illustrated in (2.41), where either the surface subject *Ashley* or the *by*-phrase object *the doctor* may be the agent: that is, either Ashley is wise to be examined, or the doctor is wise to do the examining (we return to passive sensitivity in chapter 3).

(2.41) Ashley was wisely examined by the doctor.

With predicational adverbs there is a commonality between the clausal and manner readings of each adverb; in fact, manner readings are (for the most part) merely verb-modifying (Ad-V) versions of adverbs whose lexical entries are based on the (more diverse) clausal readings. There are two major ways in which manner readings differ from clausal readings. First, they seem to require some (usually overt) manifestation of the quality expressed by an adverb, other than the clausal reading's minimum of entering into some event. To indicate this, I take manner readings to result from the substitution of a relation 'manifest' in templates like (2.39), according to (2.42) (to be revised later).

(2.42) ADV (e) = e [$_{\text{REL}}$ manifests] P_{ADJ} in Agent.

The relation 'manifests' is not necessarily exactly the same as the English word manifest. It is intended primarily to capture the fact that manner readings describe some sort of external manifestation that may or may not reflect the internal reality. For example, one can imagine the two situations invoked by (2.43a–b), where the postverbal manner adverbs "manifest" stupidity and cleverness (respectively) without the spy Alice actually being stupid or clever at that moment.

(2.43) a. Alice cleverly answered stupidly in order to keep her identity secret.
b. Alice stupidly answered cleverly and gave her secret identity away.

Thus perhaps the relation 'manifest' has something of the flavor of 'shows properties typical of'.[20]

The second difference between manner and clausal readings is that even though both involve an event as an argument, the comparison class for the event differs; for manner readings the comparison class is more specific (thus the label SpecEvent). Examine the two sentences in (2.9a–b) repeated here as (2.44a–b) and how they can be interpreted according to the instantiations of (2.39), with the two possible relations given for the clausal and manner readings (2.45a–b; to be revised later).[21]

(2.44) a. Rudely, she left.
b. She left rudely.

(2.45) a. e [$_{\text{REL}}$ warrants positing] rudeness in Agent.
b. e [$_{\text{REL}}$ manifests] rudeness in Agent.

It is still necessary to distinguish the event. In (2.44a) she is judged rude because of the event of her leaving, as opposed to other things she could have done, most especially *not* leaving; a common paraphrase is 'She was rude to leave', with the infinitival complement [PRO to leave] providing the second argument of RUDE (i.e., the event [she leave]). Yet, in (2.44b), intuitively, she is judged rude on the basis of something about her leaving – some property of her leaving that we sometimes call a manner, which distinguishes this leaving event from other possible leaving events. For example, she might have left without saying good-bye, by slamming the door, or with a few choice imprecations on her way out. Notice that the property in question serves to distinguish some leaving events from others. Thus it is possible that the exact same event occurs in both (2.44a) and (2.44b); the difference is that in the first case it is compared to other relevant events that she could have done of any sort, including not leaving, while in the second it is compared to other leaving events (distinguishable by these unmentioned properties).

(2.46) a. Craftily, Vera withdrew all her funds from the bank.
b. Vera withdrew all her funds from the bank craftily.

Similarly, in (2.46a) Vera counts as crafty for withdrawing all her funds from the bank: this is judged implicitly with respect to other things she could have done, at the very least to not withdraw the funds. In (2.46b) we might say that her manner was crafty: tiny withdrawals spaced over a year (so that no one notices them), a withdrawal done with forged documents, one accomplished by hypnotizing the teller so that she or he wouldn't remember the transaction, and so on. Each of these represents a particular event of withdrawing all her funds from the bank. The crafty manner (whichever one it is) is not explicitly described but rather simply evaluated as crafty, as implicitly contrasted with various, noncrafty withdrawing events of (say) withdrawing the funds all at once, withdrawing them under her own name, leaving a paper trail, or telling people openly that she withdrew funds.

Crucially, for both (2.44a–b) and (2.46a–b) we are comparing event to event in evaluating rudeness and craftiness. In the clausal (a) versions, the

comparison is among event of any sort. In the manner (b) sentences, it is between events of the type specified by the verb: leaving and withdrawing of funds from the bank, respectively. Therefore, the comparison class with respect to which the event is evaluated differentiates the clausal and manner readings. Note that on this view it is not the manner (i.e., some property) that is ADJ, but it is the whole event that has that property.

Comparison classes are necessary anyway for the interpretation of gradable predicates like *tall*, *hot*, *quiet*, *simple*, and so on; a tall building is judged as such compared to the norm for buildings, while a tall woman is judged against other women, and a tall boy against other boys. Here we need to consider comparison classes for events, given the more precise versions of (2.45a–b) indicating the gradable-predicate nature of RUDE:[22]

(2.47) a. e [$_{\text{REL}}$ warrants positing] more rudeness in Agent than the norm for events.
b. e [$_{\text{REL}}$ manifests] more rudeness in Agent than the norm for Specified Events.

Taking the clausal version in (2.47a) as basic, agent-oriented adverbs' lexical entry can be represented more formally as in (2.48).

(2.48) Agent-Oriented Adverb Template:
ADV [$_{\text{E}}$. . .] → [$_{\text{E}'}$[$_{\text{E}}$. . .] & P_{ADJ}([$_{\text{E}}$. . .], Agent)],
where the designated relation in P_{ADJ} between the event and the Agent is [$_{\text{REL}}$ warrants positing], and the comparison class for P_{ADJ} is all relevant events in context.

The manner reading corresponding to (2.47b) is derived by the Manner Rule in (2.49), which is a more elaborate version of (2.25c).[23]

(2.49) Manner Rule:
A predicational adverb within PredP, selecting an Event [F(x, . . .) . . .] denoted by its sister, may yield
[$_{\text{E}'}$[$_{\text{E}}$F(e) & θ(e, x), . . .] & P_{ADJ}([$_{\text{E}}$F(e) & θ(e, x), . . .], x)],
where the designated relation in P_{ADJ} is [$_{\text{REL}}$ manifests], and (if P_{ADJ} maps FEOs to a scale) the comparison class for P_{ADJ} is all events of x F-ing.

(θ (e, x) represents the subject's theta role. The second argument of P_{ADJ}, x, is the subject for subject-oriented adverbs and is absent for speaker-oriented adverbs.) Agent-oriented adverbs take events as their FEO argument, along

with their subject argument, and yield another event. I note the difference between (2.44a–b) as in (2.50a–b), where the asterisk signals interpretation as in (2.49), evaluated with the designated relation 'manifests' and the comparison class of events of F-ing, which defines the FEO SpecEvent.

(2.50) a. $[_{E'}\ [_{E}$ L(e) & Agt (e,she)] & RUDE ($[_{E}$ L(e) & Agt (e,she)], she)]
b. $[_{E'}\ [_{E}$ L(e) & Agt (e,she)] & RUDE ($[_{E}$ L(e) & Agt (e,she)]*, she)]

Thus in (2.44a) she is judged rude for having left, as opposed to, for example, staying to make small talk; the event of her leaving is mapped onto a scale of rudeness where it is evaluated with respect to other relevant events in that context. In (2.44b) it is her leaving as opposed to other possible events of her leaving that manifests rudeness. This analysis makes the claim about what "manners" are: the (unexpressed) properties that make SpecEvents (such as leavings, speakings, dancings, etc.) different from each other. In (2.44b) her specific leaving event (which, though not named as such overtly, might be a leaving-without-saying-good-bye) is ruder in some way than a normal leaving event.

Crucially, then, the difference between the clausal agent-oriented reading (2.44a) and the manner reading (2.44b) turns on the existence of the same event serving as the argument of RUDE but is evaluated with respect to different designated relations and comparison classes. The clausal reading in (a) involves the event compared to other relevant events, in which case we call it an event argument; the manner reading in (b) involves this event compared to other possible events of V-ing, in which case it is a SpecEvent. This contrast is analogous to nominal modification cases like *good violinist*, where the meaning of *good* remains constant, but the phrase can be interpreted, with respect to different comparison classes, as referring either to a person who plays violin well (i.e., good for a violinist) or to a good person who also happens to be a violinist.[24]

Let us sum up the crucial points thus far. Schematically, the lexical entry for agent-oriented adverbs like *rudely* looks like (2.51).

(2.51) e $[_{REL}$ warrants positing] more P_{ADJ} in Agent than the norm for Events.

The Manner Rule converts $[_{REL}$ warrants positing] to $[_{REL}$ manifests] and changes the comparison class to SpecEvents. There are no homonyms at all, the difference between the clausal and manner readings being derived by the application of (2.49) when the adverb occurs in the domain of V in base structure and only then. Agent-oriented refers to a lexical class; when an adverb of this class occurs outside PredP, (2.49) cannot apply, and thus is

interpreted as in (2.51), with a reading Jackendoff called subject-oriented; otherwise (2.49) may apply, producing a manner reading.

It is important that the content of the event in (2.49) and (2.52) correspond to the sister of the adverb instead of always corresponding to the (unique) event variable in standard Neo-Davidsonian representations, as in (2.52b) for the basic event in (2.44) ((2.52a) shows the syntactic structure for (2.44), with the subject *she* in its base position, where it is mapped onto the event representation).

(2.52) a. $[_{\text{PredP}}$ rudely $[_{\text{PredP}}$ she $[_{\text{PredP}}$ leave$_i$ $[_{\text{VP}}$ $t_i]]]]$
b. $\exists$e [L(e) & Agt (e,she)]

This holds because clausal-reading agent-oriented adverbs may take different scopes with respect to other adverbial elements, including negation. In (2.50) the event argument of the adverb is the basic event determined by the verb's argument structure. In cases like (2.53a–c), however, the event argument may be different, as represented in (2.54a–c) (where all brackets delineate events).

(2.53) a. Intelligently, Kim had not frequently bought tickets.[25]
b. Frequently, Kim had intelligently not bought tickets.
c. Frequently, Kim had not bought tickets intelligently.

(2.54) a. $[_{E''} \sim [_{E'}$ FREQ $[_{E}$ B(e) & Agt(e,k) & Th(e,t)]]] & INTELL (e″)
b. FREQ $[_{E''} [_{E'} \sim [_{E}$ B(e) & Agt(e,k) & Th(e,t)]] & INTELL (e′)]
c. FREQ $[_{E''} \sim [_{E'} [_{E}$ B(e) & Agt(e,k) & Th(e,t)] & INTELL (e*)]]

In (2.54a) the intelligent thing that Kim does is to not frequently buy tickets, while in (2.54b) the intelligent thing she does is to not buy tickets (and she does this frequently). In (2.54c) she did not buy tickets in an intelligent way (and as in (2.54b) this nonaction happens frequently). Among the representations of these three sentences, in (2.53a) *intelligently* takes the widest scope among the adverbials, but (2.53b) represents this adverb as taking narrow scope under *frequently*, though it has wide scope over negation; that is, its event argument corresponds to *Kim didn't buy tickets*.[26]

In this way agent-oriented adverbs show that events can be layered. The basic event of (2.54a) is Kim's buying tickets, but this event is modified (quantified) by *frequently* in such a way that one can refer to an event of Kim's frequently buying tickets. Similarly, there can be events of Kim's not buying tickets, Kim's not frequently buying tickets, Kim's frequently not buying tickets, and so on. (2.55) provides further examples. In each case, the

agent-oriented adverb takes scope not over the basic event e but over "larger" events, consisting of the basic event plus one or more layers:

(2.55) a. Bob wisely is no longer playing his accordion.
b. Sue has carefully been occasionally letting her son win at chess.
c. Fred had obnoxiously stayed locked in the bathroom for two hours on the day of his sister's graduation.

(2.55a) indicates that the wise thing Bob did is to be in (get into) the state of no longer playing his accordion. In (2.55b), similarly, Sue is judged careful for the event of occasionally letting her son win at chess; and in (2.55c) the event marking Fred as obnoxious includes specification of duration and time, that is, his staying locked in the bathroom for two hours on his sister's graduation day. Thus layered events can include (at least) negation and aspectual or temporal information in addition to the basic event denoted by the verb and its arguments. (2.55c) shows two layers beyond the basic event, but clearly there can be more.

Not only does (2.48) allow accounting for this phenomenon of event layering, and for the type of scope ambiguity shown in (2.54), but it correctly captures differences in the semantic property discussed with respect to (2.2), by which the truth of an Adv + S sequence entails the truth of the sequence with the adverb missing, illustrated by the manner adverb in (2.56) (called "Droppability" by Wyner 1994).

(2.56) a. Kim bought the tickets intelligently. →
b. Kim bought the tickets.

Given the representation in (2.57) for (2.56a), the inference to (2.56b) follows straightforwardly.

(2.57) $[_{E'}\ [_{E}\ B(e)\ \&\ Agt(e,k)\ \&\ Th(e,t)]\ \&\ INTELL(k,\ e^*)]$

But Droppability is lacking for clausal readings like (2.58), where (a) does not entail (b), even though if *stupidly* were absent it would.

(2.58) a. Stupidly, she ate meat on Friday (in the Vatican).
b. Stupidly, she ate meat (in the Vatican).

Given the (pre-1963) Roman Catholic prohibition on eating meat on Friday, doing so (at least in a place like the Vatican) can be seen as a stupid act. But eating meat per se (2.58b) need not be; thus (2.58a) can be true while

(2.58b) is false – Droppability does not hold. This is predicted correctly by the respective representations in (2.59a–b), since the event argument of STUPID is different in the two cases, so that the inference from (a) to (b) is invalid, even though the inference from the event e′ of (2.59a) (including ON(e,Fri)) to the event e′ of (2.59b) (without ON(e,Fri)) is valid.[27]

(2.59) a. $[_{E'}\ [_{E}$ E(e) & Agt(e,s) & Th(e,m)] & ON(e,Fri)] & STUPID(k,e′)
b. $[_{E'}\ [_{E}$ E(e) & Agt(e,s) & Th(e,m)]] & STUPID(k, e′)

More traditional Davidsonian analyses cannot easily handle such differences in Droppability patterns (as pointed out in Fodor 1970 and Wyner 1994: chapter 3).

To conclude the discussion of agent-oriented adverbs, I have proposed that they have a unique lexical entry, requiring an event as one argument and agent as the other, and set for the designated relation 'warrants positing' for the clausal reading. When an adverb of this type occurs within PredP, the Manner Rule applies, deriving the manner reading by changing the designated relation and changing the comparison class to SpecEvents. For clausal readings the event argument is not necessarily the basic event but may be a different, larger event denoted by the adverb's sister; this allows us to explain the two phenomena of event layering ((2.53)–(2.55)) and Droppability. Agent-oriented adverbs may occur either before or after negation, or before or after other event-taking adjuncts like *frequently*, because all three of these take event arguments and yield events. Thus the result of combining one adverbial with an event-denoting phrase is another event-denoting phrase, and layers may be added freely. This correctly predicts the possibility of alternative orders, as illustrated in (2.53).

2.3.3 Mental-Attitude Adverbs

In the discussion of *rudely* in (2.44) in section 2.3.2, I claimed that the (a) and (b) readings both involve an event serving as an argument. This helps explain why there has frequently been confusion between the two readings, both being paraphrasable by 'Her leaving was rude'. In this section I examine mental-attitude adverbs (hereafter M-A adverbs) like *calmly*, *bitterly*, and *willingly*. The interpretation of these is rather complex, but, in fact, once the various factors are teased apart, it provides further evidence that events and SpecEvents are arguments of predicational adverbs and that it is correct to treat the two readings in terms of one sort of fundamental entity – events, distinguished by the comparison classes and designated relations outlined in the previous section.

M-A adverbs include *calmly*, *anxiously*, *absent-mindedly*, *eagerly*, *sadly*, *attentively*, *willingly*, *reluctantly*, *obstinately*, and *vigilantly*. They describe, most fundamentally, a state of mind experienced by the referent of the subject of the verb. They seem to fall into two groups, which I term state and intentional according to their preferred reading, but it appears that either type of M-A adverb may take the reading characteristic of the other subgroup (depending on the meaning of the verb). That is, state M-A adverbs tend to have a state reading but may sometimes have an intentional reading in the right context; intentional M-A adverbs tend toward an intentional reading but may have a state reading in the right context. Both types also may have manner readings. (2.60)–(2.62) provide examples of the state group, and (2.63)–(2.64) the intentional group.

(2.60) a. Delightedly, Chris did not budge while the new robot cooked his supper.
b. To say the least, Chris did not speak delightedly after the defeat.

(2.61) a. She calmly had left the room.
b. She had left the room calmly.

(2.62) a. Bitterly, Elsa spoke about her former partner.
b. Elsa spoke bitterly about her former partner.

(2.63) a. Mindy has reluctantly been going to accounting classes.
b. Mindy has been going to accounting classes reluctantly.

(2.64) a. Willingly, the sailors sang a few of the chanteys.
b. The sailors sang a few of the chanteys willingly (and a few others begrudgingly).

State M-A adverbs, in their most basic state reading, have the meaning that the subject experiences a certain mental state during the time that the event holds (2.65).

(2.65) e [$_{\text{REL}}$ is accompanied by] a greater degree of P_{ADJ} in Experiencer (Subject) than the norm for Experiencers.

In (2.65) the comparison class is restricted to experiencers and is not determined by events; thus for this one predicational subclass, the comparison class is not determined by the FEO argument of the adverb. In (2.61a), for example, Chris simply is calm as she leaves the room; there is no question of calmness evaluated with respect to other possible things she could have

done (as was the case with agent-oriented adverbs). The norm for calm is determined simply by the way people feel emotions.[28]

(2.61a) also seems to have an intentional reading, though it is less salient. Roughly speaking, it is her decision to leave that is calm; her mental state precedes the event described (while for the state reading it is simultaneous). This intent can be expressed in the designated relation in (2.66).

(2.66) e [$_{REL}$ is intended with] a greater degree of P_{ADJ} by Experiencer (Subject) than the norm for Experiencers.

Once again, the comparison class for the gradable predicate ADJ is merely experiencers, not events. Though she may intend to take one action as opposed to another, this has no effect on how we evaluate the degree of her calmness in making this decision. (Compare this to sentences like *Wisely*, *she left*, where [for example] it is her choice to leave rather than to stay that determines whether she is judged wise or not.)

(2.67a–c) provide more examples of state-reading M-A adverbs (some of these may also have manner readings).

(2.67) a. Frantically, he waved down a taxi.
b. Elsie stood contentedly by the fence.
c. Herb left the room quite hopefully after the meeting.

In (2.67a), *frantically* indicates that his waving down a taxi is accompanied by a state of franticness; similarly, in (2.67b–c) Elsie is content simultaneous with her standing by the fence, and Herb's hopefulness coincides with his leaving the meeting.

Turning now to intentional M-A adverbs, we find that both readings are again available, but the intentional reading is far more salient, with the state reading requiring a favorable context. (2.64a) says that the sailors are reluctant to enter into the event of singing chanteys; that is, the mental attitude is an (unfavorable) intention with respect to doing the (future) action in question. Again, in accordance with (2.65), the mental state holds (though perhaps very briefly) before the designated event actually occurs. It also seems possible to interpret (2.64a–b) as asserting that the state of reluctance persists through the event of singing (via (2.66)). This sort of reading is somewhat more salient when the main verb is stative, as might be expected (2.68), though it seems never to be the primary interpretation.

(2.68) They reluctantly waited there for Mary to assign jobs to them.

For the two clausal readings of M-A adverbs, I provide a general interpretation schema parallel to that for agent-oriented adverbs, but without reference to events as comparison class, in (2.69) (where experiencer is usually the Subject, just as for agent with agent-oriented adverbs, and other symbols are interpreted as before).

(2.69) ADV $[_{E}\ldots] \rightarrow [_{E'}\ [_{E}\ldots]\ldots \&\ P_{ADJ}\ ([_{E}\ldots],$ Experiencer)],
where the designated relation between e and Experiencer is
a. $[_{REL}$ is accompanied by] (or for state M-A)
b. $[_{REL}$ is intended with] (for intentional M-A),
and the comparison class for P_{ADJ} is Experiencers.

Given (2.69), we are able to account for different layered events in the scope of the adverb. For example, (2.70a–c), with intentional readings, have their representations in (2.71a–c), respectively.

(2.70) a. Obstinately, George ate his steak.
b. Obstinately, George didn't eat his steak.
c. George didn't obstinately eat his steak.

(2.71) a. $[_{E}$ E(e) & Agent (e,g) & Th(e,s)] & OBSTINATE (e,g)
b. $[_{E'} \sim[_{E}$ E(e) & Agent (e,g) & Th(e,s)]] & OBSTINATE (e′,g)
c. $\sim[_{E'}\ [_{E}$ E(e) & Agent (e,g) & Th(e,s)] & OBSTINATE (e,g)]

This correctly shows that George is the agent of eating but the experiencer of being obstinate about some event; the latter event is his eating the steak for (2.71a), his not eating the steak for (2.71b), and again his eating the steak for (2.71c) (where it is claimed that it is not so that he is obstinate with respect to this event). Similarly, (2.72a–b) (taking (a) on the reading where *purposely* has scope over *twice* and ignoring the fine points of representing *twice*) are represented in (2.73a–b), respectively.

(2.72) a. Sarah purposely lied to me twice.
b. Twice, Sarah purposely lied to me.

(2.73) a. $[_{E'}\ [_{E}$ L(e) & Agent (e,s) & Goal(e,me)] & Twice(e)] & PURPOSEFUL (e′,s)
b. $[_{E'}\ [_{E}$ L(e) & Agent (e,s) & Goal(e,me)] & PURPOSEFUL (e,g)] & Twice (e′)

In both cases, Sarah lied to the speaker twice, but (2.73a) represents that her intent is to lie twice, while in (2.73b) her intent is to lie (holding separately for

each of two occurrences of the event). Syntactically, these examples show that M-A adverbs, just like their agent-oriented cousins, permit free ordering in principle with respect to negation and other event-taking adverbials. (2.74a–c) give further examples of intentional-reading M-A adverbs.

(2.74) a. Deliberately, Freida put her keys under the sofa.
b. Ira had intentionally knocked the beer off the counter.
c. The agency had turned its files over grudgingly.

Now examine the manner readings. For (2.61b), given the Manner Rule, it must be that she manifests calm while leaving, as indicated in (2.75), which is the nonformal version of the result of applying (2.49) to (2.66).

(2.75) e [$_{REL}$ manifests] a greater degree of P_{ADJ} in Experiencer (Subject) than the norm for Experiencers and SpecEvents.

Manner readings require a comparison class of SpecEvents, by virtue of (2.49); clausal readings do so only if an adverb's lexical template requires one. M-A adverbs do not require one lexically; thus, of the three readings discussed here, only manner makes reference to some sort of event in this way. Therefore, the interpretation of (2.61b) is that her leaving is more of a manifestation of calm than other possible leavings could have been (e.g., she might have left with a slow, measured pace and a serene expression, as opposed to rushing, shouting, moving jerkily, etc.) (2.76) shows the template for manner readings of M-A adverbs (derived according to (2.49), and (2.77) provides an example, with the representation for (2.74c).

(2.76) [$_{E'}$ [$_{E}$ F(e) . . .] & P_{ADJ} ([$_{E}$ F(e) . . .], Experiencer)],
where the designated relation between the event and Experiencer is [$_{REL}$ manifests], and the comparison class for P_{ADJ} is Experiencers and events of F-ing.

(2.77) [$_{E}$ T(e) & Agt(e,a) & Th(e,f)] & GRUDGING (e*, Experiencer)

Notice that this view of M-A adverbs holds that clausal readings need not be overtly manifested; all that is required for them is that the experiencer actually have the mental state in question. Manner readings, though, do require overt manifestation but not the actual state. This is brought out by the pairs in (2.78–2.79).[29]

(2.78) a. Though her emotions were in turmoil, she managed to leave the room calmly.
b. ??Though her emotions were in turmoil, she calmly had left the room.

(2.79) a. Despite being overjoyed at the news, she answered them glumly.
b. ??Glumly, she answered them, despite being overjoyed at the news.

In the (a) sentences, the initial adverbial clause explicitly says that the experiencer has a certain mental state, and as a result the postverbal M-A adverb must have a manner reading, where she shows the overt signs of calm or glumness but does not feel them. In the (b) sentences the pre-Aux position of the adverb forces a state reading, which conflicts with the meaning of the concessive clause. (2.80a–d) supply further examples of manner-reading M-A adverbs.[30]

(2.80) a. Harry waved a taxi down frantically.
b. One of the parishioners responded angrily.
c. Rufus marched proudly down the boulevard in his checkered suit.
d. Gorgox stood defiantly before the Temple of Doom.

There are two indications that the treatment of clausal M-A adverbs sketched here, where the event argument does not serve to define a comparison class for evaluating ADJ, is correct. First, the semantics proposed for state readings in (2.65) is no different from that usually assumed for adjunct secondary predicates, like those in (2.81) (cf. (2.61)).

(2.81) a. Calm, she had left the room.
b. She had left the room calm (and came back angry).

Compare this sort of example to that of agent-oriented adverbs, as in (2.82).

(2.82) a. ??Rude, she left the room.
b. ??She left the room rude.

The interpretation of secondary predicates has no provision for an event argument, so that the agent-oriented predicate *rude* in (2.82a–b) is very hard to interpret. A person can be rude as a general characteristic, but if so, *rude* would be an individual-level predicate, which is excluded from serving as a secondary predicate.[31] Thus *rude* in (2.82) must be stage-level, but stage-level agent-oriented predicates are interpretable only with respect to particular events; there must be some evidence, some basis on which an entity is judged

rude, wise, stupid, and so forth. This sort of reference to events is impossible for secondary predicates, making (2.82a–b) ill-formed. (2.81a–b) are fine, though, showing that state-reading M-A adverbs do not refer to events for evaluating calmness, bitterness, and so on (only making reference to events temporally).

Second, sentence pairs made up of one clausal and one manner reading of an M-A adverb are judged much closer in meaning than similar pairs made up of agent-oriented adverbs. Compare (2.62a–b) and (2.83a–b).

(2.83) a. Intelligently, Elsa spoke about her former partner.
b. Elsa spoke intelligently about her former partner.

Though both pairs show a contrast, the contrast in (2.83) is greater. In (2.83a) Elsa shows intelligence by the act of speaking (though her manner of speaking might be silly – again, perhaps she is a spy being interrogated), while in (2.83b) she shows intelligence by the way she speaks (though perhaps it was stupid to speak at all). In (2.62a) she feels bitterness as she speaks but in (2.83b) manifests bitterness as she speaks. Since (pragmatically) we normally expect the manifestation of a feeling to reflect an actual feeling, (2.62a–b) are almost synonymous. This difference in strength of contrast is to be expected on the analysis given, since for the M-A case it is only one of overt manifestation versus internal experience, while for the agent-oriented pair the contrast involves both a difference in manifestation and a difference in the kind of event used as a comparison class to evaluate the ADJ predicate.

2.3.4 Summary for Subject-Oriented Adverbs

I proposed here that agent-oriented and M-A adverbs take events and the agent/experiencer as arguments and that each adverb of these classes has a single lexical entry (phrased for the clausal reading). The Manner Rule (2.49) is applicable when an adverb of these classes occurs within PredP, requiring a change of the designated relation to 'manifests' and a change of comparison class to events of the kind denoted by the verb. Thus the clausal/manner "homonymy" is not real homonymy because of there being two lexical entries: the manner reading is derived by rules mapping syntax to semantic representation.

Clausal representations may be constructed by means of a derived event, that is, the basic event plus some modifier(s), which is the argument of ADJ. This is justified by the need to capture different possible scopes (a phenomenon here labeled event layering), by the entailment patterns known as

Droppability, and by the fact that this allows us to explain alternative orders of subject-oriented adverbs with respect to negation and other adverbials. I also proposed that the agent-oriented and M-A subclasses differ in part in that the former invokes event as its comparison class for clausal readings, while the latter does not.

2.4 Speaker-Oriented Predicationals

2.4.1 Overview

Three Predicational adverb subclasses belong to what Jackendoff (1972) calls (and are known here as) speaker-oriented adverbs: speech-act,[32] epistemic,[33] and evaluative adverbs. They share the property that on their clausal readings they do not make any reference to the subject of V, and they take one of the clausal FEO's proposition, fact, or speech-act as their single FEO argument. (2.84a–c) show one example of each type, with paraphrases in (2.85a–c), respectively.

(2.84) a. Honestly, who would do such a thing? (speech-act)
b. The markets will perhaps respond to lower interest rates. (epistemic)
c. Unbelievably, she decided to buy a camel. (evaluative)

(2.85) a. Tell me honestly, who would do such a thing?
b. The proposition that the markets will respond to lower interest rates may be true.
c. The fact that she decided to buy a camel is unbelievable.

In this section I discuss these three types in turn, distinguishing several subtypes and showing how they all fit into the semantics proposed in sections 2.2–2.3 based on FEOs as arguments. In the course of discussion, I address three themes in particular. First, to understand the semantics of these predicational subclasses (as with all others), it is necessary to formulate their lexical representations correctly, particularly with respect to the way they select certain properties of their FEO objects. Second, once these semantic requirements are properly understood, it is possible to show why certain relative orderings (scopes) of two speaker-oriented adverbs are possible, and others are barred, on semantic grounds. Third, with proper lexical formulations it is possible to demonstrate (as with the subject-oriented group) that manner readings are uniformly derivable from the clausal lexical representation by means of the general Manner Rule.

2.4.2 Speech-Act Adverbs

The pairs (2.86)–(2.88) provide examples of speech-act adverbs, again showing clausal and manner readings in (a)–(b) sentences, respectively.

(2.86) a. Frankly, you shouldn't speak to Annette.
b. Annette spoke frankly.

(2.87) a. We've honestly been dealing with them for a long time.
b. We've been dealing with them honestly.

(2.88) a. Roughly, management intends to beat the union by wearing them down.
b. This accords with the plan roughly.

Frankly, *honestly*, and *simply* are three common adverbs of this class, which also includes *seriously*, *confidentially*, *specifically*, *generally*, and *candidly* (see also discussion and list in Greenbaum 1969:chapter 4). Its status as a class is slightly different from the others examined here, since most if not all of its members fit semantically into other, well-established lexicosemantic classes (cf. Greenbaum 1969:93); some members are also agent-oriented (e.g., *honestly*), some aspect-manner (*briefly*), others degree-of-precision (*roughly*, *generally*; see Ernst 1984:chapter 3, for discussion of this group). However, they are unified in two important ways. First, they all have meanings appropriate in some way (i.e., they cognitively select) for predicates of communication, which allows them to have their clausal readings, since any speech-act is potentially an act of communication (the speaker's) and may also invite an act of communication (the addressee's, in questions like (2.84a)). Second, they all function as manner adverbs modifying a covert predicate of expression, as was proposed in the Performative Hypothesis of the late 1960s (see Schreiber 1972, Mittwoch 1976, and Wachowicz 1978 for discussion and references), though here this predicate is only relevant in (postovert-syntax) semantics. This fact about their semantics explains both why they all have conventional, main-verb-modifying manner readings in addition to clausal, speech-act readings (although they may have other manner readings unrelated to communication, such as in *handle the affair honestly*, *design the room simply*, *push him aside roughly*, etc.)

The lexical semantics of speech-act adverbs can be represented as in (2.89)–(2.90), reflecting the lexicosemantic differences between the subtypes (**Express* represents the special predicate, abbreviated as *E in SRs, introduced by the speech-act operator).

(2.89) Agent-oriented Type:
$\left\{\begin{array}{l}\text{Event of *Expressing P}\\ \text{Event}\end{array}\right\}_{[\text{REL}}$ manifests] greater degree of P_{ADJ} in Agent than the norm for SpecEvents.

(2.90) Manner and degree-of-precision Types:
$\left\{\begin{array}{l}\text{Event of *Expressing P}\\ \text{Event}\end{array}\right\}_{[\text{REL}}$ manifests] greater degree of P_{ADJ} than the norm for SpecEvents.[34]

There is surely more work to be done to establish the nature of P, but it should be intuitively clear enough for present purposes: in assertions, it is what the speaker is saying, and in questions it embodies the addressee's answer. The use of 'manifests' and SpecEvents in (2.89)–(2.90) makes this a special case of manner modification. Thus the speech-act FEO is a shorthand for 'SpecEvent of *Expressing P'.

As is common, I assume that assertions involve a covert operator with (roughly) the content 'Speaker expresses P'. I also assume that questions have a question operator in Comp (or in Spec,CP; the distinction is unimportant here) that has the effect of an imperative, that is, 'You tell me P', where P conveys the requested information, and that an appropriate compositional rule gives the imperative part of this formula wide scope over the adverb (see Aqvist 1965, Belnap 1969, Lang 1978, and Wachowicz 1978). These operators can be translated as in (2.91) (IMP = imperative operator).

(2.91) a. *E (Speaker, P)
b. IMP [*E (you, P)]

(2.92)–(2.93) give more formal versions of (2.89)–(2.90).[35]

(2.92) ADV $[_{\text{E}}$ F(e) . . .] → $[_{\text{E}'}$ $[_{\text{E}}$ F(e) . . .] & P_{ADJ} ($[_{\text{E}*}$ F(e) . . .], Agent)], where F may be *E, the designated relation is $[_{\text{REL}}$manifests], and the comparison class is events of *Expressing. (for the agent-oriented type, e.g., *honestly*, *sincerely*)

(2.93) ADV $[_{\text{E}}$ F(e) . . .] → $[_{\text{E}'}$ $[_{\text{E}}$ F(e) . . .] & P_{ADJ}($[_{\text{E}*}$ F(e) . . .])], where F may be *E, and the designated relation is $[_{\text{REL}}$manifests], and the comparison class is events of *Expressing. (for the manner and degree-of-precision types, e.g., *briefly*, *simply*, *roughly*)

Examine (2.94), (2.97), and (2.100) as examples (= (2.88a), (2.86a), and (2.84a), respectively). Application of (2.92) to (2.94) gives (2.95) (P_1 standing for the proposition expressed by (2.94) minus *frankly*), fleshed out verbally as (2.96).

(2.94) Frankly, you shouldn't speak to Annette.

(2.95) $[_E$ *E(e) & Agt(e,I) & Th(e,P_1)] & FRANK (e*, Agent)

(2.96) I say that you shouldn't speak to Annette, and I say this frankly (i.e., this shows notable frankness on my part as compared to other attitudes I could have had in saying it).

The representations are similar for (2.97) in (2.98)–(2.99), starting from (2.93), and for (2.100) in (2.101)–(2.102).

(2.97) Roughly, management intends to beat the union by wearing them down.

(2.98) $[_E$ *E(e) & Agt(e,I) & Th(e,P_1)] & ROUGH (e*)

(2.99) I say that management intends to beat the union by wearing them down, and my description of this is rough (approximate).

(2.100) Honestly, who would do such a thing?[36]

(2.101) IMP $[_{E'}$ $[_E$ *E(e) & Agt(e,you) & Th(e,P)] & HONEST (e*, you)]

(2.102) Tell me honestly the answer to "Who would do such a thing?"

Turning now to manner readings, the Manner rule in essence selects the bottom line in (2.89)–(2.90), corresponding to the cases in (2.92)–(2.93) where F $\neq$ *E. The readings for (2.103) and (2.105) are shown in (2.106)–(2.107) ((2.104) will have a representation parallel to that in (2.106)).

(2.103) Annette spoke frankly.

(2.104) We've been dealing with them honestly.

(2.105) This accords with the plan roughly.

(2.106) [$_E$ S(e) & Agent(e,a)] & FRANK (e*, Agent)

(2.107) [$_E$ A(e) & Th(e,this) & With(e,p)] & ROUGH (e*)

((2.103)–(2.105) = (2.84b)–(2.86b), respectively.) For (2.103), as required, Annette is represented in (2.106) as manifesting frankness in her speaking, with respect to other speaking events, and in (2.107), for (2.105), the accuracy of match between *this* and the plan is said to be rough (= approximate), compared to more accurate "accordings."

To summarize the discussion of speech-act predicationals: they are lexically just like event-taking adverbs (including agent-oriented, M-A, degree-of-precision, and pure manner types) except in selecting additionally for events of *Expressing, the covert predicate introduced by speech-act operators. Thus they may take scope over such an operator. If they modify any other predicate, they can only do so by means of the Manner Rule and have manner readings.

2.4.3 Epistemic Adverbs

(2.108)–(2.111) show epistemic adverbs, the first two pairs with modal adverbs and the last two with evidential adverbs.

(2.108) a. Sam has probably made an appointment.
b. *Sam has made an appointment probably.

(2.109) a. Maybe someone has already unlocked the door.
b. *Someone has already unlocked the door maybe.

(2.110) a. Clearly, they saw the sign.
b. They saw the sign clearly.

(2.111) a. Marian has quite obviously been coughing.
b. Marian has been coughing quite obviously.

All clausal-reading epistemic adverbs are predicates about the truth of the proposition represented by the rest of the sentence.[37] Modals are a speaker's assertions about the degree of certitude of the truth-value, expressed in terms of possibility or necessity; they require as their objects propositions whose truth-value is unspecified (taken as unknown by the speaker). Other examples include *possibly*, *certainly*, *surely*, and *definitely*. Evidentials' basic adjectival predicate describes the manner of perceiving something, and when this

something is a proposition it must be true, with the adverb indicating the ease or clarity of perceiving it. (2.112a) gives the relevant part of the lexical entry for modal adverbs, and (2.113a) for evidentials, each with a specific example.[38]

(2.112) a. The certitude of Proposition being true is ADJ.
b. PROBABLE (p)

(2.113) a. The perception of (the true) Proposition [$_{REL}$'s truth shows] greater degree of P_{ADJ} than the norm for Propositions.
b. [$_P$ . . .] & CLEAR(p)

In both cases, p represents the proposition denoted by the sister of the adverb, assuming that subjects and verbs are interpreted in their base positions. Examine the results for modal adverbs first; (2.114) shows the form for (2.108a). According to (2.25a), an event may be automatically converted to a proposition that this event occurred, represented by [$_P$ [$_E$ . . .]]. (2.108b) is ungrammatical; since the Manner Rule can apply only if event is mentioned as an option in an adverb's lexical entry (as it is for subject-oriented and speech-act adverbs), it can never apply to modal adverbs like *probably*, and (2.108b) is ruled out.

(2.114) PROBABLE ([$_P$ [$_E$ M(e) & Agt(e,s) & Th(e,a)]])

In other words, on the one hand, modals may only select propositions and no other FEO.[39] On the other, the cognitive-semantics core of *clearly* comments on how or on how easily one perceives something, and one can perceive many things besides the truth of a proposition. We can thus formulate the manner option corresponding to (2.113a) as in (2.115).

(2.115) The perception of the Theme of Event [$_{REL}$ manifests] a greater degree of P_{ADJ} than the norm for Event.

The combined lexical entry for *clearly* thus looks like (2.116); outside PredP the adverb can take the propositional FEO, and inside PredP, via the Manner Rule, it takes (Spec) Events.

(2.116) The perception of $\left\{\begin{matrix}\text{(the true) Proposition [}_{REL}\text{'s truth shows]}\\ \text{the Theme of Event [}_{REL}\text{ manifests]}\end{matrix}\right\}$ a greater degree of P_{ADJ} than the norm for $\left\{\begin{matrix}\text{Proposition}\\ \text{Event}\end{matrix}\right\}$.

The clausal part of (2.116), the first lines of the brackets, was represented in (2.113b). (2.117) represents the manner version formally.

(2.117) . . . & P_{ADJ} (e*), where the designated relation is [$_{REL}$ manifests]

The readings for (2.109a–b) are thus represented in (2.118)–(2.119).

(2.118) [$_{P}$ [$_{E}$ S(e) & Agt (e,they) & Th (e,s)]] & CLEAR (p)

(2.119) [$_{E}$ S(e) & Agt (e,they) & Th (e,s)] & CLEAR (e*)

Cognitively, modal epistemics are predicates of the likelihood of the truth of something, and only propositions have truth-values; evidential epistemics are predicates of the perception of something, and many other things besides truth may be perceived. This is reflected in the formal selection properties embodied in modal adverbs' selecting only propositions as their FEO argument, while evidentials allow either proposition or SpecEvent.

Some adverbs might seem to be evidentials on the basis of their corresponding (real) adjectives yet act like modal adverbs in having only clausal readings (2.120).

(2.120) a. Marian has apparently been coughing.
b. *Marian has been coughing apparently.

If *apparently* fronts for the predicate APPARENT, there seems no reason why (2.120b) should be ill-formed, just as (2.111) is not. This is a case of the well-known process of semantic bleaching, by which a word becomes less lexical and more functional. On the analysis given here, the formal correlate of bleaching is the conversion of the lexical entry from the type in (2.116) to that in (2.112).

To summarize what has been proposed for epistemic adverbs: modal adverbs are predicates of degree of certitude about the proposition and do not select for events under any circumstances; thus they have no manner reading. Evidentials are predicates of perceptibility and are sometimes allowed manner readings; they select either for propositions or for events.

2.4.4 Evaluative Adverbs

The following pairs of sentences illustrate evaluative adverbs, showing a bifurcation between those that do not allow a manner reading (pure evaluatives) ((2.121)–(2.122)) and those that do (dual evaluatives) ((2.123)–(2.124)).

(2.121) a. Unfortunately, she lay down on a scorpion's nest.
b. *She lay down unfortunately.

(2.122) a. Donald has surprisingly decided to join the union.
b. *Donald has decided surprisingly.

(2.123) a. Oddly, Carol was dancing.
b. Carol was dancing oddly.

(2.124) a. Appropriately, the treasury official was named Bill.
b. They had named the dog appropriately.

Evaluatives represent the speaker's evaluation of some state of affairs according to how good or bad it is (*luckily*, *unfortunately*), how (ab)normal it is (*normally*, *strangely*, *curiously*, *surprisingly*), its desirability (*ideally*, *preferably*), or a wide range of other criteria (e.g., for *significantly*, *absurdly*, *conveniently*, *astonishingly*, etc.). As this evaluation often considers the state of affairs' effect on someone, these adverbs may take PP complements relatively freely (as in *unfortunately for our hero*, *conveniently for us*). Most are factive, presupposing the truth of the rest of the sentence. On their clausal readings, they take propositions as their one argument, which, in the factive cases, is a fact (following the common Fregean view that facts are true propositions; see Fitch 1971, Parsons 1990:31ff., Bennett 1996, and Peterson 1997; cf. also Bartsch 1995:45–46, where facts are instantiated propositions).[40] This fact corresponds to the material immediately c-commanded by the adverb, again assuming that subjects and raised verbs are interpreted in their base positions.

Starting with the dual evaluatives, consider (2.123). In (2.123a), on the one hand, there is a fact about an event of dancing by Carol that is odd; that is, it is odd that there is such an event, considered among other relevant facts in context. The manner reading in (2.123b), on the other hand, says that there is a (Spec)Event of dancing by Carol, which is odd compared to other dancing events. This could be, for example, because Carol dances by throwing her arms about in an unusual way, dances with her knees locked, or dances too slowly for the rhythm of the music – all dancing events that count as odd compared to normal dancing events. Thus for evaluatives of this sort, we need the general template for the two readings in (2.125).

(2.125) $\left\{\begin{array}{l}\text{Proposition}_t \text{ has} \\ \text{SpecEvent manifests}\end{array}\right\}$ a greater degree of P_{ADJ} than the norm for $\left\{\begin{array}{l}\text{Propositions}_t \\ \text{SpecEvents}\end{array}\right\}$.

Formally, (2.125) comes out as (2.126) (clausal) and (2.127) (manner), where p_t stands for a true proposition, that is, a fact.

(2.126) evaluatives – clausal readings: P_{ADJ} (p_t)

(2.127) evaluatives – manner reading: P_{ADJ} (e*), where the designated relation in P_{ADJ} is $[_{REL}$ manifests].

Returning to (2.123a–b), (2.126)–(2.127) yield the representations in (2.128a–b), respectively.

(2.128) a. $[_P [_E D(e) \& Agt (e,c)]] \& ODD (p)$
b. $[_E D(e) \& Agt (e,c)] \& ODD (e^*)$

Appropriately in (2.124) works in a similar way; in (2.124a) the fact that a treasury official is named Bill is appropriate (as opposed, say, to the fact that Bill lives in Phoenix, which has no particular appropriateness about it, or that he is named Greg). In (2.124b) there are many possible naming events (distinguished by different ways to name), and perhaps in the case in question the dog was named Fido or Rex, stereotypical dog names, as opposed to Binky or Fluff. (2.129) represents these two readings (where B = be-named).

(2.129) a. $[_P [_E B(e) \& Agt (e,x) \& Th (e,b)]] \& APPROPRIATE (p)$
b. $[_E B(e) \& Agt (e,x) \& Th (e,b)] \& APPROPRIATE (e^*)$

Turning now to the pure evaluatives in (2.121)–(2.122), there seems to be no way to predict which adverbs disallow the manner reading. It would seem perfectly interpretable to say (2.122b) if, for example, she unwittingly lay down in a puddle, so that this particular event of laying down was comparatively unfortunate; or to say (2.122b) if the way he made the decision (perhaps by studying goat entrails for divine messages) was surprising. I conclude that pure evaluatives are simply specified as formally selecting fact FEOs, and not SpecEvents, that is, having only the first lines of the brackets in (2.125).[41]

There is a third type of evaluatives, nonfactives, which on their clausal readings presuppose that the truth-value of the relevant proposition is unknown (though hoped to be true), as in (2.130).

(2.130) a. Preferably, the performance will finish before dark.
b. Ideally, (we will find that) this culture also made large pots for storage.
c. They will hopefully decide soon.

This type appears to allow manner uses in certain cases:

(2.131) a. The shelter had been constructed ideally.
b. *The bank handles my money preferably.
c. *Her career has blossomed hopefully. (on evaluative reading, not M-A)

As with the pure evaluatives, given the lexical core meaning of these adverbs, one might think (2.131b–c) should be possible (meaning 'The bank handles my money in a way I prefer' and 'Her career has blossomed in the way that was to be hoped'), but they do not. From the cognitive point of view, I take their ill-formedness as resulting from a clash of their requirement of an unknown truth-value and the fact that the relevant events are real, and thus it is true that they occur. Formally, they must be handled as pure evaluatives are, by selecting for propositions (of unknown truth-value) only. The grammaticality of (2.131a) shows that *ideally* selects for both propositions and SpecEvents.

Finally, it should be noted that a small number of verbs allow even pure evaluatives to occur productively as verb modifiers, with what might be described as a result reading, as exemplified in (2.132a–b).

(2.132) a. The performance turned out pretty luckily, considering the troubles we'd had.
b. The game ended up amazingly, with a huge comeback in the last quarter.

Without going into detail, it must be assumed that these verbs denote events with end-states characterized as facts, which then may serve as arguments for the evaluative ADJ. Importantly, these readings are akin to manner readings in that the comparison class is SpecEvents (of turnings-out and endings-up, that is, different possible results of the events named by the subject DP).

To summarize, most evaluatives potentially select for facts (true propositions) or SpecEvents; in the latter case, with dual evaluatives, the Manner Rule applies. For pure evaluatives, only facts are selected. A small group of nonfactive evaluatives, such as *ideally*, selects propositions with no specified truth-value.

2.4.5 Summary for Speaker-Oriented Predicationals

I propose in this section that speaker-oriented adverbs, for their clausal readings, take either propositions as their FEO argument or, in the case of speech-act adverbs like *frankly*, the covert predicate *Express. The proposition may be required to be (assumed to be) true for most evaluatives, in which case it is a fact. Where speaker-oriented adverbs have a manner reading, the lexical entry specifically mentions the second possibility for FEO type, SpecEvent, and the Manner Rule may apply. This holds for speech-act, evidential, and some evaluative (dual) adverbs, but not for modal adverbs and other evaluatives (of the pure evaluative type).

2.5 Exocomparative Adverbs

Finally, (2.133)–(2.134) show cases of a subclass I call exocomparatives, which have not previously been discussed as a group in the literature, to my knowledge.

(2.133) a. Similarly, this machine makes widgets.
b. This machine functions similarly.

(2.134) a. Management gave up their demands for wage rollbacks; likewise, the unions relented on demands for higher pensions.
b. Ken did likewise.

Other exocomparatives include *accordingly*, *differently*, *equally*, *indistinguishably*, *correspondingly*, *equivalently*, and *independently*. The defining features of exocomparatives are their reference to some (usually contextually defined) entity of the same sort as their FEO argument[42] and their less stringent requirements on the nature of the FEO, on their clausal readings allowing (in principle) speech-act, fact, or event. Alongside (2.133a), where *similarly* takes a fact, (2.135a–b) provide examples where speech-act and event serve as arguments, respectively.

(2.135) a. Similarly, where would we put all the computers?
b. Cleverly, Martin's team had similarly flown in from Paris.

A sentence like (2.135a) may be uttered when there are several questions that all make the same point (e.g., enumerating problems that arise); it could be paraphrased along the lines of 'My question is similar (in its implications) to other (previously asked) questions'.[43] (2.135b) might be said in a context

where one company's sales team had flown to a meeting all the way from London, so that Martin's team deliberately routes itself through Paris to be equally impressive to the client. The possibility of a paraphrase like 'This act (event) of flying from Paris is similar to the act (event) of flying from London', as well as the fact that *similarly* is within the scope of *cleverly* (which takes an event), shows that event is indeed the FEO object of SIMILAR for (2.135b).

I take exocomparatives to have templates like (2.136), formalized as (2.137).

(2.136) X is ADJ with respect to Y, where X,Y are the same type of FEO, and 'with respect to' is replaced by the appropriate preposition.

(2.137) ADV(x) $\rightarrow$ [$_{Y}$ Same-type (x,y) & P_{ADJ} (x,y)] where 'Same-type (a,b)' = 'a is of the same FEO type as b'.

Based on this template and invoking the Manner Rule again, (2.138a–b) represent (2.133a–b).

(2.138) a. [$_{P}$ [$_{E}$ M(e) & Agt(e,m) & Th(e,w)]] & [$_{P'}$ Same-type (p, p′) & SIM (p, p′)]
b. [$_{E}$ F(e) & Th(e,m)] & [$_{E'}$ Same-type (e*,e*′) & SIM (e*,e*′)]

(2.133a) claims that two facts are similar, that this machine makes widgets, and (say) that a previously mentioned machine makes wodgets; they are similar in that they involve machines that make the same sort of thing. (2.138a) expresses this by making the two arguments of SIM facts (represented as p variables). The manner reading in (2.133b) says that (generically) some functioning event (e*′) is similar to some other functioning event (e*): a functioning event by this machine is similar to a functioning event by some other (contextually identified) entity.[44] The similarity of these events is judged according to the comparison class of functioning events (e*).

Note that even on clausal readings, exocomparatives' argument does not seem to be restricted to just propositions or just events; in (2.137) no particular FEO type is listed as required. Observe (2.139).

(2.139) a. Similarly, the administration had famously refused to cooperate with Congress.
b. The administration wisely has similarly cooperated with Congress on the tax bill.

In (2.139a) *famously* is an evaluative adverb and thus takes a fact to yield a fact; this shows that *similarly* may take a fact as its object, as in (2.133a) (see discussion in chapter 3). But it was shown earlier that *wisely* takes an event as its FEO object; (2.139b) says that the administration was wise to enter into an event of cooperating with Congress, an event that is similar to some other event (e.g., cooperating with Congress on the health-care bill). Thus it seems that exocomparatives may take event arguments as well. This should not be surprising, because the predicates in this class are quite general. In terms of cognitive selection, they impose relatively few requirements on their objects (compare *similarly/likewise* to *oddly/possibly*, for example). As expected, a more open cognitive selection correlates with freer formal selection.

2.6 Predicational Adverbs, Selection, and Homonymy

2.6.1 Selection and Homonymy

In sections 2.3–2.5, we examined the semantics of speaker-oriented, subject-oriented, and exocomparative adverbs, and in doing so we have seen both why these adverbs take the type of scope they do and why they show the clausal/manner dual-reading pattern. My aims in this section are to show how the former flows ultimately from the cognitive selection of adverbs, even where this is restricted by formal selection (in concert with rules of composition, of course), and to summarize the formal treatment of the clausal/manner pattern.

2.6.2 Selection and Relative Scope

The selectional properties of epistemic, evaluative, and agent-oriented adverbs account for their relative scopes. The core property of agent-oriented adverbs is that they describe an event in terms of what "performing" that event (in the sense of control discussed in section 2.3.2) says about its agent. I suggest that this fact about cognitive selection is behind their formal selection. The judgment of a person in terms of intelligence, tact, stupidity, and so on is based ultimately on whether she or he decided to take the action, that is, whether she or he entered into the event. One cannot control propositions in this way, so it is far more natural to take (in formal terms) events as the argument for these predicates. In addition, since any speaker-oriented adverb in their scope would force them to take a proposition as an argument, they must occur within the scope of speaker-oriented adverbs.

Consider also the many cases of functional adverbs (frequency, additive, duration, repetitive, focusing, "B-class," etc.) that most often are variable in their scope with respect to Predicational adverbs. (2.140)–(2.143) give some examples (more are provided in chapters 3 and 7, where this topic is addressed again).

(2.140) a. Edson only has apparently found a black pearl on the beach.
b. Edson apparently has only found a black pearl on the beach.

(2.141) a. Luckily, the police dogs have often found clues to the crime on the beach.
b. Often, the police dogs have luckily found clues to the crime on the beach.

(2.142) a. Max therefore is probably going home.
b. Max probably is therefore going home.

(2.143) a. She again has cleverly disguised herself as a potted palm.
b. She cleverly has again disguised herself as a potted palm.

A little thought will show the reader that each pair of sentences differs in truth conditions. Examine the case of *therefore*, which introduces a proposition representing the result of something mentioned earlier, determined by *therefore*'s immediate c-command domain (its sister). In (2.142a) what is therefore so is that Max is probably going home, while in (2.142b) it is that Max is going home. The literature on these nonpredicationals makes it clear that in most if not all cases their lexical meaning is constant between the two sentences.[45] This sort of scopal freedom is restricted by (ill-formedness induced by conflicting) selectional requirements in the case of functional adverbs, just as for predicationals, but, crucially, this grouping of adjuncts is either much less restricted or has different sorts of restrictions from predicationals (so that conflicts are more often avoided) or both. *Therefore* says, quite generally, that what follows in its scope is a result of some contextually salient effect, and this effect can be (at least) a fact or any size of layered event.

To take one more example, consider the iterative *again*, which signals the repetition of some event (see Stechow 1996 and references there). In (2.143a) the repeated event is her disguising herself as a potted palm, and this repeated event is said to be clever. But in (2.143b), where *cleverly* takes *again* in its scope, the agent of the event is taken as clever because she intentionally did it more than once. *Again* creates an event out of an event, so *cleverly* has no

trouble taking either the basic event or the layered event in its scope, and since iterative and agent-oriented adverbs have no clashing semantic requirements, either order is possible.

The relative freedom of ordering seen here, reflecting scope relationships, was seen also in the case of exocomparatives and, to a lesser extent, in evidentials. Functional adjuncts themselves vary in their scopal freedom, according to the degree to which they impose restrictions on their arguments (and therefore risk inducing anomalies), with focusing adverbs being quite general, for example, and aspectual adverbs less so (since they have the same sorts of restrictions as aspectual heads and verbs, unlike focusing adverbs). The conclusion therefore must be that the freedom of scopal relationships depends directly on the complexity of restrictions that selection imposes on an adverb's arguments.

2.6.3 Cognitive Selection and Patterns of Homonymy

Much of the discussion in sections 2.3–2.5 aimed at justifying lexical representations for predicational adverbs that kept true homonymy to a minimum. Most centrally, I tried to show that adverbs with manner readings do not constitute a lexical class but rather are the manner versions of several types of adverbs, whose differences come to the fore on their clausal readings, if any: speech-act, modal, evidential, agent-oriented, M-A, exocomparative, pure manner. This required a theory of FEOs to serve as arguments of adverbs' ADJ predicates, mechanisms to introduce comparison classes, and the Manner Rule in (2.49) to supply (or choose, from a lexical entry's two selected possibilities) the designated relation and comparison class characteristic of manner readings.

With this theory in place, we can now distinguish three types of homonymy where predicational adverbs are concerned. First, there are the (relatively random) cases where what seems to be one adverb has two different clausal readings (or two manner readings), which can be either M-A or evaluative. Second, there are instances of clausal/manner differences where the clausal reading is a special sort of manner reading (as for speech-act adverbs, or the aspect-manner adverbs discussed momentarily). Third, there is the bulk of the clausal/manner homonyms; these result from one lexical entry, possibly with the two options for selected FEO and designated relation, where the Manner Rule is responsible for the manner reading. These three groups are addressed in turn. Without going into great detail, in all cases I wish to suggest that the basic cognitive selection of an adverb favors (but does not completely determine) its formal selectional properties.

The first type is exemplified by the two clausal uses of *happily* in (2.144).

(2.144) a. Happily, the budget cuts will not be passed this year.
b. Happily, he walked off with his ice cream cone.

Other adverbs allowing this dual function (M-A and evaluative) include *curiously*, *sadly*, and *thankfully*. Why this happens seems fairly straightforward: a state of affairs often produces a mental state as a reaction, and thus the fact describing that state of affairs may be evaluated in terms of this reaction. For (2.144), for example, the person with the ice cream cone may be happy or that he walked off may be such as to generally make people happy in that situation. Similarly, as noted, one may find homonymy between M-A and agent-oriented adverbs like *obstinately*, *vigilantly*, or *patiently*, since one may merely describe an experiencer's state or treat that state as a quality in the agent. While these homonymies exist and are understandable from a cognitive point of view, they are relatively random and unsystematic; for example, substituting *ecstatically* or *joyfully* into (2.144), as in (2.145), does not easily yield evaluative readings parallel to (2.144a).

(2.145) a. *{Ecstatically/Joyfully}, the budget cuts will not be passed this year. (as evaluative)
b. {Ecstatically/Joyfully}, he walked off with his ice cream cone.

A slightly different case is illustrated by (2.146)–(2.147), where the homonyms are both verb modifiers, one being the manner version of an agent-oriented adverb (in (a) sentences) and the other a manner (instrument?) version of a domain adverb (in (b) sentences).

(2.146) a. Andrea always arrives very theatrically.
b. Andrea decided to present her ideas theatrically (not in a novel).

(2.147) a. The duke walks very militarily.
b. The duke threatened the province militarily.

Again, that these two readings should arise seems plausible, starting from a basic domain semantics; the agent-oriented readings (on either manner or clausal readings) represent some quality typically associated with the domain in question, such as melodrama in (2.146) or a stiff, upright posture in (2.147).

The second and third types of homonymy involve clausal and manner readings. The first of these is characterized by clausal readings based on covert manner predicates. We already saw, in section 2.4, how this works for

speech-act readings, where the covert predicate is supplied by a speech-act operator in Comp, and (at least) agent-oriented, pure manner, and degree-of-precision adverbs may be lexically specified to modify *Express, as one option. Another example comes from the class of aspect-manner adverbs, which includes *suddenly*, *abruptly*, *gradually*, and *slowly*.[46]

(2.148) a. Suddenly, there was a gnome on the lawn.
b. The driver turned suddenly.

(2.149) a. Lynn quickly raced down the hallway.
b. Lynn raced down the hallway quickly.

Although *suddenly* selects for events involving speed, when a sentence can be interpreted at the clausal level as involving a transition from one eventuality to another (in (2.148), from there being nothing to there being a gnome on the lawn), the adverb can be used felicitously to describe this transition. The distinction between readings is sometimes subtle, as in (2.149), where (2.149a) can be interpreted as saying that Lynn's beginning the action of racing-down-the-hallway occurred quickly after some other event (perhaps a command to go fetch something), while (2.149b) is a description of the speed of her movement; and in (2.150), where the beginning of movement occurred only a few seconds after reference-time in (2.150a) in (2.150b) the duration of the movement was short.

(2.150) a. The soldiers had quickly (within seconds) moved out.
b. The soldiers had quickly moved into position (taking only a minute to get there).

Other adverbs like *suddenly* include *abruptly* and *instantaneously*. Adverbs on the opposite end of the scale of speed, such as *slowly* and *gradually*, are not as felicitous in cases like (2.148), even though it would be possible to imagine a slow transition to the state of there being a gnome on the lawn (see (2.151)); as has often been noted, transitions between states act semantically as if instantaneous.

(2.151) ??Slowly, there was a gnome on the lawn.[47]

Without pursuing the question in formal terms, it can at least be said that these adverbs require some sort of covert inchoative operator (either freely available in the sentence or introduced by the adverbs). Their lexical entries should therefore look similar to those for speech-act adverbs, with basic manner semantics, plus the option of selecting the relevant operator.[48]

I turn finally to the bulk of cases where an adverb allows both clausal and manner readings; I also consider why pure manner adverbs have only the latter. Three of the classes examined allow the two readings fairly productively: agent-oriented, evaluative, and exocomparative, illustrated again in (2.152)–(2.154), respectively.

(2.152) a. George dutifully has spoken to his superiors.
b. George always speaks to his superiors dutifully.

(2.153) a. Conveniently, it had been arranged for the office to stay open late.
b. They arranged the office conveniently.

(2.154) a. Differently, Jones classifies those languages as related.
b. Jones classifies those languages differently.

The agent-oriented class appears to allow its two readings completely freely, with no lexical restrictions. This should not be surprising, since on both the clausal and manner readings the comparison classes are events of some sort, and the core of their semantics is that some judgment about a quality of the agent can be made from her or his being involved in this event and not some other(s). One might thus think of this core as 'event-as-evidence-of-a-quality' (although given the different designated relations the emphasis is more on the quality for clausal readings and on the event manifesting it for manner readings). To my knowledge, there are no cases of agent-oriented adverbs that cannot have both readings. This is predicted, on the analysis offered here, because their lexical entries are truly univocal, selecting formally for events as their FEO arguments. The Manner Rule therefore may always apply to them. (The same holds of M-A adverbs, at least those of the state subtype.)

Evaluatives divide into the pure and dual subclasses according to whether an individual adverb's formal selection allows it to be interpreted according to the Manner Rule. From a cognitive point of view, there seems to be no barrier to being as productive as agent-oriented adverbs in allowing both clausal and manner readings. But because their lexical entries always select formally for facts (true propositions), adverbs of the dual evaluative subgroup must have lexical entries with a second formal-selection option of SpecEvents to have a manner reading at all. This creates room for lexical variation. Thus we might say that subject-oriented adverbs (agent-oriented and M-A) show the clausal/manner difference more productively than speaker-oriented adverbs, because the former select only for events; thus the Manner Rule operates automatically without need to stipulate a second FEO option. Speaker-oriented

adverbs, on their part, most basically select propositions, and the Manner Rule can only operate if event is also lexically specified.

Exocomparatives also appear to allow both clausal and manner readings freely. This follows because they are relatively free in their selection of FEO, with no restrictions in (2.136). However, modal adverbs do not, and I suggested that there are very good cognitive-semantics reasons for this, reflected in their lexical entries' formal selectional properties.

Finally, let us consider why there is a class of pure manner adverbs; that is, why are some manner adverbs unable to have a clausal reading? Again, I suggest, at least a large part of it is due to cognitive selection.

(2.155) a. *Ken loudly had spoken.
b. Ken had spoken loudly.

(2.156) a. *Joe limply was shaking my hand.
b. Joe was shaking my hand limply.

Pure manner adverbs like *loudly* and *limply* in (2.155)–(2.156) often require an event specified as involving a physical stimulus, such as volume of sound (other examples include *brightly* and *tightly*). Suppose that *loudly* were instead forced, on a clausal reading, to use unspecified events for its comparison class, parallel to agent-oriented adverbs. The event argument of LOUD would have to be mapped onto a scale of volume that must be evaluated according to a comparison class of sound-producing events – but this comparison class is undefined, based on the class of events, unspecified as to sort. That is, in cognitive terms one would have to attempt to compare a singing event to, say, events of thinking, being fat, varying speed, growing, and so on, in terms of their loudness, but since these events do not involve loudness at all, this task cannot be accomplished. Thus, as with epistemic adverbs, the difficulty of this task underlies the restricted formal selection of pure manner adverbs (to SpecEvents). *Loudly* contrasts with *oddly* or *rudely*: any fact can be odd in context (since in any context there are normal and abnormal situations about which facts obtain), and an agent can be judged rude with respect to any event she or he has control over. This relative lack of selection allows the latter two adverbs to function either as clausal or manner modifiers.

The difference between pure manner adverbs and those that can have both clausal and manner readings thus often seems to hinge on whether the ADJ predicate selects events that are restricted to purely physical manifestations (as with *loudly*) or whether a wider (often metaphorical) usage is allowed. Compare (2.157) and (2.158).

(2.157) a. *She woodenly had ignored them.
b. She was speaking woodenly.

(2.158) a. She gracelessly had ignored them.
b. She was speaking gracelessly.

Woodenly in (2.157) requires actions that physically manifest stiffness and unnatural movement, rhythm, and intonation in speech, for example; it is fine in its manner usage in (2.157b) but not in its clausal usage in (2.157a). But *gracelessly*, aside from its reading as the opposite of *woodenly*, has the nonphysical reading of not graciously, in which any event can be socially smooth. Compare *loudly* with its antonym *quietly*, which is metaphorically extended to mean 'unobtrusively' and thus can have a clausal reading:

(2.159) a. Kim quietly had gone home to think it over.
b. Kim sang quietly.

(2.160) a. *Kim loudly had gone home to think it over.
b. Kim sang loudly.

Therefore, whether an adverb is of the pure manner type depends on whether it has acquired a metaphorical meaning in this way.

In this subsection, I have reviewed or introduced a wide range of predicational adverb homonym pairs, aiming to show that the cognitive-lexical properties of the ADJ predicate helps explain why the homonymy exists. Of course, the mere existence of an appropriate cognitive core does not guarantee formal selection, as the two relatively unproductive types represented by *happily* and *militarily* demonstrate. However, once we move to pairs representing the clausal/manner distinction (resulting from a difference between clausal FEOs and SpecEvents), there appears to be more productivity. On the one hand, the agent-oriented, M-A, and exocomparative adverbs seem to have the dual readings quite regularly. The analysis presented in sections 2.3–2.5 predicts this, because these adverbs either select uniquely for event FEOs, upon which the Manner Rule may operate, or are unspecified for FEO (so that event is one normal option). On the other hand, evaluatives and epistemics are less likely to show the dual readings because they are fundamentally clausal, selecting propositions/facts, and only specify events as an extra formal selection. Speech-act[49] and aspect-manner adverbs are also less likely to show two readings, because they are fundamentally manner modifiers, selecting SpecEvents; their clausal readings only come when some abstract clausal operator introduces a covert predicate to modify. Thus the patterns of homonym pairs can be understood by looking at the basic selection for FEO of each

subclass, any additional formal selections, and the way in which a given adverb is composed with the rest of the sentence, especially by the Manner Rule or in the presence of covert clausal operators. This is evidence for an account based on FEOs, since it directly predicts the difference in productivity of the clausal/manner ambiguity between event-taking and proposition-taking adverbs.

2.6.4 Conclusion: Homonymy and Composition

We can conclude that the set of adverbs that can have a manner reading does not constitute a lexical class of manner adverbs, unlike the cases of (say) adverbs with modal or evaluative readings, which do constitute the lexical classes of modal and evaluative adverbs. Although some adverbs with manner readings are specially suited for them lexically and thus are pure manner adverbs, most manner readings are derived, a generalization embodied in the Manner Rule. The clausal/manner homonym pairs are not always true homonyms, if homonymy is taken as a matter of lexically encoded differences, because subject-oriented adverbs (agent-oriented and M-A) have lexical entries that uniformly select event FEOs, and exocomparatives freely allow event FEOs as arguments. Even most speaker-oriented adverbs (i.e., nonmodals), which require formal selection for both propositions and events, are homonyms in only this minimal way, otherwise having unified (cognitive) selectional properties.

The Manner Rule essentially requires that an appropriate predicational adverb be a verb modifier within PredP.[50] It implicitly claims that, for predicationals at least, 'being a verb modifier' means that the comparison class for the eventive FEO is SpecEvents: events of the sort specified by V.

Finally, it is also possible to generalize over all the lexical entries for predicational adverbs: they share the basic template in (2.161).[51]

(2.161) Predicational Adverb Template:
P_{ADJ} (x, . . .), where x is an FEO denoted by the sister of ADV, P_{ADJ} is the property corresponding to the appropriate adjectival form of ADV, and P_{ADJ} is gradable.

Moreover, all predicationals except M-A adverbs determine the comparison class for ADJ by the FEO type. ADJ must of course be spelled out in terms of the various lexical schemata discussed in this chapter, including designated relations. Tentatively, (2.161) can be taken as a formal definition for predicational adverbs. Manner modification is a special subcase, with the nature of the designated relation and comparison class altered.

2.7 Summary, Conclusion, and Final Remarks

This chapter started with an overview of the main types of predicational adverbs, along with their characteristic pattern of clausal and manner readings, and I asserted that a fairly detailed lexical analysis is necessary to understand their semantic behavior. In particular, the notions of FEOs and selection (for both FEOs and other properties of arguments) are crucial. They allow explaining a number of phenomena, including scope relationships, co-occurrence restrictions, event layering, and the regular clausal/manner relationship.

In section 2.2 I gave an overview of the distinction between cognitive and formal selection, and presented the basic system for combining events and propositions. In section 2.3 I discussed the semantic representation of subject-oriented adverbs, introducing lexical templates for them and the Manner Rule to derive their manner readings based on their selection for controllable event FEOs. The introduction of an event variable and the comparison class in this template (cf. (2.49)) plays a crucial role, and evidence for them comes from event layering and characteristic entailment patterns (such as Droppability), as well as from the contrasts in comparison classes between the agent-oriented and M-A subtypes and between clausal and manner readings.

In section 2.4 I discussed the various types of speaker-oriented adverbs, again exploiting lexical templates, which this time select for either the covert speech-act operator (a special kind of SpecEvent) or a proposition of some sort, either one taken as true by the speaker (a fact, for evidentials and most evaluatives) or one with no claim on its truth-value (for modal adverbs). Section 2.5 presented a parallel analysis for exocomparatives, which are unrestricted as to the identity of their FEO argument. All of these subtypes also allow manner readings when either unrestricted or lexically specified to optionally select events.

Finally, in section 2.6 I reviewed the role of cognitive selection in partly determining formal selection and in determining both the patterns of scope relationships for different adverb classes and the various patterns of homonymy. While some patterns of homonymy are relatively random and unproductive, the clausal/manner pattern is systematic and productive much of the time. I claimed that this is precisely because of the existence of the Manner Rule, which derives manner readings, and that the degree of productivity can be explained by whether a given adverb subclass selects events for its clausal reading. Given this analysis, the only lexically defined manner class is that of pure manner adverbs, such as *loudly* and *tightly*, which select specifically for SpecEvents and allow no other readings. Otherwise, the totality of manner readings represents verb-modifying occurrences drawn from (almost) the full range of predicational adverb subclasses.

From the discussion in sections 2.3–2.5, we see that at least some syntactic effects (linear order) can be explained in terms of the semantics of predicationals. Others can be attributed to restrictions on syntax-semantics mapping, as with the restriction on the application of the Manner Rule to predicationals in PredP. In chapter 3 I use these and similar conclusions to argue that, in this way, semantic interpretation plays a larger role in determining the syntactic behavior of adjuncts than is often supposed.

3

The Scopal Basis of Adverb Licensing

3.1 Introduction

3.1.1 The Main Claim

The generative tradition has recognized at least since Jackendoff 1972 that the meaning of a given adverb has an effect on its distribution. The main question for syntactic theory is to determine how syntax and semantics interact. How much of adjunct distribution can be directly predicted from the semantics, how much must be mediated by purely syntactic principles, and precisely what form do the principles, and the interface, take? In this chapter I argue that the relationship is very direct, with little mediation. I claim that the most important determinant of adjunct licensing is an adjunct's scope (and other selectional) requirements, encoded as lexical properties and verified at LF, rather than syntactic feature licensing, as in Cinque 1999 and other current work;[1] beyond this, relatively few syntactic principles are needed to predict the main facts of adjunct distribution. In particular, though purely syntactic features may occasionally be involved, they are largely independent of adjuncts per se.

This is a desirable result from a theoretical point of view, because it reduces complexity and redundancy in syntax by deriving as much as possible from lexical semantics and compositional rules, which are needed independently. I justify this scope-based theory in part by contrasting it with feature-based systems, such as Cinque's, in which all adverbs are licensed by being in the Spec of a particular (functional) head. I argue that, by using such adverb-head feature relations, we require unnecessary complexity and stipulation, and also miss important, overarching generalizations about adjunct distribution that are captured directly by the scope-based approach.

Feature systems, at least in their current form (e.g., Alexiadou 1997, Laenzlinger 1997, Cinque 1999) are driven in part by the desire to restrict the number of types of licensing relations. In particular, the claim has been made

that adverbs are restricted to Spec positions, one per projection. The scope-based approach (Jackendoff 1972, Zubizarreta 1987, Rochette 1990, Ernst 1998d, Haider 2000) also aims to increase the restrictiveness of the grammar, but in a different way. Just as the elimination of Phrase Structure rules made the grammar less redundant in its account of arguments by partly deriving subcategorization (c-selection) facts from argument structure (s-selection), a scope-based grammar of adjunct licensing attempts to derive the distributional patterns of adjuncts from their semantic (especially scopal) properties. Hence, for certain large areas of adjunct syntax, it may be that there are few or no purely syntactic features, and that instead adjunct distribution correlates with independently verifiable lexicosemantic phenomena.

I aim to show in this chapter that the Scope theory is considerably simpler and more general than the Feature theory, while being no less restrictive and therefore preferred.

3.1.2 Theoretical Desiderata

Any syntactic theory must strive to be both as simple and as restrictive as possible. Of course, this must be applied to the grammar as a whole; as has happened repeatedly in the history of generative grammar, a simplification or restriction in one part of the grammar may result in a complication or loosening elsewhere, producing a grammar that is no better or is even worse than the original. Still, we can start with some tentative hypotheses about the right kinds of simplifications and restrictions.

First, one kind of simplification is to assume that adjuncts are generally attached freely (as discussed in chapter 1). This is in line with most of Principles and Parameters (P&P) theory: something must build phrase structure, and the absolute minimum for this is that items are (freely) chosen for D-Structure unless some principle is violated (such as the θ-Criterion), just as 'Move α' is free, but moved items must meet conditions on their landing site and their relation to the original position. The position of arguments is just as free as far as phrase structure theory is concerned; in the early 1980s version of PS theory, for example, the existence of fixed base positions for arguments was purely a matter of Theta theory and the strictly local conditions on theta assignment (or interpretation). The relatively free distribution of adjuncts comes from the lack of such strict locality conditions on adjunct interpretation. On this view, positing a single base position for an adverb is an unwarranted complication of the theory based on an illusory parallelism with arguments.

Second, one can simplify by minimizing specific reference to adjuncts in grammatical principles. Thus the grammar ought to be free of statements like "Adverbs cannot adjoin to AgrP" or "Manner adverbs only adjoin to X′

nodes"; it may be that we see such effects, but they should be just that: derived effects and not stipulations. In other words, restrictions should be motivated and general.

Third, as noted, a grammar is simpler if it derives as much as possible of the syntax of adverbs from information needed independently: their meanings. Thus just as subcategorization can be largely derived from (s-)selection, and the initial linear order of arguments is mostly derivable from s-selection (argument structure) plus the θ-Hierarchy or its equivalent (such as a mapping principle at D-Structure), so the lexically encoded semantic requirements of adverbs ought to be used as much as possible to predict their possible positions.[2]

Fourth, the modularity of the grammar ought to be maintained; in fact, I argue that a scope-based theory is better because it is more modular than a feature-based theory, as it maintains a useful separation of syntactic and semantic components, each with their separate properties. In essence, the argument here is the same one given in much of generative grammar: a proper division of labor among modules allows each one to be simpler and less redundant, and allows for more restrictive links among modules. By making proper reference to semantic (as well as pragmatic and morphological/phonological) facts, we simplify and tighten up syntactic principles, removing "noise" that properly belongs in other modules. In this way an important goal of the scope-based licensing theory is to achieve a superior syntactic account by reducing the coverage of syntax per se.[3]

Identifying Universal Grammar (UG) restrictions on the syntax of adverbs is especially important, because adverbs are optional and much more rarely used as a class than are arguments, making correspondingly less empirical evidence available to the child learner. There are two sorts of restrictions worth exploring here. The first is on the type of position in which they may occur. We might say that adjuncts are uniformly adjoined, but it seems that some adjuncts are in Spec, such as negators (like *not* or Chinese *bu*; see Ernst 1992b, 1995b), or French *beaucoup* 'much' (Rizzi 1990:18). If this is so, then perhaps all adjuncts are in Spec positions; this could result in a system like that of Kayne (1994), where there are no adjoined positions but only Spec and complement positions, or rather, Spec positions *are* adjoined positions, one to a projection. While this may seem like a simplification, I argue later in this chapter that it is only an illusory one, since on Kayne's approach so many (if not all) of the different properties of Spec and adjoined positions must be encoded in the grammar in some other way.

The other type of restriction is on movement of adverbs. Movement is a very powerful tool and must be severely restricted, and much of the past

three decades has been marked by the search for such restrictions. Thus, ideally, adverbs should never move except for processes that are independent of their adjunct status, such as *wh*-movement, topicalization, or prosodically motivated rearrangements.[4] I assume here that this is so.

In sum, as in any other part of syntax, the search for simplicity, generality, and restrictiveness should lead us to examine some common assumptions about adverb licensing carefully. Thus we should keep parochial restrictions on adverbs to a minimum; specifically, I take it as a working principle that adjunct licensing should not be able to refer to the category of the projection (or head) to which the adjunct is attached. Any such apparent restriction should be the result of this projection (or head) being independently associated with some compositional rule that interacts with the adjunct in a way that makes it uninterpretable in all other positions. This is a simplification because these semantic mechanisms are needed anyway, so the syntactic statement linking the adjunct to the projection can be eliminated. As for restrictiveness, we should consider whether a given mechanism, no matter how restrictive it is by itself, will end up making the overall grammar more or less restrictive. In particular, any putative restrictiveness gained by reducing the number of phrase structural relations should be balanced against increased numbers of movement trigger types, lack of constraints on possible functional heads, and the like.[5]

3.1.3 Organization

In section 3.2 I present my version of the scope-based adjunct licensing theory, applying the semantic analysis of predicational adverbs in chapter 2 to syntax. In section 3.3 I review the main characteristics of feature-based theories, with an emphasis on the most recent version based on Spec-head relationships. Then, in the next seven sections (3.4–3.10), I provide seven arguments that scope-based theories do a superior job of accounting for the facts about adverb distribution and do so in a more elegant way than feature-based theories. These arguments are given schematically in (3.1). Finally, I close with a summary and discussion of the theoretical implications (section 3.11).

(3.1) a. multiple positions for predicational adverbs
b. multiple positions for functional/participant adjuncts
c. ordering restrictions among adverbs
d. different degrees of permutability among different adjunct classes
e. differences in iterability among different adjunct classes
f. licensing of coordinate adjuncts
g. unified explanation for (a)–(f)

3.2 Scope-Based Licensing and the Distribution of Predicational Adverbs

3.2.1 Overview

The scope-based theory introduced in chapter 2 is based on three ideas: that adjuncts can be divided into major types according to whether and how they take scope; that their scope requirements may include selection for some type of covert argument (which in some cases corresponds to a syntactic constituent); and that unsuccessful licensing is, in large measure, a matter of these requirements going unfulfilled, so that the adjunct is uninterpretable (thus violating the principle of Full Interpretation (FI), in the framework of Chomsky 1986, 1995b).[6]

In this section I build on the semantic analysis of predicational adverbs in chapter 2 to show how their distribution is predictable from their selectional (including scopal) properties. The focus is on accounting for the linear order of clausal predicationals with respect to auxiliaries, other predicational adverbs, and negation. This is a necessary preliminary to showing how this theory has advantages over feature-based theories. More detailed discussion of manner (and measure) adverbs is to be found in chapter 6, and issues that concern adjuncts in general (such as the ban on adjuncts between verb and direct object, and the analysis of sentence-initial position) are taken up again in chapters 7–8.[7]

(3.2) provides a review of the classification of predicational adverbs assumed here.

(3.2) a. speaker-oriented:
speech-act: *frankly*, *briefly*, *simply*
evaluative: *oddly*, *amazingly*, *predictably*
epistemic: modal: *probably*, *necessarily*, *maybe*
evidential: *clearly*, *obviously*
b. subject-oriented:
agent-oriented: *rudely*, *tactfully*, *wisely*
mental-attitude: *calmly*, *willingly*, *intentionally*
c. exocomparative: *similarly*, *accordingly*, *independently*
d. aspect-manner: *slowly*, *quickly*, *abruptly*
e. pure manner: *tightly*, *loudly*, *woodenly*

As often noted, predicational adverbs most typically exhibit rigid orders among themselves and with respect to negation (see Jackendoff 1972, Ernst 1984, Cinque 1999, and references therein). (3.3) schematizes the typical

ordering for most speaker-oriented adverbs and negation (examples of the orders in (3.3)–(3.6) are given in later sections devoted to each class).[8]

(3.3) speech-act > evaluative > epistemic > negation

Although negation must follow the three classes in (3.3), it may either precede or follow evidentials and subject-oriented adverbs:

(3.4) evidential/subject-oriented >< negation

But when any speaker-oriented adverb (including an evidential) co-occurs with a subject-oriented adverb, the former precedes:

(3.5) speaker-oriented > subject-oriented

Finally, exocomparatives can occur on either side of negation and all the other clausal adverbs:

(3.6) exocomparative >< all others

The goal of this section is to show how the selectional properties of each adverb class allow deriving the ordering facts shown in (3.3)–(3.6).[9] Recall that the analysis rests on the lexicosemantic properties of the various predicational subclasses plus the FEO calculus (2.25), repeated here as (3.7).

(3.7) The FEO Calculus:
- a. Any FEO type may be freely converted to any higher FEO type but not to a lower one, except
- b. Any FEO (sub)type may be converted to another FEO (sub)type as required by lexical items or coercion operators.
- c. Events may be interpreted as Specified Events (SpecEvents) within PredP.

(3.7b–c) will play minimal roles in this chapter, but (3.7a) will be crucial, particularly in its ban on the lowering of FEO type.

It is an important aspect of the account proposed here that events and propositions are not necessarily mapped to any one particular projection, as is often assumed (e.g., in Bowers 1993 and Higginbotham 2000). A relatively high projection like TP may represent an event as long as nothing forces it to be converted to a proposition (such as a modal auxiliary or adverb); likewise, a low projection like PredP can denote a proposition if no element above it requires an event. Of course, there are certain heads where a particular FEO is required. Certainly this is true of various auxiliary verbs, as it is for adverbs

with similar semantic content: aspectual auxiliaries like *have* and *be* require events, and modals like *must* or *may* (at least on their epistemic readings) require propositions. Similarly, speech-act operators for questions, imperatives, and the like, or a focus feature or morpheme, may have a determined locus in Comp (or some node in the "split Comp" à la Rizzi 1997), but these are not events and propositions. They are semantic elements that require events or propositions (among other things) for their interpretation.

3.2.2 Speech-Act Adverbs

The covert assertion operator noted in chapter 2 as *Express must take in its scope the entire proposition denoted by its immediate c-command domain (i.e., its sister). This predicts straightforwardly that these adverbs must always precede other speaker-oriented adverbs (as well as subject-oriented adverbs). See (3.8)–(3.10).

(3.8) a. {Roughly/Briefly}, Ernestine has possibly been holding out for too much money.
b. *Possibly, Ernestine has {roughly/briefly} been holding out for too much money.

(3.9) a. Albert {frankly/honestly} will unfortunately have to return the Rolls-Royce.
b. *Albert unfortunately will {frankly/honestly} have to return the Rolls-Royce.

(3.10) a. They frankly are willingly giving up far too much power.
b. *They willingly are frankly giving up far too much power.

The same holds for negation, which must be part of a sentence's maximal proposition:[10]

(3.11) a. {Briefly/Quite simply}, the money isn't going to be enough.
b. *The money isn't {briefly/quite simply} going to be enough.

These adverbs may also take the question operator in their scope, in which case they serve to request an answer of the sort indicated:

(3.12) {Briefly/Simply/Honestly/Frankly}, why would they do such a thing?

Some of these adverbs seem to only occur in sentence-initial position, while a few of the more common ones are possible after the subject, as long as they do not follow two auxiliaries (or the main verb in English, of course):[11]

(3.13) a. {Briefly/Simply/Honestly/Frankly}, they could be avoiding all that trouble this way: . . .
b. They could {*briefly/*simply/honestly/frankly} be avoiding all that trouble this way: . . .
c. They could be {*briefly/*simply/*honestly/*frankly} avoiding all that trouble this way: . . .

The ungrammaticality of (3.13c) follows because speech-act adverbs must take an assertion operator (*E), and when placed after a second auxiliary, they can only apply to events, which are the operands of aspectual auxiliaries like *be* in (3.13) (see chapter 7). I propose that the difference in (3.13b) is due to a distinction between speech-act adverbs that (optionally) carry their own, lexically encoded assertion operator with them in their lexical representation (*honestly* and *frankly*), allowing them to occur (in principle) anywhere they can take a propositional FEO, and those like *briefly/simply*, which do not. The latter group, therefore, can only occur sentence-initially, since only there can they c-command and thus modify the grammatically encoded assertion operator normally located in Comp or Spec,CP. Some measure of support for this comes from the fact that not even *honestly* and *frankly* may follow *wh*-phrases in questions (see (3.14); cf. (3.11)), indicating that there is no general, grammatical realization of illocutionary force operators within TP. Rather, there seems to be just the limited, lexically encoded option for the assertion operator for a small number of speech-act adverbs.[12]

(3.14) *Why would they {briefly/simply/honestly/frankly} do such a thing?

3.2.3 Evaluative Adverbs

Evaluatives represent one-place predicates taking a proposition as their FEO argument, with this proposition necessarily expressed by the sister of the adverb (AdvP). Most of them also require their object proposition to be true, that is, to be a fact, while a few like *ideally* and *hopefully* do not require this. As (3.15a–b) illustrate, the latter group therefore tends to occur with future tenses or in cases where the speaker does not know the truth-value of the object proposition.

(3.15) a. Ideally, they will stop by Bangkok on their way to Bali.
b. Hopefully, they stopped by Bangkok on their way to Bali.

In this they are like modal adverbs, although they are still fundamentally evaluatives in terms of cognitive selection. (3.16) represents normal, factive evaluatives' semantic requirements schematically.

(3.16) [$_{\text{FACT}}$ ADV [$_{\text{FACT}}$]]

In other words, they must combine with a fact as their sister, and they yield a fact.

These requirements allow predicting evaluative adverbs' distribution. First, they must occur above any subject-oriented adverb because the latter must take an event as its sister. Since the output of combining an evaluative with a fact is another fact, a type of proposition, an adverb like *willingly* or *stupidly* would be unable to take an event as it is required to. Thus cases like (3.17a–b) are excluded.[13]

(3.17) a. *The audience willingly significantly all fell asleep.
b. *Mark stupidly had oddly been betting on lame horses to win.

Similarly, evaluatives must occur above modal adverbs like *probably* or *possibly*, since the latter require objects that are mere propositions, not facts:[14]

(3.18) a. *Someone probably will unfortunately be asked to stay behind to clean up.
b. *Perhaps Carol has amazingly been spared the ordeal.

Second, evaluatives cannot follow negation or the base positions of aspectual operators like perfective or progressive auxiliaries:[15]

(3.19) *Jim did not {fortunately/oddly/tellingly} remove his shoes.

(3.20) a. *Jules might have unfortunately seen Jeanne.
b. *Oskar had been luckily leaving the office at the time.

(3.21) a. Jules has unfortunately seen Jeanne.
b. Oskar was luckily leaving the office at the time.

Since evaluatives create facts (propositions whose truth-value speakers commit themselves to), any negation of such a fact makes a contradiction: the speaker simultaneously asserts/presupposes and denies the truth of the same proposition.[16] As for cases like (3.20), where an evaluative follows the second of two auxiliaries, I take *have* and *be* as operators that create events out of events (see chapter 7 for further discussion). (3.19a–b) are therefore ruled out

in a way parallel to (3.17a–b): the aspectual operator must take an event as its object but can only take a fact, violating its semantic requirements. Of course, in languages like English, where the finite verb raises to Tense, sentences like (3.21) (with the evaluative after the first auxiliary) are fine, because the adverb c-commands the auxiliary's base position, with respect to which the latter is interpreted.

Third, evaluatives may take other predicational adverbs in their scope:

(3.22) a. Significantly, the technicians have cleverly fixed all the problems.
b. She strangely has deliberately destroyed all the evidence.

(3.23) a. Unfortunately, Sue has probably broken Bob's accordion.
b. (Just to provoke the male tycoons of her day who enjoyed flaunting such things,) She famously would likewise lean on the hood of her limousine and smoke a cigar.

In (3.22)–(3.23) the evaluatives take scope (respectively) over subject-oriented adverbs (both on their clausal and manner readings), which take events as their FEO objects, and over a modal adverb (in (3.23a)) or exocomparative (*likewise*, in (3.23b)) adverb. The former case is expected, since events can be freely converted into propositions. (3.23a–b) are also fine because with these speaker-oriented adverbs the [ADV + proposition] constructs are asserted by the speaker, that is, are facts, which is exactly what evaluatives need as their objects. This analysis is supported by the data in (3.24), showing that the *ideally*-class of evaluatives, which (like modal adverbs) take not facts but propositions whose truth-value is not fixed (noted as ?-propositions), is not acceptable with modal adverbs in their scope.

(3.24) a. {Luckily/Surprisingly/Significantly}, she probably will have left by then.
b. ??{Preferably/Ideally/Hopefully}, she probably will have left by then.

3.2.4 Modal Adverbs

Modal adverbs are like evaluatives in being one-place predicates, taking propositional FEO objects. They are also like evaluatives in that the FEO [ADV + proposition] they create is a fact. They do differ in requiring a propositional object whose truth-value is unknown; the adverb assigns a degree of likelihood for the proposition being true. Schematically, this is shown in (3.25).

(3.25) [FACT ADV [?-PROP]]

This predicts many of the same facts that the requirements schematized in (3.16) did for evaluatives. First, modal adverbs cannot be within the scope of subject-oriented adverbs because they would make unavailable the event FEO that the latter requires (cf. (3.17)):

(3.26) a. *The audience willingly maybe all fell asleep.
b. *Mark stupidly had possibly been betting on lame horses to win.

Second, just as with evaluatives and for the same reasons, modal adverbs may not follow negation or aspectual auxiliaries' base positions (see the discussion for (3.19)–(3.21)):[17]

(3.27) *Jim did not {probably/possibly} remove his shoes.

(3.28) a. *Jules might have maybe seen Jeanne.
b. *Oskar had been probably leaving the office at the time.

(3.29) a. Jules has maybe seen Jeanne.
b. Oskar was probably leaving the office at the time.

They cannot take either evaluatives or other modals in their scope, since this would violate the requirement that their propositional object not be a fact ((3.30a) = (3.18a)).

(3.30) a. *Someone probably will unfortunately be asked to stay behind to clean up.
b. *Perhaps Carol has possibly been spared the ordeal.

Taking evaluatives and modal adverbs together, we have captured the generalizations that these epistemic adverbs, for the most part, (a) must occur to the left of all nonfinite auxiliaries (and main verbs, of course; with one exception discussed in chapter 8), (b) must precede negation, and (c) are normally ordered with evaluatives before modals. These generalizations follow from their lexically encoded semantic requirements.

There seems to be at least one case where these ordering restrictions may occasionally be violated: when modals precede evaluatives. Here the modal adverb apparently does not take the proposition created by the evaluative and its object, but rather the two adverbs independently modify the same proposition, and the evaluative must be interpreted along the lines of 'If P is

true, then ADJ(P)' (cf. Ramat and Ricca 1998:224–25). The (b) versions of (3.31)–(3.33) illustrate this.

(3.31) a. Strangely, they probably gave up all that money.
b. ?They probably had strangely given up all that money.

(3.32) a. Surprisingly, the government will perhaps release the report early.
b. ?Perhaps the government will surprisingly release the report early.

(3.33) a. Paradoxically, they have perhaps done more than expected.
b. ?They perhaps have paradoxically done more than expected.

Speakers report that these sentences are a bit odd but acceptable. When the modal adverb indicates stronger certitude, the sentences improve. (3.34)–(3.35) are considered more acceptable by informants (imagine (3.35) as part of a *Wall Street Journal* article).

(3.34) Quite probably, they will disappointingly be shunted aside by the new directorate.

(3.35) Most definitely, the biggest new investment firm in New York has curiously shown itself to be rather weak in its grasp of public relations.

I assume that there is some mechanism that weakens the factivity requirement of evaluative adverbs in these contexts and that allows them to modify the same proposition that the modal adverb does, as in (3.36) (for (3.33b)), where P = 'They have done more than expected'.

(3.36) PERHAPS (P) & [P is true → PARADOXICAL (P)]

While these may be marked readings, that they are possible at all shows that the normal ill-formedness of sentences with modal adverbs preceding evaluatives is the result of semantic anomaly, which is induced by the relative scope normally required for these adverbs, in concert with their semantic requirements. When composition differs in such a way that there is no anomaly, as in (3.31)–(3.35), the sentences improve considerably.

3.2.5 Evidential Adverbs

On their clausal reading, evidential adverbs describe the ease of perceiving the truth of their object proposition, which must be true and thus a fact. In

this way they are like evaluatives, but they differ in that they act more like main predicates: rather than taking facts to form facts, they take facts to form (stative) events. As such they are more like their adjective forms than other speaker-oriented adverbs. Schematically, their requirements are shown in (3.37).[18]

(3.37) [STATE ADV [FACT]]

Evidence that this is correct comes from the contrast between acceptable questions with evidentials and infelicitous ones with evaluative or modal adverbs:

(3.38) a. Has she obviously finished her work?
b. *Has she surprisingly finished her work?

(3.38b) is bad because the speaker is simultaneously asserting and questioning the same proposition (see the discussion in Bellert 1977, Ernst 1984:29–93). (3.38a) is fine, as predicted if evidentials yield a stative event, with no speaker's assertion involved at this level. Also, unlike evaluatives/modals, evidentials may fall within the scope of negation:

(3.39) a. Sally was not obviously affected by her winning the award.
b. They haven't clearly finished all their work yet.

This follows because the state represented by [*clearly* + P] is an event, so that negation modifies it just as it does any event; *clearly* imposes no further requirements on it.

In other ways evidentials parallel evaluative and modal adverbs; they cannot follow aspectual auxiliaries, because if they did they could not take a propositional argument, as they require (see (3.40)); and they cannot be within the scope of subject-oriented adverbs, since the latter require controllable events. The events represented by *clearly*, *obviously*, and the like are not controllable but rather represent judgments by the speaker (see (3.41)).

(3.40) a. *Jules would have clearly worked on it more if he had had the proper tools.
b. *Oskar had been obviously running up the stairs at the time.

(3.41) a. *The audience willingly had clearly fallen asleep.
b. *Mark stupidly had obviously been betting on lame horses to win.

3.2.6 Subject-Oriented Adverbs

Since subject-oriented adverbs take events as their FEO argument, they should be able to occur in any preverbal position, in principle. They certainly can occur in the most normal positions before and after a finite auxiliary, as in (3.42), although the first of these is slightly marked (see chapter 8). They also may go either before or after negation, as in (3.43)–(3.44); in the latter case they are better with contracted negative auxiliaries.

(3.42) a. Camilla (wisely) had (wisely) paid her bills early that month.
b. Dave (tactfully) is (tactfully) putting the bottles behind the armoire.

(3.43) a. They have willingly not gone out of their way to say nasty things.
b. Carol is cleverly not telling people about the party.

(3.44) a. They haven't willingly gone out of their way to say nasty things.
b. Carol isn't cleverly telling people about the party (as she claimed she would).[19]

However, these positions may be restricted when the semantic requirements of the adverb cannot be met; thus, for example, (3.45a) is fine with the temporal modal *will*, but (3.45b) with *must* is unacceptable.

(3.45) a. She cleverly will hide behind a tree when he comes.
b. *She cleverly must hide behind a tree when he comes.

Must indicates an obligation, and the agent cannot control an obligation, as it has to if the adverb c-commands the modal. Likewise, these adverbs cannot precede (c-command) a speaker-oriented adverb since they would then have to take a fact as their FEO object, but can only take events (and the FEO Calculus forbids lowering facts to events in the normal case):

(3.46) a. She probably has wisely returned the money.
b. *She cleverly has probably returned the money.

Similar explanations may be given for sentences in which a subject-oriented adverb follows a second or third auxiliary. After an epistemic modal and *have*, one is generally possible, as in (3.47), since this combination represents a past tense interpretation of these modals (see chapter 7).

(3.47) a. They must have willingly postponed their own work to do hers.
b. Dan could have tactfully withdrawn his offer, but if I know him he didn't.

Most speakers also accept subject-oriented adverbs after sequences of two aspectual auxiliaries, as in (3.48), as long as it is presupposed in context that some past state or process obtains, but these cases are not as good as those where the adverb is after the first auxiliary (as in (3.49)).[20]

(3.48) a. She has been wisely insisting on total control of her films.
b. All during that time, they had been cleverly attending every church meeting they could find, as a way of bolstering their social standing.

(3.49) a. She has wisely been insisting on total control of her films.
b. All during that time, they had cleverly been attending every church meeting they could find, as a way of bolstering their social standing.

This presumably is true because there is no particular reason to ascribe wisdom or cleverness to the individual events that collectively make up the states of (generally or frequently) insisting or attending, as ought to be the case in (3.48). Thus the pattern in (3.48), while grammatical, is pragmatically disfavored.

Note that the semantics proposed for subject-oriented adverbs accounts for more than just relative ordering with respect to other elements in a sentence. For example, they do not occur in middle constructions, since there is no agent or experiencer for the adverb to take as an argument (see (3.50)).

(3.50) These toys sell {easily/*deliberately}.

Similarly, it was noted quite early in the study of adverbs (at least as far back as Lakoff 1972, 1973) that subject-oriented adverbs are passive-sensitive: in sentences like (3.51a–b), the subject-oriented adverb may be construed with either the surface subject or the deep subject, that is, the agent in theta-theoretic terms.

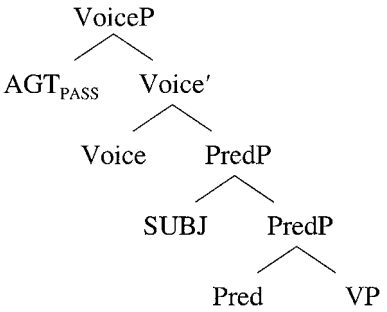
(3.51) a. Debbie was willingly hired by the contractor.
b. Karen was reluctantly examined by the auditor.

When the adverb precedes the passive auxiliary, only the surface subject is interpreted with it (see (3.52a)); but when it is between the auxiliary and the verb, it is ambiguous (3.52b).

(3.52) a. Debbie willingly was hired by the contractor.
b. Debbie was willingly hired by the contractor.

These facts follow on the sort of analysis that has been widely adopted in the semantics literature, including McConnell-Ginet 1982, Wyner 1994, 1998, and Kratzer 1996 (see also Croft 1984, Travis 1988, Eckardt 1998, Frey 2000, and Higginbotham 2000). Although details differ, most of these analyses share the idea that the passive operator may assign a sort of secondary agenthood to the surface subject in the passive. In (3.52a), then, Debbie is the agent of be-hired-by-the-contractor in the sense that she brought this event about in some way or at least had the option of refusing. The analysis I adopt here depends on a VoiceP projection above PredP, which is immediately above VP, as illustrated in (3.53) (see chapter 6 for further detail and discussion).

(3.53)



I assume (contra Kratzer 1994, 1996) that subjects represent genuine external arguments, in the sense that the verbal predicate imposes a particular interpretation on its subject, and are not the result of a generalized agent-assigning function of Voice (cf. Rapoport 1999). I take these subjects as being licensed by V (which raises to Pred) and adjoined to PredP. (On these points, see Bowers 1993 and Heycock 1991, respectively.) Since subjects always move to Spec,TP in active sentences, their being adjoined in the base instead of in Spec,PredP causes no problem for linear order. In passives, subjects may be covert (PRO, assigned null case in Spec,PredP)[21] or are assigned Case (and a "mediated" theta role) by the preposition *by* in a PP, which must right-adjoin to PredP (for reasons discussed in chapter 4).[22] Objects in passives optionally pass through Spec,VoiceP (indicated in (3.53) by AGT$_{PASS}$), giving them the agentive interpretation just discussed.

Now the ambiguity of cases like (3.52b) can be handled by (3.54).

(3.54) Structural Condition on subject-oriented interpretation: the DP (in an A-position) denoting a subject-oriented adverbs' agentive argument must c-command the adverb.

(This condition can be derived if all such adverbs require a syntactically realized PRO in their AdvP, and the DP in question must be its controller, assuming a c-command condition on control.) This correctly predicts that any subject-oriented adverb below Spec,TP may have the normal interpretation where the subject of the sentence is its agent, both for actives and passives and for both clausal and manner interpretations. In passives, however, the lexical agent (i.e., the deep subject still in PredP in derived structure) can only be the adverb's agent when the adverb is below Voice. This yields the pattern in (3.52). Note that this holds just as well when there is more than one auxiliary; the passive *be*, in Voice, is still the dividing line for sentences with covert lexical agents:[23]

(3.55) a. Vince would have willingly been examined by Catherine.
b. Vince would have been examined willingly by Catherine.

In (3.55a) *willingly* can only ascribe willingness to Vince, while in (3.55b) only Catherine can be taken as willing.

3.2.7 Exocomparatives

The examples in this subsection illustrate the relative freedom exhibited by exocomparatives with respect to all the other adverbs discussed in section 3.2; this type of adverb takes a broader range of FEO arguments (taking either an event or a proposition to yield the same type as output) and imposes fewer additional requirements on them. Thus adverbs like *similarly*, *equally*, and *accordingly* do not prevent other adverbs from fulfilling their requirements:

(3.56) a. Similarly, Karen has fittingly been chosen to head a new division. (evaluative)
b. Fittingly, Karen has similarly been chosen to head a new division.

(3.57) a. Accordingly, they will probably need funds from your account. (modal)[24]
b. Probably, they will accordingly need funds from your account.

(3.58) a. Similarly, other cultures of that era obviously were concerned about smelting technology. (evidential)
b. Obviously, other cultures of that era similarly were concerned about smelting technology.

(3.59) a. Alternatively, they will not consider buying imported products. (negation)
b. They have not been alternatively considering buying imported products.

(3.60) a. Similarly, Eduardo had willingly accepted the windfall. (mental-attitude)
b. Willingly, Eduardo had similarly accepted the windfall.

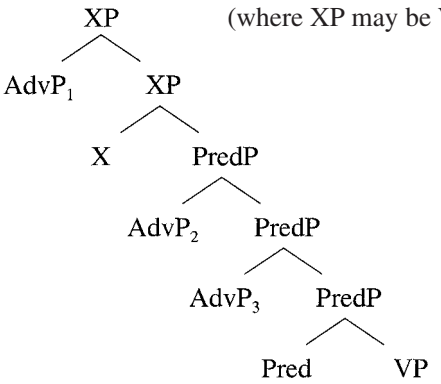
3.2.8 The Clausal/Manner Ambiguity

It was noted in the discussion of (3.48)–(3.49) that clausal readings may occur as low as the position just below an aspectual auxiliary, like *have* and *be* (although this is true as a general rule only for the exocomparative and subject-oriented types). This means that the immediately preverbal position may be ambiguous between a clausal reading and a manner reading, as (3.61) illustrates.

(3.61) a. They will clearly understand this play.
b. The company may have similarly expanded its line of gift products.
c. Jane has intelligently answered all the questions.

(3.7c) requires that event-taking adverbs can be interpreted as taking SpecEvents only when they are in PredP. Thus in (3.61a), for example, *clearly* may adjoin to PredP (as $AdvP_3$ in (3.62)) and receive a manner interpretation.[25]

(3.62)



(where XP may be Voice, Neg, Aux, Tense, etc.)

Nothing in the compositional system prevents the same adverb from being interpreted clausally as well, when adjoined to PredP. Thus the clausal

readings in (3.61) may also come with the adverb adjoined to PredP (or higher, of course, such as $AdvP_1$). If there are two adverbs adjoined to PredP, one of each type ($AdvP_2$ and $AdvP_3$ simultaneously in (3.62)), a clausal reading must be higher (see (3.63)), since (by (3.7a)) once the system moves away from rules for one type of modification (event-internal, event, or proposition), it cannot return to that type.

(3.63) a. She has clearly wisely advised her daughter.
b. She has wisely clearly advised her daughter.

Although both (3.63a–b) are a bit awkward (the manner-reading adverb would be much better postverbally), in both cases the clausal reading can only be taken as on the first of the two adverbs.[26]

3.2.9 Summary

In this section I used the semantic analysis of predicational adverbs from chapter 2 to explain ordering and co-occurrence restrictions of these adverbs with auxiliaries, negation, and each other. We found that it is possible to account for these facts, in particular the ordering restrictions shown in (3.3)–(3.6), by means of semantic properties of individual adverbs, the system of compositional rules for constructing events and propositions in a clause (the FEO Calculus), and minimal assumptions about clause structure. Although there is more to say about the details of predicational adverb syntax, as well as about the fine-grained lexical semantics of individual adverbs (and its effect on distribution), the main facts about their possible positions in a sentence are handled by this analysis, without adding any theoretical devices to syntax.

3.3 Outline of the Feature-Based Theory

The distinguishing characteristic of Feature theories is that adjuncts are licensed by a featural relationship to heads. This can be accomplished technically in several ways; for example, a feature might be assigned to the adjunct, and any adjunct lacking a feature would violate some filter (parallel to Case assignment and the Case Filter of Chomsky 1981). A more current view maintains there is some sort of "Adjunct Criterion" (Laenzlinger 1993b), parallel to the *Wh*-Criterion (May 1985) and the Neg-Criterion (Haegeman and Zanuttini 1991), by which a feature on an adjunct and a feature on its licensing head must agree. Given the diversity among adverbs in terms of distribution and behavior, this of course necessitates a fairly large number of different features keyed to particular classes of adjuncts.

The earliest such approach of which I am aware is that of Travis (1988). On her analysis, features on clausal heads like V and Infl license adverbs and may assign particular semantic roles to them. Because these features can percolate, in principle multiple positions are allowed as well; ordering restrictions like those seen in (3.3) or (3.5) result from a ban on crossing percolation paths. Later works do not generally make use of feature percolation but instead require feature checking within the local domain of the licensing head.[27] This is sometimes the maximal projection (Ernst 1993), or the checking domain in the sense of Chomsky 1995b (e.g., Tang 1993), if adjuncts are in their traditional adjoined positions (possibly in addition to Spec positions). Most recently, a number of works have narrowed the domain to Spec position, positing that there can be only one adjunct per head (Alexiadou 1997, Laenzlinger 1996, Cinque 1999), following Kayne (1994), for whom all Spec positions *are* adjunctions, limited to one per head by phrase structure theory.

Though not as widely used, another option on Feature theories is to have more than one head licensing the same adjunct (each one locally). For example, both Tense and Perfect might bear a feature like [+Agent-Oriented], so that *politely* could be licensed in both (3.64a) (in Spec,TenseP, assuming subjects to be in some higher projection, like AgrSP) and (3.64b) (in Spec,PerfP, where *have* is the head of PerfP).

(3.64) a. Dan politely will serve coffee.
b. Dan will politely have served coffee.

This would preserve the locality of feature licensing, although it would also require a set of principles to predict which sets of heads license a given adjunct in order to properly express generalizations about their distribution.

However, Alexiadou (1997) and Cinque argue for the narrower relationship: "[A] restrictive theory should force a one-to-one relation between position and interpretation (i.e., one specific, and distinct, interpretation for each position of 'base generation')" (Cinque, p. 20). If so, the two occurrences of *politely* in (3.64) must represent either movement (either of the adverb or of *will* from a canonical base position) or a case of licensing by different heads, by means of different features, and with different interpretations for the adverb. In evaluating this version of Feature theory as an account of multiple adverb positions, it is necessary to explore the implications of these two strategies: movement or the existence of a range of heads licensing one adverb, each head contributing a different, additional meaning component.

Cinque argues that rigid ordering of adverbs is evidence for an invariant sequence of functional heads provided by UG. The idea that there is such a UG-mandated sequence is not new, of course, but the number and diversity of adjuncts requires a larger number of such heads, and more phonologically

empty ones, than has been assumed up to now. Cinque assumes that the sequence does not vary, but for other scholars parts of it might be parameterized, as proposed, for example, in Zanuttini 1990. (3.65) (based on data from Modern Greek) and (3.66) (based mostly on Italian, French, and English) illustrate the proposals made by Alexiadou and Cinque, respectively. For the latter, illustrative adverbs are positioned to indicate their position in Spec of the relevant head, and a tree is given in (3.67) for a representative section.

(3.65) C – Top – Foc – *Wh* – Top – Mood – AgrS – T – Asp – Voice – V

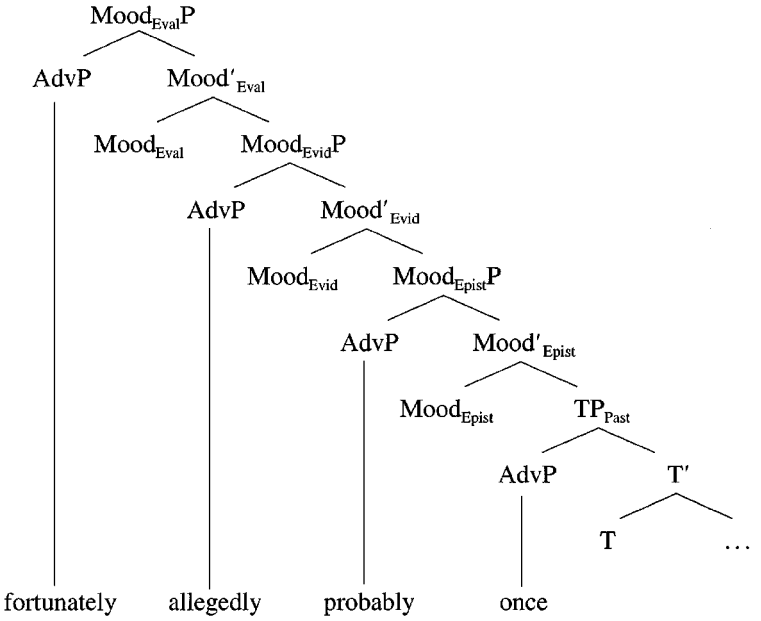
(3.66) $\text{Mood}_{\text{Sp-Act}}$ – $\text{Mood}_{\text{Eval}}$ – $\text{Mood}_{\text{Evid}}$ – $\text{Mood}_{\text{Epist}}$ –
frankly fortunately allegedly probably

T(Past) – . . . – Asp_{Hab} – Asp_{Rep} – Asp_{Freq} – $\text{Asp}_{\text{Celerative}}$ –
once again often quickly usually

. . . – $\text{Asp}_{\text{SgCompletive}}$ – $\text{Asp}_{\text{PlCompletive}}$ – Voice – $\text{Asp}_{\text{Celerative}}$ –
completely tutto well fast

$\text{Asp}_{\text{SgCompletive}}$ – Asp_{Rep} – $\text{AspAsp}_{\text{Freq}}$
completely again often

(3.67)



Thus on the Feature theory the ordering of adverbs is the result of the UG order of functional heads plus features linking specific classes of adverbs

to each head. This link is justified by a transparent semantic relationship between the head and the adjunct it licenses; for example, Modal heads license *probably*, *maybe*, and other modal adverbs, Aspect heads license *for an hour* or *frequently*, Tense licenses *yesterday*, and so on. There is relatively little more to say about (preverbal) adverb ordering, which according to Cinque is rigid and dependent on the stipulated order of heads. Note, in particular, that Cinque makes two important claims about the role of syntax in adverb licensing. First, although he suggests that there are correlations between broad semantic types of adjuncts and the positions of their associated heads, he maintains that the order of heads is still fixed syntactically; the syntax-semantics mapping is thus an indirect one, mediated by a large UG-mandated set of functional heads that license the adverbs. Second, the Feature theory makes a strong claim about the strict locality of licensing: a head licenses an adjunct only in Spec, and in doing so it is independent of other heads licensing other adverbs. (An implicit claim of many of the arguments I make in sections 3.4–3.10 is that adverb licensing is in fact not local in this way: many of the Feature theory's problems result from this property.)

Finally, before proceeding to a comparison of the scope-based and feature-based theories, two preliminary remarks are in order. First, although I argue against a feature-based approach to adjunct licensing, I believe that Cinque has done the field a great service to document and emphasize the extent to which the ordering of functional heads is fixed and consistent across languages. Still, it is important to keep this separate from the issue of whether adjunct order is rigid. Despite his claims, I believe that, once we look at the full range of adjuncts and are careful to control for semantic and pragmatic interference in specific example sentences, the order of adjuncts in any given language can be seen to be much freer than Cinque's work suggests, in a large number of cases.[28]

Second, we ought not to overemphasize the claims of restrictiveness for phrase structure theories like that of Kayne (1994), which Cinque adopts. No one denies the initial attractiveness of such theories, but it is becoming clear that whatever restrictions they introduce are balanced by equal looseness elsewhere, such as in movement theory and the theory of syntactic features (see section 3.4). More important for my purposes, a search for restrictiveness should be balanced by a search for generality and depth of explanation. The arguments in this chapter, most fundamentally, embody the idea that this search can only be fulfilled for adjunct licensing if we adopt something like the semantically driven Scope theory.

The next seven sections present arguments for the scope-based theory over the feature-based theory of adjunct licensing.[29]

3.4 Multiple Positions for One Predicational Adverb

3.4.1 Goal and Data

In this section I argue that the Scope theory is superior to the Feature theory in its treatment of multiple positions for predicational adverbs.[30] The former directly predicts the range of positions for each subtype according to independently needed semantic properties, while the latter is forced to posit multiple verb movements in a way that unduly complicates syntactic theory.

(3.68) summarizes the basic pattern of predicational adverbs as established in section 3.2, where Infl is the site of the finite auxiliary, if any, and Aux that of a second one. I ignore the prohibition on adverbs between verb and object, since it is accounted for independently (chapter 5).

(3.68)

a. manner:				DP		Infl		Aux	✓	V	✓	XP	✓			
b. subject-oriented/ exocomparative:		✓		DP	✓	Infl	✓	Aux	✓	V		XP				
c. epistemic/ evaluative:		✓		DP	✓	Infl	✓	Aux	?	V		XP				
d. speech-act:	✓	Comp	✓	DP	✓	Infl	✓	Aux		V		XP				
	[CP		[IP				[AuxP		[PredP	[VP			]]]]]			

Though I discuss only English here, analogous patterns appear to hold for other languages.

3.4.2 The Scope Theory

The Scope theory accounts for the patterns in (3.68) by saying that, in general, predicational adverbs must be the sister of (be adjoined to) a constituent corresponding to an FEO of the type required by that adverb. Heads like progressive, perfective, or modal auxiliaries likewise require an FEO of the appropriate type (event for the first two, and event or proposition for a modal, depending on which kind it is) and thus, in effect, may force a change of FEO during the semantic composition of a sentence. All scope-taking elements must satisfy their scope requirements.

This correctly predicts the patterns in (3.68), according to the descriptive generalization in (3.69).

(3.69) A predicational adverb may occur in a range of positions starting from the lowest (rightmost) position where it is a sister of its required FEO and upward (leftward) from there in a contiguous range, unless something forces the FEO to change.

This is exactly as shown in (3.68): manner adverbs require a SpecEvent, which is available in VP or PredP but not above this, according to (3.7c). Agent-oriented adverbs require events and so occur adjoined to PredP or above, in principle. Epistemic and evaluative adverbs normally may not occur to the right of (the base position of) an aspectual head, since the latter requires events.[31] Finally, the same general result holds for speech-act adverbs: if placed to the right of any (modal or aspectual) auxiliary at D-Structure, they would be forced to take an event or proposition, which violates their requirements.

3.4.3 The Feature Theory

Recall that the Feature theory is restricted to a local mechanism where heads license an adjunct in Spec position. If one adverb subclass may be licensed by several different heads, the patterns shown in (3.68) might result from licensing by the sets of heads shown in (3.70) (and possibly more, if there are additional functional heads between subject and verb; Aux1 indicates the first nonfinite auxiliary).

(3.70) a. manner: Pred, V
b. agent-oriented: Pred, Aux (= Voice, Prog, Perf, Mod), T
c. epistemic: Aux1, T
d. speech-act: Aux1, T, Comp

However, on the Feature theory the sets of heads in (3.70) do not form natural groupings, while the Scope theory does characterize them, in effect, as natural classes: all those that can be a sister of the adverb's required FEO in some instance. Thus this version of Feature theory misses out on expressing a major generalization about adverb distribution. (3.70) also does not directly capture the fact that each predicational adverb appears in a contiguous range of positions and not, say, before the first auxiliary and after a second one but not between them. Short of adding another principle to generalize over the sets of heads in (3.70), nothing in UG would keep a language from allowing this by choosing a noncontiguous set of heads.

Cinque's version of the Feature theory claims that multiple listing of heads like in (3.70) is disallowed, as licensing of one subclass is restricted to one and only one position. If so, multiple positions among auxiliaries result from movement, either of the adverb itself or of auxiliaries (Cinque, pp. 20, 132). The first of these options, where the adverbs move, could be handled if we take the rightmost grammatical position (e.g., of *elegantly* and *wisely* in

(3.71)–(3.72)) as basic and allow free movement to the other positions, assuming that movement is always upward.

(3.71) (*Elegantly) Superstring theory (*elegantly) will (*elegantly) have (elegantly) accounted (elegantly) for these phenomena (elegantly).

(3.72) (Wisely,) they (wisely) will (wisely) have (wisely) declined her invitation (*wisely).

But as noted, there are many arguments against positing adverb movement rules. Alternatively, heads can move over an adverb, so that for cases that look like (3.73a) on the surface, the auxiliary verb starts below the adverb and optionally raises, as (3.73b) illustrates.

(3.73) a. They (wisely) were (wisely) examined by a specialist.
b. They were$_i$ wisely t$_i$ examined by a specialist.

This approach was adopted for simple cases like (3.73) in Ernst 1991a, 1992b; Cinque also requires this approach. However, it appears that head movement cannot be responsible for more than this limited number of cases. As a more general account, in sentences with multiple auxiliaries and adverbs, head movement entails significant complications in the syntax of auxiliary verbs and negation. Thus the argument against the Feature theory is that in accounting for multiple positions of adverbs it requires unnecessary complications in other parts of syntactic theory that the Scope theory avoids. Consider (3.74a–b).[32]

(3.74) a. Bill never will discover what Bertha said.
b. Bill will never discover what Bertha said.

As Cinque points out, given rigid base ordering and no movement of adverbs, all modals and other auxiliaries must start out in a very low position, below aspectual adverbs like *never* (which are below predicationals, time adjuncts, and many functional adverbs), and optionally raise over the adverbs (as in (3.74b)). Note that there are four types of English auxiliaries, rigidly ordered (3.75a), with examples in (3.75b).

(3.75) a. MODAL – PERF – PROG – PASS
b. will – have – been – being

Given possible sequences of adverbs like those in (3.76) and the fact that any of the four auxiliaries may occur to the left of any one of these adverbs when

it occurs alone, the base structure must look something like (3.77), where each capital letter is a functional head (although since even more adverbs are possible in principle, there are many more such empty heads than those shown here).

(3.76) a. Bill (quite) luckily has seemingly been wisely engaged in cleaning his desk when the boss walks in.
b. Bill wisely has never been involved in gambling.

(3.77) A luckily B seemingly C D wisely E never F G H I
TENSE MODAL PERF PROG PASS

At this point, three problems arise. First, it is unclear how more than one auxiliary may raise in the same sentence, as must happen in cases like (3.78), since the first one to move must land in every empty head on the way up to Tense.[33]

(3.78) Maureen could have been wisely getting involved in other pursuits.

This is because the movement of this auxiliary leaves traces in each head along the way, so that the second, third, or fourth auxiliary should not be able to raise beyond the lowest of these (E) without violating the Head Movement Constraint (HMC) (Travis 1984, Chomsky 1986, Baker 1988) or making ad hoc claims about excorporation.[34] Since they must raise in order for this theory to work, these complications in the theory of head movement are unavoidable.

Second, this array complicates the treatment of negation. Recall that English sentential negation must occur after the first auxiliary and thus is standardly assumed to be after position A (Tense) in (3.77). But to correctly account for (3.79), the highest position for *not* must be between C and D.

(3.79) a. Sarah {luckily/seemingly} has not been told about the fiasco.
b. *Sarah has not {luckily/seemingly} been told about the fiasco.

(3.80) a. Paula wisely has not gone home yet.
b. Paula wisely will not go home for a while yet.

Besides this, to get (3.80a–b) we also need a position for Neg as low as after position E in 3.77, below *wisely*; modal or *have* can raise to E and stop there. Now, a low position for Neg is of course independently necessary for cases of constituent negation like (3.81).

(3.81) Paula will have been wisely *not* going home.

In (3.81) the three raised auxiliaries would occupy position A and two more positions out of B–D in (3.77). Now, however it is no longer possible to structurally distinguish sentential negation, as in (3.79b) and (3.80a–b), from constituent negation, as in (3.81), by its position: for all of them *not* is below E. (If *not* in (3.81) is constituent negation, we wrongly predict that it is acceptable without stress.) This distinction must be made: not only (a) is sentential negation unmarked and (relatively) unstressed, while constituent negation is marked and stressed, but (b) they behave differently with respect to stranding. As discussed in Ernst 1992b, sentential *not* allows VP-ellipsis while constituent *not* does not:

(3.82) a. Larry has eaten, but Moe has not.
b. *?Larry may have eaten, but Moe may have not.

Whatever the structural distinction is (see Ernst 1992b, Potsdam 1997, and references there), it can be used to condition these differences. On a theory that neutralizes the distinction in this way, presumably one must refer to the surface positions of auxiliaries to condition stress of negation and licensing of VP-ellipsis after negation. Besides being an undesirable complication, it is also unclear how this could be implemented technically in current theory.

The third problem is in conditioning raising of the auxiliaries. To get (3.83), *will* must be able to raise over *wisely*, thus at least as high as D in (3.77), and this movement must be optional, so that (3.80b) can be generated. However, even if we assume a possible position for (sentential) negation to the right of *wisely* (and therefore as low as E in (3.77)), we must ensure that the first auxiliary always raises over it, as (3.84) shows.

(3.83) Paula will wisely go home.

(3.84) *Paula not will go home.

Thus apparently movement of *will* over *wisely* is optional when negation is absent (cf. (3.83) and *Paula wisely will go home*) but obligatory when negation is present, as in (3.84). While standard, traditional explanations for cases like (3.84) have involved the need for either negation or Tense to be supported in some way by an auxiliary (see Chomsky 1957, Pollock 1989), thus requiring movement of the highest auxiliary to Tense, these explanations are no longer available in any simple form if Tense can be unsupported (in (3.80b), with *will* at E or below) and Neg can be unsupported (in (3.81)). Thus it is unclear how these facts could be handled in a principled way.

In sum, given these and other complications necessary for auxiliary movement, a head-movement approach to multiple positions of Predicational adverbs appears to involve a far more complex system of movement and negative-placement than the scope-based theory does. On the latter, there is limited and obligatory movement in English – of the first auxiliary only, to Tense – and sentential negation immediately follows Tense. (Sentential) *not* is an adverb in the Spec position of the first AuxP (see Ernst 1992b) and semantically takes a proposition (or event) as its argument, but never a fact; given that evaluative and modal adverbs combine with propositions to yield facts, they cannot be in the immediate scope of negation, thus accounting for the contrast in (3.79a–b). Constituent negation involves adjunction of *not* to projections lower than the highest AuxP (in addition to DPs, PPs, etc.). These assumptions account for all the facts discussed here, with none of the complications required by the Feature theory.

3.4.4 Summary

In accounting for the phenomenon of multiple positions for one predicational adverb, the Scope theory handles the facts generally and straightforwardly. It says that they may occur anywhere these requirements are met: in principle, as low in a structure as their required FEO can occur and anywhere above this point as long as the FEO has not been changed to meet some other elements' scope requirement. Since not all auxiliary verbs cause a change in FEO, predicational adverbs may occur in any of several positions. The Feature theory does not fare as well. In essence, it must depend on various movements of auxiliary heads to account for multiple positions, but for English at least this entails considerable complication in movement theory and in the analysis of negation. I conclude that the Scope theory is superior in accounting for multiple positions of predicational adverbs.

3.5 Multiple Positions for One Functional Adjunct

3.5.1 Introduction

The second argument in favor of the Scope theory (related to, but logically separate, from the argument in section 3.4) concerns the treatment of multiple positions for one functional adjunct ((3.85)–(3.88)).

(3.85) a. She frequently has wisely gone there on Sundays.
b. She wisely has frequently gone there on Sundays.

(3.86) a. She frequently was suddenly (being) rejected by publishers.
b. She suddenly was (being) frequently rejected by publishers.

(3.87) a. Ken frequently has already eaten supper by the time I get home.
b. ? Ken already has frequently called his girlfriend by the time I get home.

(3.88) a. Marie frequently would willingly call her brother.
b. Marie willingly would frequently call her brother.

Though some of (3.85)–(3.88) require some context, all are fine once that context has been established. They show that *frequently* can occur on either side of *wisely*, *suddenly*, *already*, and *willingly*. Such instances are a prima facie problem for Feature theories like Cinque's, which claim that adverbs are licensed only in one-to-one relationships with their heads, because the same adverb with the same meaning shows up in more than one position. Fuller discussion is presented in chapter 7, but for present purposes it is sufficient to give a brief overview of the various functional adverb subtypes and of their distribution.

Functional adjuncts perform a variety of operations on their objects; examples are given in (3.89).[35]

(3.89) a. negative: *not*
b. focusing: *even*, *also*, *mainly*
c. measure/degree: *completely*, *a lot*, *(very) much*[36]
d. iterative: *again*, *repeatedly*, *over and over*
e. frequency: *occasionally*, *twice*, *many times*
f. duration: *all day*, *for an hour*
g. aspectual: *still*, *already*
h. "B-class": *barely*, *scarcely*, *hardly* (Ernst 1984:215ff.)
i. degree-of-precision: *precisely*, *roughly*, *approximately*

Functional adjuncts largely involve focus-presupposition structure and/or quantification of some sort, either over events (or times, instances, or occurrences) or with respect to completion, intensity, or (for (3.89h–i)) closeness to some defined point.[37] In doing so, they may single out different types of these entities. For example, *again* in (3.90a–c) can indicate that a new point is being added in the speaker's exposition (thus (3.90a) is a case of speech-act modification), that a state of affairs obtains a second time (in (3.90b)), or that a (nonstative) event has been repeated (see (3.90c)).

(3.90) a. The psychologist can assist in detecting those children who may specially require such experiences. Other children may benefit from the many regular tasks which the routine of the classroom has to offer. Again, it is often possible for the psychologist to observe the child at work and at play in a [more natural] social setting. (Greenbaum 1969:47)
b. George (once) again could not finish his Jello.
c. Martha is crying again.

These are all possible because different types of things can be counted and repeated. Similarly, Focusing adverbs make an assertion about some entity described in a sentence, with an accompanying presupposition about other entities of the same type; in (3.91a–d), for example, assertions are made about Carol, buying, and junk food (respectively).

(3.91) a. Only *Carol* buys junk food.
b. Carol only *buys* junk food.
c. Carol only buys *junk* food.

Once again, the type of object focused is relatively unrestricted.[38]

I take functional adjuncts as being licensed, in principle, in any projection. (3.92)–(3.94) show that they can indeed occur in a wide variety of positions.

(3.92) a. Again, why would she do such a thing?
b. They again have raised objections.
c. They have again raised objections.
d. They have raised objections again.

(3.93) a. The architect even has been talking about using prefab concrete panels.
b. The architect has even been talking about using prefab concrete panels.
c. The architect has been even talking about using prefab concrete panels.

(3.94) a. Occasionally they could have been passed over for promotions.
b. They occasionally could have been passed over for promotions.
c. They could occasionally have been passed over for promotions.
d. They could have occasionally been passed over for promotions.
e. They could have been occasionally passed over for promotions.
f. They could have been passed over for promotions occasionally.

All three of these adverbs take events as arguments and thus show none of the restrictions associated with speaker-oriented adverbs.

3.5.2 Functional Adverbs and the Feature Theory

On the Feature theory, if we assume that these other adverbs are rigidly ordered (as claimed by Cinque) as in (3.95), the grammaticality of (3.85)–(3.88) requires that *frequently* must be able to occur in each of at least five positions, among, before, and after those in (3.95).

(3.95) willingly > wisely > suddenly > already (Cinque, p. 106)

The only way to explain such cases is to claim that these five occurrences are not the same adverb licensed by the same head. Rather, each one is licensed by a different head that contributes some extra nuance of meaning, by which each adverb has a different interpretation.

This approach requires something like (3.96), where each adverb shown is licensed by the head following it, and the heads licensing *frequently* are A, C, E, G, and I.

(3.96) A willingly-B C wisely-D E suddenly-F G already-H I (VP)

Let us assume that *frequently* has a core meaning something like 'number of events of X is many'.[39] What is the meaning nuance contributed by A in (3.85a), as opposed to that contributed by I in (3.85b), as opposed to that contributed by G for (3.87a)? In each instance what is frequent are occurrences or events, and clearly the semantic content of the VP is constant within each pair of sentences in (3.85)–(3.88), so the difference between the relevant occurrence/event serving as the argument of *frequently* in each pair must correspond to the content of the extra adverb. Again, recall that the Cinquean Feature theory of adverb licensing requires each licensing head to contribute a different semantic element to the interpretation of *frequently*. Thus, in (3.85a) the occurrence/event is *(have) wisely gone there on Sundays* (encoded in head C); in (3.85b) it is *gone there on Sundays*, encoded in head I (or possibly E or G). Ignoring the contributions of auxiliaries for simplicity, this means that A contributes the nuance that *frequently* operates on events of willingly doing something, G that it involves events of already doing/having done something, I that it involves plain events, and so on.

Surely these are not parts of the meaning contributions of the heads A, G, and I; they are simply the content of the event being described, varying in exactly the sort of way as the event would vary if (for example) we changed

a VP from *sing* to *sing a ballad*. It does not seem possible to say that the type of *frequently*'s argument varies, since in all these cases it takes an event (or set of events).[40] Moreover, even if we were to try to encode the different events on each head, we would have to say that the differences are somehow picked up from the next lowest head, not the head that actually licenses *frequently*.

By contrast, the patterns seen here are exactly as predicted by the Scope theory, where *frequently* uniformly takes an event whose content is specified by its immediate c-command domain. This is in no way an isolated instance: the same sorts of data hold for equivalents of *frequently* in other languages (e.g., Chinese in (3.97)–(3.99); cf. Åfarli 1998 and Rosengren 2000 for similar data from Norwegian and German, respectively), and most other functional adjuncts behave this way.

(3.97) a. Ta changchang yinwei xinqing buhao bu qu shang-ban.
s/he often because mood bad not go go-to-work
'Often, because s/he's in a bad mood s/he doesn't go to work.'
b. Ta yinwei xinqing buhao changchang bu qu shang-ban.
s/he because mood bad often not go go-to-work
'Because s/he's in a bad mood s/he often doesn't go to work.'

(3.98) a. Ta guyi changchang zao hui-jia.
s/he purposely often early go-home
'S/he purposely often goes home early.'
b. Ta changchang guyi zao hui-jia.
s/he often purposely early go-home
'S/he often purposely goes home early.'

(3.99) a. Ta hen congming de changchang pai ta laoban de mapi.
s/he very smart MOD often pat her boss MOD rear
'S/he intelligently often flatters her/his boss.'
b. Ta changchang hen congming de pai ta laoban de mapi.
s/he often very smart MOD pat her boss MOD rear
'S/he often intelligently flatters her/his boss.'

Consider focusing adverbs like *even*, *only*, or *just*, which can occur in a wide range of positions:

(3.100) a. Fred has (even) probably (even) gone out to Key West in a hurricane.

b. Fred probably has even predictably gone out to Key West in a hurricane.
c. Fred predictably has even willingly gone out to Key West in a hurricane.
d. Fred apparently has deliberately even gone out to Key West in a hurricane.

The semantics of such adverbs is reasonably well understood, and all of these sentences can be represented semantically by means of one lexical entry for the adverb and a general template for generating focus-presupposition structures (see Bonomi and Casalegno 1993:34–35, for example). It is difficult to see, if the Feature theory is correct, why UG would supply yet another set of heads, each tailored to one reading of a focusing adverb, and miss the relevant generalization.[41]

The same can be said of similar sets for *again* ((3.101)–(3.103)) and *already* ((3.104)–(3.106)).

(3.101) a. He (once) again probably won't remember anything when he wakes up.
b. He probably (once) again won't remember anything when he wakes up.

(3.102) a. Alice again has purposely gone against regulations.
b. Alice purposely has again gone against regulations.

(3.103) a. Bob again has cleverly switched phone companies.
b. Bob cleverly has again switched phone companies.

(3.104) a. Dan already has probably given up.
b. Dan probably has already give up.

(3.105) a. Fred already has deliberately cut back on his hours.
b. Fred deliberately has already cut back on his hours.

(3.106) a. George already has wisely photocopied the documents.
b. George wisely has already photocopied the documents.

Though *again* has different readings in (3.101)–(3.103), these and other readings are derivable from one meaning (Stechow 1996:95) plus different scopes determined by the adverb's immediate c-command domain; any encoding of extra information, as required by the Feature theory, is redundant. The same

holds for *already* in (3.104)–(3.106) (see Auwera 1993, Michaelis 1996:486, and chapter 7 here): one adverb-meaning, plus normal mechanisms for mapping c-command relationships onto scope, can derive all the relevant readings without claiming that some empty head contributes to meaning. Finally, observe (3.107).

(3.107) Michael almost loves music.

As Tenny (2000) points out, this sentence allows interpretations in which Michael likes music a lot, but doesn't quite love it; Michael loves some music, but not enough to constitute loving music; Michael can't quite bring himself to love music, but with a slight push he might; and so on. This variation in reading holds generally with *almost*. Taking Cinque's dictum of one position to one interpretation seriously, (3.107) should represent at least three distinct structures, and most likely more, limited only by one's imagination for scenarios like these and not corresponding neatly to a set of events differing by the adverbs in his universal hierarchy (as was the case in (3.96)).

In sum, when we combine all these cases of multiply positioned functional adverbs – along with similar data sets that we could construct from other frequency or focusing adverbs, as well as "B-class," duration, and degree-of-precision adverbs – it seems clear that the Feature theory forces one to proliferate syntactic heads in a way that (a) adds considerable complexity avoided on the Scope theory and (b) also misses the semantic generalizations involved, especially by being forced to encode information about the scope of adverbs on a multiplicity of individual heads information that falls out immediately from the Scope theory.

3.5.3 Summary and Final Note

On the Scope theory, the possibility of multiple positions, exemplified in (3.85)–(3.88) and the similar sets in (3.97)–(3.106), is predictable from the scope properties of the adjuncts in question. They select fairly generally for semantic objects (such as [sets of] events), which may correspond to many different syntactic constituents; the "content" of the event in a given case is determined largely by the adverb's c-command domain. To the extent that the resulting semantic representation does not cause an anomaly (as it sometimes does), the sentence is acceptable. This freedom of scope correctly predicts the possibility of multiple positions.

I have shown that the order of functional adjuncts with respect to each other and to predicationals is not as rigid as is sometimes supposed. The Feature

theory must posit a number of separate heads for each type of functional adjunct. In doing so it makes the wrong prediction that they should all differ in meaning – or, if it does treat them as different in meaning, clearly misses the generalization that they differ systematically, in ways better captured by treating the differences independently. This constitutes an argument for the scope-based theory. I conclude that the Scope theory has a simple and more general account of both functional and participant adjuncts' multiple positions than the Feature theory.

Before leaving this topic, it is worth reconsidering Cinque's claim that there is a rigid order of adjuncts. Of the three main types of adjuncts discussed here, it is clear that predicationals do, in general, show rigid ordering, but participant adjuncts clearly do not (see chapter 6 for further discussion), and most of the functional adjuncts appear not to as well. Although Cinque presents a large number of example sentences to argue for rigid ordering of functional adverbs, a significant number of other sentences, corrected for context and for semantic interference from other parts of the sentence, show that either of two orders is possible.[42] Full discussion must wait until chapter 7, but one example makes the point. Cinque (p. 204, n. 36) gives the French pair in (3.108) (from Schlyter 1977) to argue that habitual adverbs must precede the *frequently* type.

(3.108) a. Habituellement ils regardent fréquemment la télé.
usually they watch frequently the television
'They usually watch TV frequently.'
b. *Fréquemment ils regardent habituellement la télé.

However, it is possible (for some speakers at least) to get the order in (3.108b), for both French and English, in contexts where the time intervals referred to by the two adverbs are sufficiently different. Imagine some very long-lived people whose TV-watching habits might change over time, and that our standard sociological survey of habits involves checking to see what they do during every three-year period. We find that over a hundred years their habits vary, despite some three-year periods when they watched little TV; in most of the periods they made a habit of watching TV. In this scenario (3.109) is fine for these speakers.

(3.109) Fréquemment ils ont regardé habituellement la télé.
frequently they have watched usually the TV
'Frequently they usually watched TV.'

The main problem with cases like these is that habits are usually not thought of as holding over short periods of time; once a large enough interval is

established by the context, the plausibility of this reading (and thus the acceptability) is increased. If we are to account for judgments that vary across speakers and across contexts in this way, rather than attribute (3.96) to rigid universal ordering, it seems more empirically adequate to say that either order is possible in principle, but speakers vary in how plainly they require the event argument of *habituellement* to be interpretable as a habit.

3.6 Ordering Restrictions among Predicational Adverbs

3.6.1 The Problem

I return to predicational adverbs for the third argument for the Scope theory over the Feature theory. The relevant data are shown in (3.110)–(3.112), where any pair of two Predicational adverbs may only occur in one order.

(3.110) a. Jim luckily has wisely refused the offer.
b. *Jim wisely has luckily refused the offer.

(3.111) a. Gina probably has tactfully suggested that we leave.
b. *Gina tactfully has probably suggested that we leave.

(3.112) a. Honestly, they surely will drive us out of this house in the end!
b. *Surely, they honestly will drive us out of this house in the end!

Why do the restrictions in the (b) sentences hold?

3.6.2 The Scope Theory

As detailed in section 3.2, on the Scope theory the ungrammaticality of the (b) sentences in (3.110)–(3.112) results from one adverb requiring a particular FEO at a specific point in the structure, which prevents the second adverb from fulfilling its own scope requirements. (3.113a–b) represent (3.111a–b), respectively (with wl standing for *we leave*):

(3.113) a. PROBABLE $[_P\ [_{E'}\ [_E$ S(e) & Agt (e,g) & Th(e,wl)] & TACTFUL (g,e)]]
b. *$[_{E'}\ [_E$ S(e) & Agt (e,g) & Th(e,wl)] & TACTFUL (g, $[_F$ PROBABLE $[_P\ [_E$ S(e) & Agt (e,g) & Th(e,wl)]]])]

On the Scope theory (3.113b) can be ruled out as an illegitimate representation, since PROBABLE takes a proposition to yield a fact (a type of proposition),

so that the second argument of TACTFUL can only be a proposition – but TACTFUL cannot take a proposition, so it cannot be interpreted (its scope requirement is not met). Alternatively, one can say that TACTFUL requires an FEO that is controllable in the sense discussed in chapter 2, and only events are controllable, not propositions. The representation for the reverse order of adverbs in (3.113a) is legitimate, since TACTFUL is able to take an event as its argument (as required), with this event being part of the proposition taken as the argument of PROBABLE. (3.110) and (3.112) work in a similar fashion; for example, (3.110b) is ruled out because *wisely* must select an event but cannot do so because *luckily* has already forced the sequence *refused the offer* to be taken as a fact.

3.6.3 The Feature Theory

Recall that the Feature theory assumes a fixed order of functional heads in UG, which directly accounts for rigid ordering of adverbs in sentences like (3.110)–(3.112). This is an empirical success for this theory. However, we already saw that it requires rather extensive complications in the analysis of head movement and negation. I aim to show here that, in addition, it cannot generalize as easily as the Scope theory to the relative ordering of adverbs and modals, and of adjectives related to these adverbs.

First, observe sentences like (3.114)–(3.115).

(3.114) a. Jim must have wisely refused the offer.
b. *Jim wisely must have refused the offer.

(3.115) a. Gina may have tactfully suggested that we leave.
b. *Gina tactfully may have suggested that we leave.

Scope theories handle such cases easily: as first discussed in Jackendoff (1972), epistemic modals like *may* and *must* have the same sort of scope requirements as do modal adverbs like *possibly* and *necessarily*, which must occur above *tactfully* and *wisely*; they require propositions as objects, and an anomaly results in (3.114b)/(3.115b) regardless of whether the scopal operator is represented by an adverb or a modal auxiliary.[43]

The Feature theory, though, must deal with these cases in terms of how high the modals raise. The best way to account for the contrasts in (3.114)–(3.115), as far as I can tell, is to assume that modals like *must* and *may* (with base positions below all adverbs, as noted) are required to raise up to at least a certain point, which will be above *wisely* and *tactfully*. In (3.116) a representative section of Cinque's (p. 106) proposed array of Mood, Tense,

and Modal functional heads (some intermediate nodes are omitted, but this has no effect on the argument), this minimum landing site would presumably be located around the Modal node that licenses *possibly*, since *may/must* may follow *possibly*.

(3.116) $\text{Mood}_{\text{Sp-Act}}$ - $\text{Mood}_{\text{Eval}}$ - $\text{Mood}_{\text{Evid}}$ - $\text{Mood}_{\text{Epist}}$ -
frankly fortunately allegedly probably

T(Past) - $\text{Mod}_{\text{Possibility}}$ - $\text{Mod}_{\text{Volitional}}$ - $\text{Mod}_{\text{Obligation}}$ -
once possibly willingly inevitably

$\text{Mod}_{\text{Abil/Perm}}$ - Asp_{Hab} - Asp_{Rep} - Asp_{Freq} - $\text{Asp}_{\text{Celerative}}$ -
cleverly usually again often quickly

T(Ant) - $\text{Asp}_{\text{Continuative}}$
already still

Such a move might (in fact, ought to) be motivated by the need for modals to land in the semantically appropriate head, for example, $\text{Mod}_{\text{Obligation}}$ for *must*. If so, there is no way around the necessity of positing base positions for all the lower functional adverbs in (3.116) (*usually*, *again*, *often*, *already*, etc.) above $\text{Mod}_{\text{Obligation}}$ or higher, duplicating the entire set of T and Asp nodes there and exacerbating the problem of multiple positions for Functional adverbs discussed in section 3.5. In other words, the Scope theory easily extends its mechanisms to cases like (3.114)–(3.115), while the Feature theory does not.

(3.117)–(3.120) represent another case where only the Scope theory extends easily to a parallel set of data.

(3.117) a. a probable tactful response
b. *a tactful probable response

(3.118) a. a possible wise course of action
b. *a wise possible course of action

(3.119) a. an odd bright light
b. *a bright odd light

(3.120) a. a definite tight situation
b. *a tight definite situation

(3.117)–(3.118) show that, as with (3.114)–(3.115), an agent-oriented type of expression may not take scope over a modal expression. The Scope theory can explain (3.117)–(3.118) by assuming that TACTFUL and WISE require their agent to have control over an event, which is represented by *response*

and *course of action*. However, a probable response and a possible course of action are hypothetical, not real, events (PROBABLE and POSSIBLE select propositions), which cannot be under the control of an agent. (3.119)–(3.120) show similar cases, involving different types of scope-taking predicates.

The Feature theory can only be generalized to this sort of case if some relevant subset of the set of functional heads in (3.116) is duplicated in DPs, and something causes them to license adjectives instead of adverbs. Cinque (personal communication) has suggested that it is plausible to posit this duplication. If one does, however, not only would one have to condition the adverb/adjective distinction nonlocally (so that an AspP in a DP, say, licenses an adjective under the influence of a potentially distant head D or N, while an AspP in TP licenses an adverb under T's influence), but one would also have to find a way to rule out cases like (3.121), where the overt heads that fill clausal Mod and Asp projections may not fill those same projections in DPs.

(3.121) a. *a must tactful response (cf. a necessary tactful response)
b. *the usual is/be leaving

(Cf. Alexiadou 1997:chapter 7, Pittner 2000:204.) This adds an extra layer of complication and stipulation that the Scope theory avoids, since in the latter there is no need to refer to the difference between clauses and DPs for conditioning the overt/covert head distinction in handling any of (3.119)–(3.120).

3.6.4 Summary

We have seen that sometimes one order of two co-occurring adverbs is ungrammatical while the other order is fine. The Scope theory analyzes such cases as involving a violation of the scope requirements of one or the other adverb, and can generalize this account to parallel instances of adverb-modal order and adjective-adjective order. The Feature theory cannot account easily for such cases without complicating the treatment of auxiliaries and negation, adding otherwise unnecessary, duplicate functional heads and stipulating differences in the morphological realization of functional heads in clauses and DPs.

3.7 Permutability of Different Adjunct Classes

3.7.1 The Data

The fourth argument for the Scope theory over the Feature theory is based on a contrast between different classes of adjuncts. Of the three major classes,

predicational adjuncts do not permute freely in general, functional adjuncts do but show meaning differences, and participant adjuncts permute freely with no differences in meaning. This follows neatly on the Scope theory but must be stipulated on the Feature theory.

(3.122)–(3.124) illustrate the restrictions on co-occurring Predicational adverbs.

(3.122) a. Jim has luckily wisely refused the offer.
b. *Jim has wisely luckily refused the offer.

(3.123) a. Gina has probably tactfully suggested that we leave.
b. *Gina has tactfully probably suggested that we leave.

(3.124) a. They honestly surely will drive us out of this house in the end!
b. *They surely honestly will drive us out of this house in the end!

(3.125)–(3.127) show that when at least one of the two adverbs is a functional adverb, both orders are generally allowed, with clear differences in meaning.

(3.125) a. They also often bought melons.
b. They often also bought melons.

(3.126) a. Kim swam with her goggles off for an hour purposely.
b. Kim swam with her goggles off purposely for an hour.

(3.127) a. The speaker never intentionally strays from the topic.
b. The speaker intentionally never strays from the topic.

Participant adjuncts are mostly realized by prepositional phrases and add participants to an event beyond the arguments of the predicate (which are also participants in the event).[44] Examples are given in (3.128).

(3.128) a. Instrumental: *with a shoe*
b. Benefactive: *for anyone listening*
c. Locative: *on the ledge*
d. Goal: *to the shore*
e. Source: *from my informants*

Participant adjuncts often serve as arguments when a verb selects for a participant represented by the phrase in question.[45] Following Parsons (1990), I take them as having no scope requirements, but instead, just like arguments,

they serve as relations between participants and basic events; they do so independently of one another and therefore can combine with a predicate in an unordered way, as (3.130) illustrates for (3.129).

(3.129) George opened the bottle with his teeth.

(3.130) [$_{E}$ Open (e) & Agent (e,George) & Theme (e,bottle) & Inst (e,his teeth)]

Sequences of participant adjuncts, as shown in (3.131), allow all orders, with no difference in meaning.

(3.131) a. Carol built a treehouse for her brother in the backyard with her new tools.
b. Carol built a treehouse in the backyard for her brother with her new tools.
c. Carol built a treehouse with her new tools for her brother in the backyard.
d. Carol built a treehouse in the backyard with her new tools for her brother.

How can the three-way distinction among predicationals, functionals, and participant PPs be handled?

3.7.2 Comparison of the Theories

On the Scope theory, the differing scope requirements of the three classes of adjuncts predict the contrasts. Predicational adjuncts require FEOs as their semantic arguments, and when this requirement is not fulfilled, as in the (b) versions of (3.122)–(3.124), the sentences are ungrammatical. But functional adjuncts have looser scope requirements: some of them function as generalized quantifiers, whose less constrained mapping from syntactic structure allows avoidance of the anomalous representations that are often induced when predicational adverbs co-occur. Other functional adverbs, such as focusing adverbs, have freedom to focus on many different semantic entities, as long as this is appropriate to the focus-presupposition structure that they require. As a result, in sentences like (3.125)–(3.127), with a functional adverb as one of two co-occurring adverbs, both orders result in semantically well-formed readings, but they differ according to the scope each adverb takes in the two cases. Participant adjuncts do not take scope, but, like arguments of the main predicate, independently relate some object to the event variable

in terms of a semantic role, such as locative. No scope relations are required, and thus nothing restricts their relative order, as (3.131) illustrates.

This same point extends to contrasts between various subclasses within the predicational and functional groups. For example, exocomparative adverbs represent relatively unselective predicates like SIMILAR, while speaker- and subject-oriented adverbs require particular properties of the propositional argument (for the former) or a controlling agent for an event (for the latter). Exocomparatives, being less selective, have freer word order; the others, being more selective, are more restricted. The same holds among functional adverb subclasses, where (for example) focusing adverbs are freer, and aspectual adverbs like *still* and *already* are far more restricted (see chapter 7).

The Feature theory faces two problems in accounting for these distinctions, the first of which we have already mentioned: the meaning of each of the sentences (3.131a–d) ought to be different, but this does not seem to be true. This problem requires making the licensing of these adjuncts an exception to the one-to-one licensing principle. The second problem is larger. We must explain why these classes differ in the way they do: why does one group allow free permutation while another one is restricted, and not the other way around?

Cinque (pp. 28ff., following Nilsen [1998]) addresses this question partially, recognizing that participant PPs are semantically different from the others; he suggests, tentatively, that they are in the Spec of "shell" VPs (headed by *v*), which are interpreted as predicates. It is crucial that this sort of analysis treat these phrases differently from adverbs by linking their meaning not to specific functional heads but to some *v* (or whatever head they are associated with), which is allowed to iterate. This accounts for their freedom of ordering and ability to co-occur with each other. Though this is potentially an empirically adequate analysis, it begs a theoretical question: why should this sort of "predicate" status (arguably, in fact, less predicational than predicational adverbs) require mapping to a different sort of head with these different properties? One can certainly stipulate that *v* creates predicates of this sort and that it is iterable, but this is not derived from anything; these statements are necessary additions to the grammar.

The Scope theory, by contrast, predicts the facts with no such additions to the grammar, because free iteration and alternative ordering is allowed whenever no scope restrictions induce semantic clashes. Such clashes very often result with predicationals, allowing only one of two possible orders; they result sometimes with functionals (and their semantic properties yield different readings with different scopes); participant PPs have no relevant semantic interactions among themselves and so allow multiple occurrences,

freely ordered.[46] Thus it seems that only the Scope theory captures the underlying semantic cause of these patterns simply and without adding theoretical mechanisms.

3.8 Differences in Iterability between Adjunct Subclasses

Just as there are differences in the behavior of adjunct subclasses with respect to permutability, there are differences in their iterability, that is, the extent to which there may be two or more occurrences of a given subtype in one clause:

(3.132) a. *The fireworks brightly lit up the sky loudly.
b. *James did it for Marie for her mother.
c. ??The children walked with their pets with their teachers.

(3.133) a. George had already run two races on a Saturday in March this year.
b. ?They played concerts twice (in one day) frequently (so many of) those years.
c. We sat in our rocking chairs on the porch in Vermont.

Although for some people (3.132a–c) are not completely out, (3.133a–c) are clearly better. In both cases, a Feature theory requiring a one-to-one Spec-head relationship for adjunct licensing needs to have multiple heads, such as Location or Time (or *v*), for (3.133). This theory presumably would also want to say on the basis of (3.132a–c) that multiple heads for manner, benefactive, and comitative are banned. The contrast cannot be explained by saying that the phrases in (3.133) are "stacked" as part of one large PP (say, a locative one in (3.133c)) licensed by a single clausal node (Loc), because such a move simply shifts the question down one level: why would locative, temporal, and frequency adverbials be able to form this sort of complex phrase while those in (3.132) could not? Moreover, as (3.134) shows, the subparts of such a putative complex phrase are separable.[47]

(3.134) a. ?This year George had (already) in March run two races on a Saturday.
b. Many times/years they would frequently play concerts twice (in one day).
c. In Vermont we sat in our rocking chairs for hours on the porch.

Thus there is still a difference to account for. Finally, (3.135) shows that topicalization can improve the unacceptable combinations in some cases.

(3.135) a. *Brightly, the fireworks lit up the sky loudly.
b. ?For her mother's sake, James did it for Marie.
c. ?With their teachers, the children walked with their pets.

Although I know of no well-developed analysis of these contrasts, on the scope-based account they can surely be explained in terms of something like (3.136).

(3.136) Adjuncts that can be conceived of as "nested" may be iterated.

It is well-known that locations and times (and thus frequencies, which are interpreted with respect to times; see chapter 7) can be taken as nested; tentatively, I assume this is so because they can be seen as nested *spaces*. Manners, actions for the benefit of someone, and responsibilities as in (3.131) are less readily conceivable in such terms. I posit that processing factors are involved in (3.131)–(3.135) as well: even with entities that are not normally conceived of in this way, a nested interpretation is more possible if topicalization serves to separate the "shells" represented by the separate adverbials, thus facilitating the nested interpretation. In this way we may think of the comitatives in (3.135c) as representing physical shells, an inner one of children with their pets and an outer one of teachers, who are responsible for the childern plus their pets; similarly, in (3.135b) the benefactive phrase *for her mother's sake* gives an outer reason for the inner action of James' acting for Marie's sake (e.g., James' driving Marie to the doctor saved her mother undue worry).

On the feature-based account, once again, we apparently would require a proliferation of identical, empty functional heads, two or more for each of the sentences with multiple occurrences, placed at several, separated sites in the hierarchy of functional heads. In addition, to handle the contrasts in acceptability, this hierarchy either must (a) arbitrarily restrict the lower range for the heads involved in (3.132) but allow multiple low heads for those in (3.133) or (b) be supplemented by the same sort of semantically based restriction represented by (3.136). In either case, the scope-based theory not only avoids the explosion of empty functional heads but expresses the underlying semantic generalization directly.

3.9 Licensing of Coordinate Adjuncts

Observe (3.137a–c).

(3.137) a. She answered him instantly and without rancor.
b. Surprisingly and rather ungraciously, Carol had told them to get lost.

c. They had frequently but (only) briefly stopped off to see her.
d. Suddenly and clearly I remembered the accident Harold Clark had with his truck. (Jane Smiley, *A Thousand Acres*, 105)

If one assumes that the coordinated adjuncts are generated as one constituent (that is, not derived from originally separate phrases that are combined by some sort of movement or deletion operation), then the one-adjunct-per-head feature-based theory claims that these sentences should be ungrammatical, because in each case the two adjuncts can only be licensed by different functional heads located in different places on the hierarchy. (3.137a) requires a (rather high) temporal (or possibly aspectual) head for *instantly* but a (low) circumstantial head (possibly *v*) for *without rancor*. The head for evaluative adverbs like *surprisingly* in (3.137b) is above that for the agent-oriented adverb *ungraciously*, and the same holds for frequency and duration adverbs in (3.137c) (Cinque, p. 106); see (3.138).

(3.138) a. Surprisingly, she had ungraciously told them to get lost.
b. They frequently had briefly stopped off to see her.

Cinque notes (p. 212 n. 72) the predicted impossibility of such coordinate phrases on the Feature theory and suggests that they are derived from coordination of larger phrases, plus deletion of repeated material. Such a syntactic derivation is dubious, however. (3.137c) would have to result from (3.139), with the bracketed sequences deleted.

(3.139) They had frequently [stopped off to see her] and [they had (only)] briefly stopped off to see her.

To condition these deletions correctly would require stranding adverbs before a deletion site, which is generally barred, as (3.140) illustrates.[48]

(3.140) *We had seldom stopped off to see her, but they had frequently.

Moreover, the derivation would (a) obligatorily involve two simultaneous deletions, one in each direction (i.e., the first bracketed phrase in (3.139) under identity with the phrase in the right conjunct, and the second one under identity with the phrase in the left conjunct), and (b) for the second of these require deletion for the entire rest of the sentence following the adverb. This latter requirement is unlike other deletions, such as VP-ellipsis, which requires only the deletion of a VP constituent under identity; as (3.141) shows, right-adjoined material may be retained.

(3.141) We stopped off to see her (yesterday), and then they did ____ today.

(3.142) shows that deletion of the entire string is necessary.

(3.142) a. He often and deliberately went to dangerous bars on weekends.
b. He often went to dangerous bars, and he deliberately went to dangerous bars on weekends.
c. He often went to dangerous bars on weekends, and he deliberately went to dangerous bars on weekends.

In (3.142a) the conjoined adverbs both normally take scope over *on weekends* (it is marginally possible for the latter to take scope over the conjoined adverbs, but this does not affect the argument). If this sentence were derived from (3.142b) by conjunction reduction, then it ought to have a reading where only *deliberately* has scope over the temporal PP. A conjunction reduction analysis must prevent this incorrect prediction and so presumably requires (3.142c) as the base sentence, with deletion of the entire string *went to dangerous bars on weekends* after *often*. Thus this approach would add to the grammar an otherwise unnecessary deletion process that needs complex conditioning factors and makes the wrong prediction with respect to adverb stranding.

On the scope-based theory, there is no difficulty in licensing sentences (3.137a–d), if we assume that each adjunct separately takes as its argument a possible denotation of the sister of the coordinate phrase. Thus for (3.137b) we would have (3.143) (where I abbreviate the proposition 'they get lost' as gl for simplicity).

(3.143) $[[_{E}$ T(e) & Agt(e,c) & Th(e,gl)] & UNGRACIOUS (e) & SURPRISING $[_{FACT}$ e]]

Since the FEO Calculus allows an event to be freely converted to a fact, this can be done with impunity for the argument of SURPRISING in (3.143), while UNGRACIOUS still takes an event argument.[49]

Thus the Scope theory licenses coordinate adjunct phrases with no difficulty, assuming that the representations are coordinated as in (3.143). The feature-based theory makes the wrong predictions and cannot easily rescue them with a deletion analysis.

3.10 Generalizations across Scope Phenomena

3.10.1 Introduction

In the six previous sections I showed that the Feature theory requires complications and stipulations to handle phenomena that the Scope theory accounts

for simply. It is a further argument in the Scope theory's favor that all six of these phenomena are predicted to hold by virtue of the same set of related mechanisms (scope mapping based on c-command, lexicosemantic requirements of adjuncts, and the FEO Calculus); the Feature theory requires a rather disparate set of unconnected mechanisms. Thus the Feature theory is less general, and less restrictive, in potentially allowing for such phenomena as permutation and iteration of various adjunct classes to vary randomly (rather than in accord with their relative tightness of semantic selection).

3.10.2 A Preliminary Matter: Topicalization

Proponents of the Feature theory generally claim that adverbials in sentence-initial position, as in (3.144), are moved there and that this is not a separate base position.

(3.144) a. Intelligently, Diana had stayed away from the dog.
b. More roughly than necessary, they hauled him out of the courtroom.
c. Already (this year) I haven't been chosen for at least six film roles.
d. For his favorite cousin he bought a gold-plated can opener.

This is a plausible stance, since it is clear (even on the Scope theory) that adjuncts may be topicalized, such as in (3.144d), where the benefactive PP is widely agreed to have a postverbal base position. Adjuncts in topic position take wide scope, as (3.144c) and (3.145)–(3.147) show.

(3.145) a. Usually (when we vacation in Cannes), we still like to eat on the patio even if it's cold.
b. Still, we usually like to eat on the patio (when we vacation in Cannes) even if it's cold.

(3.146) a. (Quite) oddly, they clearly had been unprepared for our arrival.
b. Clearly, they (quite) oddly had been unprepared for our arrival.

(3.147) a. Perversely, Al has not given up his expensive apartment in Manhattan.
b. Al has not perversely given up his cheap apartment in Manhattan.

In (3.144c) and (3.145)–(3.147) the first of the two adjuncts necessarily takes scope over the second (including negation). Note that according to Cinque the base order of the adverbs is as shown in the (b) sentences of (3.145)–(3.147) (though perhaps not for the last of these if Neg has several base positions);

thus topicalization of one adverb over another presumably is necessary to derive the (a) counterparts.

Now observe some cases where topicalization appears to be blocked:

(3.148) a. *Intelligently$_i$, she probably had t_i stayed away from the dog. (cf. (3.144a))
b. *[(More) roughly (than necessary)]$_i$, they didn't haul him out of the courtroom t_i. (cf. (3.144b))
c. *?Probably$_i$, she fortunately has t_i been allowed to go.

How can the differences between (3.144)–(3.147) and (3.148) be explained on the Feature theory? First of all, the contrast between (3.144a) and (3.148a) shows that the wide scope of *intelligently* in the former cannot be due merely to some encoding of wide scope in the Topic node (if it were, (3.148) would be fine since such an encoding of scope would have no way to "know" that *probably* is present in (3.148a) but not in (3.144a)). A second way to block topicalization would be a syntactic approach along the lines of Relativized Minimality (Rizzi 1990), where topicalization fails if it crosses an inappropriate adverb. This is possible, but one would have to make some very fine distinctions: a functional adverb may be crossed ((3.144c) and (3.145)), some predicational adverbs may be crossed but not all ((3.146) vs. (3.148a) and (3.148c)), and negation may be crossed by nonmanner adjuncts ((3.144c), (3.147), (3.149) vs. (3.148b)).

(3.149) [For his favorite cousin]$_i$, he didn't buy a gold-plated can opener t_i.

This is to be avoided if possible, as it makes for a significant complication in Relativized Minimality (or its equivalent).

A third possibility would be to adopt the same sort of scope mechanisms used by the Scope theory (still assuming something to ensure that topicalized adjuncts take wide scope). This accounts for all sentences under consideration. The FEO Calculus rules out (3.148a–c) (as well as (3.146), though this is more complex; see Ernst 1998b) since the topicalized phrases cannot be properly interpreted in their surface positions. It also permits (3.147a), since *perversely* can take wide (as well as narrow) scope with respect to negation. The other sentences are allowed, such as (3.145a), because functional and participant adjuncts have less severe scope requirements and normally may take wide scope in these sentences. In other words, topicalized adjuncts are possible if and only if the adjunct can be properly interpreted as base-generated in that position.

To sum up: for cases of topicalized adjuncts it seems that the Feature theory either must adopt a rather complex system of blocking movement or adopt

part of the Scope theory (which gets the effects of blocking automatically, without positing any new mechanisms).

3.10.3 Review of Devices Required by the Feature Theory

In section 3.4 I examined how the Feature theory treats the apparent existence of multiple positions of predicational adverbs among auxiliaries and negation, and concluded that it needs to add considerable complexity to its analysis of auxiliary movement and negation. Specifically, it appears to be obliged to make auxiliary movement optional or obligatory (depending on which adverb is present and on whether negation is present), it requires an undesirable weakening of movement theory (allowing excorporation in order to have movement of several auxiliaries in one sentence), and it requires some extra mechanism to distinguish between sentential and constituent negation.

In section 3.5 I concluded that to account for the multiple positional possibilities of functional adverbs the Feature theory has to assume (problematically) that individual functional heads can encode scope information about their associated adverbs. I also showed that the relatively free order of participant PPs would require treating them differently from adverbs structurally, stipulating different characteristics for their licensing heads.

In section 3.6 I pointed out that the Feature theory does a reasonably good job in predicting the (relatively) rigid order of predicational adverbs, by means of the rigid UG hierarchy of heads that license them. However, to get the parallel restrictions between these adverbs and modal auxiliaries, and between their adjectival counterparts in NPs, the Feature theory is forced to add more stipulations to the theory of head movements and to the realization of functional heads in DPs.

In section 3.7 I examined the different abilities of the three main adjunct classes to occur in alternate orders. On Cinque's Feature theory, a given functional or predicational adjunct may be licensed by more than one head (though its scope/meaning may differ slightly, at least for functionals). Yet, clearly one misses a generalization if this is where the story ends since the Feature theory ought to have an explanation for why the heads that license the three classes differ precisely as they do. If this is not a scope-based distinction, it is hard to see what it is instead.

I raised the issue of iterability in section 3.8: some types of adjuncts easily have multiple occurrences, while others do not. Most probably, the Feature theory would say here that the universal functional category hierarchy simply allows multiple occurrences in some cases and not in others. Parallel to the argument about participant adjuncts in section 3.5, however, this is a

weakening of the restrictiveness of the one-to-one stipulation and also lacks the explanatory power of the direct semantic explanation that is possible on the Scope theory.

Finally, in section 3.9 I showed that the Feature theory has no simple way to predict the grammaticality of coordinated adjuncts from different classes, whereas this follows straightforwardly from the Scope theory.

3.10.4 The Argument from Generality

(3.150) summarizes the mechanisms required by the Feature theory to handle the data discussed in this chapter.

(3.150) Mechanisms of the Feature Theory:
- a. stipulated order of heads for licensing (at least predicational) adjuncts
- b. additional syntactic conditions on topicalization
- c. extra triggers for auxiliary movement
- d. extra device to distinguish sentential and constituent negation non-structurally
- e. encoding of scope for each occurrence of a Functional adjunct in its licensing head
- f. something to condition the syntactic difference between unique heads for adverb licensing versus iterable *v*'s for participant PPs
- g. constraints on morphological realization of functional heads in DPs with respect to clauses
- h. (scope-based mechanisms or) arbitrary generalizations about which types of adjuncts may have alternate positions
- i. some extra principle for coordinated adjuncts of different classes (or stipulations to account for exceptions to deletion processes)
- j. scope-based mechanisms

For the Scope theory we find (3.151).

(3.151) Mechanisms of the Scope Theory:
- a. the FEO Calculus
- b. limited triggers on auxiliary movement
- c. lexicosemantic selectional (scope) requirements
- d. scope-based mechanisms

(3.151d) refers to (a) the principle mapping immediate c-command (sister) relationships onto scopally interpreted order in semantic representation, (b) the

possibility for traces to mark narrow scope for moved items corresponding to their original position (Ernst 1991a, 1998a, Aoun and Li 1993), and (c) the principle that if an item's scope requirements are not met at LF the sentence is ruled out. These seem uncontroversial and are widely assumed for *wh*-movement, negation, focus phenomena, and the like. Therefore, it seems as though both theories need some version of these. If so, and if it is (almost) all they need, then (3.150a) and (3.150d–i) are redundant and can be eliminated by adopting the Scope theory and rejecting the Feature theory.

If the Feature theory does not adopt scope mechanisms for adjuncts, the contrast between (3.150) and (3.151) is still clear. Roughly speaking, (3.150a) and (3.151a) cancel each other out in terms of complexity, as do (3.150j) and (3.151d). The contrast between (3.150c) and (3.151b) comes out in favor of the Scope theory. (3.150b) and (3.150d–i) are all needed to account for phenomena that the Scope theory handles simply and quite generally by means of just (3.151c–d).

Moreover, since much of this falls out from the same principles, the Scope theory predicts that many of the phenomena handled by these theoretical mechanisms should coincide and not vary across languages. Consider two examples. First, that topicalized manner adverbs should be acceptable when they are the only adverb in the sentence (as in (3.144b)) but not when negation or a modal adverb is present (as in (3.148b)) follows for exactly the same reason that manner adverbs come after negation and modal adverbs in nontopicalized sentences: topicalized manner adverbs obey the same sort of scope constraints they have in their base positions. As noted in section 3.10.3, the Feature theory could treat topicalization restrictions by some constraint on crossing movements, continuing to take base order as resulting from UG's rigid order of functional heads. The two phenomena are independent and need not both occur; yet they do, as the Scope theory predicts.

Now let us look at the second example: that there are positions for functional adverbs like *usually* above a clausal predicational adverb like *wisely* (as well as below it) and that manner adverbs do not precede the latter follow from the same principles that permit participant adjuncts to be freely ordered with respect to each other. In other words, the different degrees of semantic selectivity of these different subgroupings underlie both phenomena. On the Feature theory, however, they unconnected: in one case it is a matter of where different scope positions are allowed (for *usually*); in the other it has to do with whatever property allows iteration for *v* but not for the heads that license predicationals.

Therefore, not only is the Scope theory simpler and more motivated for each of the individual data sets discussed, it also predicts that they should all

act according to the same principles, as they indeed appear to do. The Feature theory predicts this only by stipulation.

3.11 Summary and Conclusion

3.11.1 Summary

In this chapter I built on the semantic analysis of chapter 2, making crucial reference to the semantic requirements of adjuncts of different classes and to a compositional system for Fact-Event Objects (FEOs). Adjuncts can be (roughly) divided into those without scope requirements (participant adjuncts), those with tight scope requirements (for a particular FEO: predicational adjuncts), and those with somewhat looser scope requirements (functional adjuncts). Within each group there are further differences among subclasses with tighter and looser requirements; for example, modals versus exocomparatives, aspectual versus focusing adverbs. The main claim is that these requirements must be met at LF and that adjuncts are licensed, in large measure, in all and only those positions where the requirements can be met.

I outlined seven arguments for this approach over the Feature theory. First, the Scope theory accounts for multiple positions of predicational adverbs straightforwardly: it predicts that there is a contiguous range of positions among auxiliaries in which a given adjunct's semantic requirements can be satisfied, starting as low in structure as the lowest projection representing the FEO required by that adverb and moving as high as when a head or another adjunct forces raising of the FEO. By contrast, the Feature theory can make these predictions only with many stipulations and/or redundancies, and misses the generalization about how an adverb's range of positions can be predicted from its selectional properties.

Second, the Scope theory predicts correctly that functional and participant adjuncts have a wider range of positions than predicationals; the Feature theory cannot do so as easily because it must treat the occurrences of one functional adverb as involving separate heads, each of which contributes a different bit of meaning. Once these purported semantic nuances are examined, though, it does not seem plausible, or sufficiently general, to attribute them to individual heads. As for participant adjuncts, the Feature theory must allow multiple heads with different syntactic licensing properties from those for predicational or functional adverbs. It might be possible to derive these different properties from the semantics of the various adjuncts, but this adds an extra complication avoided on the Scope theory, which exploits the semantic differences directly.

Third, the Scope theory predicts ordering restrictions directly on the basis of semantic anomalies induced by the ordering and generalizes easily to parallel cases of ordering between adverbs and heads, and between related pairs of adjectives. In each such specific case, an adjunct's basic range of positions happens to be reduced by some other element – specifically, by the same mechanism that sets the basic range in the first place. The Feature theory, again, requires complications in movement theory and does not extend to the parallel data sets without extra machinery.

Fourth, the Scope theory predicts that scope-taking adjuncts cannot switch positions easily, since this often induces anomalies, while non-scope-taking adjuncts permute much more freely. Again, this follows from the basic theoretical machinery without additions. On the Feature theory this contrast cannot be expressed without further additions.

Fifth, the Scope theory predicts differences among adjunct classes that allow multiple occurrences in one clause, such as frequency or locative phrases, and those that do not, according to their semantic properties. The Feature theory must do this arbitrarily.

Sixth, the Scope theory accounts for the possibility and interpretation of coordinated adjuncts without any additions. The Feature theory requires complicating the usual account of deletion to allow for stranding adverbs (usually banned) and conditions on deletion.

Seventh, the Scope theory explains these six phenomena by means of a set of related, scope-based principles, correctly predicting that they correlate with each other in certain ways. The Feature theory must resort to many different, unconnected mechanisms (or else suffer from redundancy if it adopts scope-based mechanisms for one or more of these phenomena).

On the basis of these seven arguments, I concluded that the Scope theory of abverb licensing is to be preferred, since it captures the facts more generally and simply than the Feature theory.

3.11.2 On Restrictiveness

Cinque, Alexiadou (1997), and others have claimed that putting all adverbs into Spec positions, in one-to-one licensing relationships with heads, yields a more restrictive theory than allowing adverbs to be adjoined. It is important to note, however, that this is not the same notion of restrictiveness commonly invoked in the early days of generative grammar, when the child language learner was seen as having to construct the rules of her grammar. On the latter view, limiting the number of possible licensing relationships (or permissible structural conditions for a given process, possible landing sites for some

movement, etc.) reduced the burden on the child learner by cutting down on the number and complexity of rules to be considered in this task. By contrast, in current P&P grammar the child only needs to determine the correct value for each of a number of parameters provided by UG. Parameter choices are behind the systematic differences among languages; the child's only task is to sort through the possibilities for this cross-linguistic variation and figure out the type of language in question, for each point of potential variation.

Therefore, regardless of whether there are one, or two, or seventeen possible licensing relations, as long as the child does not have to make a choice – that is, as long as UG determines how each sort of phrase is licensed in a given context – then this is not a matter of restrictiveness in the sense of reducing the choices facing the learner. Rather, it is a matter of simplicity: if a grammar can get along with just one licensing relationship for a given type of phrase, then, all other things being equal, it is to be preferred over a grammar with more licensing relationships. Adjunction-based theories of adverbial distribution are just as deterministic as Cinque-style Kaynean theories, since there are no parameters for adjunct-licensing relations. Moreover, both theories require two types of licensing relations: for Cinque and Kayne, Specs still have to be distinguishable according to two subtypes, traditionally called "Spec" and "adjoined" (see chapter 8 for one example of a difference in properties). Whether the distinction is treated as one of phrase structural positions or of features of one position makes no difference for either restrictiveness or simplicity.

The relevant criterion is therefore simplicity. In this chapter I have been at pains to show that the Scope theory is a simpler one, with arguments primarily based on the Feature theory's requirement that a given adverb have a unique position in a clause mandated by UG. However, it may be possible to go further and show that the former is simpler precisely by virtue of rejecting syntactically based adverbial licensing in Spec positions. There are two reasons to think that this might be so. First, if Borsley (1997), Ernst (1998f), and others are right, the movement rules necessary to make the Kaynean program work require such a level of complexity and arbitrary stipulation that the restrictiveness of the mechanisms for generating base structures is correspondingly reduced (chapter 4 has extensive discussion on this). Second, while Cinque recognizes the semantic generalizations underlying many of adjunct distribution facts, he explicitly rejects deriving the relevant syntactic behavior from them directly. Yet surely syntactic theory demands reducing redundancy and increasing the level of explanatory power by exploiting these generalizations. For example, as noted, on a Feature theory there might be a principle that restricts the features licensing participant adjuncts to (any of several) shell

*v*P heads, presumably by relating this structural property to these PPs (or the associated *v*Ps) representing "predicates" semantically. By contrast, the more restricted distribution of features licensing predicational adverbs would be keyed to their selection of FEO arguments. This, at least, is an improvement over the bare stipulation of different properties of *v* heads versus the modal, aspectual, and other heads that license predicationals. One might set up a system whereby the semantic properties of different adjunct subclasses underlie corresponding syntactic features for heads' position in the hierarchy, multiple occurrences, and so on (this is in fact what Cinque implies [pp. 134–35]).

However, such a system is still redundant because it embodies duplications with respect to the Scope theory, which (a) dispenses with the intermediary of features, (b) needs no special provision for differentially mapping adjuncts' semantic properties to heads' syntactic properties, and (c) does not have to stipulate the complete ordering of clausal functional projections. On the Scope theory, the difference follows from the general principles in (3.151). This, at its most fundamental, is the reason why the Feature theory is unlikely to be the correct theory of adjunct syntax.[50]

3.11.3 On Arguments for Adverbs in Spec

Cinque (chapter 2) advances two arguments that adverbs are uniformly licensed by Spec-head relations to functional heads. The first is greater restrictiveness, but as just discussed, this argument holds only if all else is equal, and we have seen that licensing adjuncts in this way makes the overall grammar less restrictive generally; thus all else is not equal.

His second, empirical argument is based on alternate orders of adverbs and participles. In (3.152) from Italian (Cinque's (2) [p. 45]), the participle *ricevuto* 'received' may occur on either side of the adverb *già* 'already'.

(3.152) a. Non ha mica già *ricevuto* più niente.
not has Neg already received any-more nothing
'He has not already any longer received anything.'
b. Non ha mica *ricevuto* già più niente.

Cinque claims (p. 45), "If AdvPs were adjoined to (possibly different) maximal projections, one would not necessarily expect the past participle to be able to appear between (virtually) any two AdvPs." That is, if (say) both *già* and *più* were adjoined to one projection, there would be no landing site for the participle *ricevuto* to land between them. There must be a landing site for a head between any two pairs of adverbs; thus only one adverb is adjoined

to each projection, and treating AdvPs as in Spec automatically predicts this one-to-one correspondence. However, this argument rests on the assumption that a given adverb must always adjoin to the same projection. If, for example, *già* and *più* may adjoin to (say) PredP in (3.152b) and the former adjoins to the next higher projection while the latter is still adjoined to PredP in (3.152b), then the facts are accounted for.

Cinque (p. 49–50) further considers the possibility that more than one adverb may adjoin to the same maximal projection (or that they might be in multiple Spec positions). Observe (3.153) (his (19) [p. 49]).

(3.153) a. Gianni saggiamente ha accettato.
Gianni wisely has accepted.
b. Gianni ha fortunamente accettato.
Gianni has luckily accepted.
c. *Gianni saggiamente ha fortunamente accettato.
Gianni wisely has luckily accepted.

His argument against this option is: "If the auxiliary occupied the same position in [3.153]a–b and 'subject-oriented' and 'evaluative' adverbs were freely adjoinable to either the left or the right of the auxiliary, [the ungrammaticality of [3.153c]] would be unexpected. Some filtering principle would be needed to replace the overgeneration induced by free adjunction (or free generation in multiple Specs)." However, the auxiliary does not need to occupy the same position in (3.153a–b), given the usual analysis in which *ha* 'has' raises from its base position to Tense. Also the filtering principle, as we have seen, consists of the basic principles in (3.150), which are independently necessary and permit eliminating the mechanisms of one-to-one feature-based licensing. Therefore, there is no valid argument against the free adjunction of adverbs.

3.11.4 Rigidity and Locality

It is worth reflecting on the results claimed here. Cinque's version of the Feature theory takes as its founding empirical observation that adjunct order is basically rigid. It adopts a UG-mandated, fixed order of functional heads to license adjuncts and thereby derive their order. In doing so, it restricts a given adjunct to a unique base position, and its licensing mechanisms are strictly local, that is, exclusively between a head and an adjunct in its Spec position. However, the data show that adjunct order is not fundamentally rigid. When interfering semantic and pragmatic factors are removed, many

apparent cases of rigidity occur due only to this interference in particular cases. (Chapters 6–7 discuss many more such cases.)

Of course, there are some genuine cases of rigidity. This chapter represents an attempt to explain them by semantic means, as mediated by fairly simple principles for mapping syntactic structures to semantic representation. Crucially, these principles must operate according to general rules for scope interpretation and selection, not tied down to strictly local Spec-head relationships; it is this strict locality, so central to the Feature theory, that prevents it from reaching the level of generality and explanation that, I believe, is attained by the Scope theory.

4

Arguments for Right-Adjunction

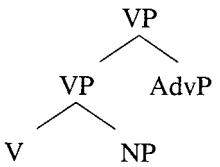
4.1 Introduction

4.1.1 Goal

Until very recently, it was usually assumed in generative grammar that adverbials generally occur in adjoined positions, on the edges of phrases made up first by heads, complements, and specifiers. When faced with phrases like the VP in (4.1), in the absence of any elaborated theory of adjunct syntax, positing a tree like that in (4.2) was quite natural.

(4.1) read the book silently

(4.2)



It was often assumed that any postverbal adjunct to the right of some element X (a verb, argument, or other adjunct) is adjoined higher than X, just as preverbal elements are adjoined to the left, producing a layered structure with the verb and its object(s) at the bottom and adjoined items attached progressively upward on both sides (Andrews 1983, Ernst 1984, Bowers 1993, among many others). This approach was embedded in the standard theory of word order typology, which considered languages to be parameterized as either head-initial or head-final (see Stowell 1981, Koopman 1983, and Travis 1984 for early Government-Binding [GB] formulations, and Saito and Fukui 1998 for a more recent one). I refer to this as the *Parameterized Direction Hypothesis* (PDH).

Starting with Larson (1988b), though, and continuing in a different vein with Kayne (1994) and many others, a popular current hypothesis has been that all languages have the same base structure (head-initial for Kayne) and that head-initial/head-final word order patterns are derived by movement. Thus all adjuncts adjoin to the left (or are in Spec position, which is to the left of heads) in base structure; any adjunct to the right of V in surface order must have arrived there by some sort of movement process, either of the adjunct itself or of other elements in the sentence. Such approaches assume a strict correspondence between linear order and hierarchical relationships in base structure, with anything to the left being higher than anything to its right. I refer to this view as the *Linear Correspondence Hypothesis (LCH)*, a term derived from Kayne's "Linear Correspondence Axiom" (LCA, Kayne 1994:6).

This chapter presents evidence to show that right-adjunction exists and therefore lends support to the PDH as a theory of linear order rather than to the LCH.

4.1.2 A Prima Facie Challenge to the LCH

I focus on sentences like those in (4.3), from head-initial languages like English, where one or more adjuncts occur to the right of the verb and its arguments.

(4.3) a. Miranda woke up slowly yesterday because she had taken a decongestant.
b. Negotiators work in their hotel rooms for long hours on purpose fairly often.
c. Julia didn't take her medicine twice again.
d. Danielle frequently buys a newspaper because her work demands it.

In (4.3a) three adjuncts follow the verb, in the order manner – time – cause, and each adjunct takes scope over the one to its left. (4.3b) illustrates a case of four postverbal adjuncts (locative – time – purpose – frequency), again with each adjunct taking scope over those to its left; although such cases of "stacked" adjuncts sometimes sound awkward in print and in isolation, they are fairly common and natural when spoken in context.[1] (4.3c–d) illustrate postverbal adjuncts that may take scope over preverbal adjuncts. In (4.3c) *again* takes scope over negation, which in turn has scope over the frequency

adverb *twice*: what she did again was to not take her medicine twice. In (4.3d), on one of two readings, what she does because of her work is to frequently buy a newspaper: thus the cause CP headed by *because* takes scope over the frequency adverb.

The patterns shown in (4.3) are not restricted to English but appear to be quite general in head-initial languages (SVO and V1), as illustrated in (4.4). With multiple postverbal adjuncts, those to the right take scope over those to the left:[2]

(4.4) a. Elle a préparé des plats pareils fréquemment
she has prepared some dishes similar frequently
l'année dernière. (French)
the year last
'She prepared such dishes frequently last year.'

b. Mi wnaeth o yfed cwrw am awr ar bwrpas. (Welsh)
ART did drink beer for hour on purpose
'He drank beer for an hour on purpose.'

c. Tsy manasa lamba tsara intsony Rakoto. (Malagasy)
not wash clothes well anymore Rakoto
'Rakoto doesn't wash clothes well any more.'

d. Bafana ba-natse tjwala masinyane kabili. (Siswati)
boys drank alcohol quickly twice
'The boys drank liquor quickly twice.'

e. Lisa ha guidato una Rolls Royce publicamente per
Lisa has driven a Rolls Royce publically to
impressionare i suoi amici. (Italian)
impress the her friends
'Lisa drove a Rolls Royce in public in order to impress her friends.'

By contrast, SOV languages have a strong tendency for all adjuncts to occur preverbally, as (4.5a–b) illustrate (and, as expected, leftward adjuncts take scope over those to the right).

(4.5) a. (Kanojo-wa) tokidoki mizukara lunch-o nuita
she-TOP occasionally willingly lunch-ACC skip-PST
({*tokidoki/*mizukara}). (Japanese)
occasionally/willingly
'She has occasionally willingly given up her lunch hour.'

b. Chelswu-nun elisekkeyto coyonghi wa-ss-ta
Chelswu-TOP foolishly silently come-PST-DEC
({*elisekkeyto/*coyonghi}). (Korean)
foolishly/silently
'Chelswu foolishly approached silently.'

c. Raam-ne zaruur vah kitaab dhyaan se paRhii
Ram-ERG certainly that book care with read-PRF-FEM
thii ({*zaruur/*dhyaan se}). (Hindi)
be-PST-FEM certainly/silently
'Ram certainly read that book carefully.'

d. Ahmet bazen hasta olduğu için kötü
Ahmet sometimes sick be-PST-3SG for bad
öksürüyor (*bazen). (Turkish)
cough-PRES-3SG
'Sometimes Ahmet coughs badly because of his sickness.'

e. Meli-at pilashash anoti taloah
Mary-SUBJ yesterday again sang
({*pilashash/*anoti}). (Choctaw)
yesterday/again
'Mary sang again yesterday.'

In some SOV languages, such as German and Dutch, certain adjuncts may occur to the right of the verb, but I ignore this fact temporarily. These two languages also represent the further wrinkle of V2 phenomena, by which the verb and one XP constituent obligatorily raise (move leftward) from their base positions to produce the surface order of matrix clauses (see chapter 5). I abstract away from these movements in discussions of typology, which focus on base order. Given these (and a few other) abstractions, head-initial and head-final languages thus show a basic difference in adverbial distribution, with the former allowing postverbal adjuncts and the latter disallowing them. Part of my argumentation depends on this basic difference.

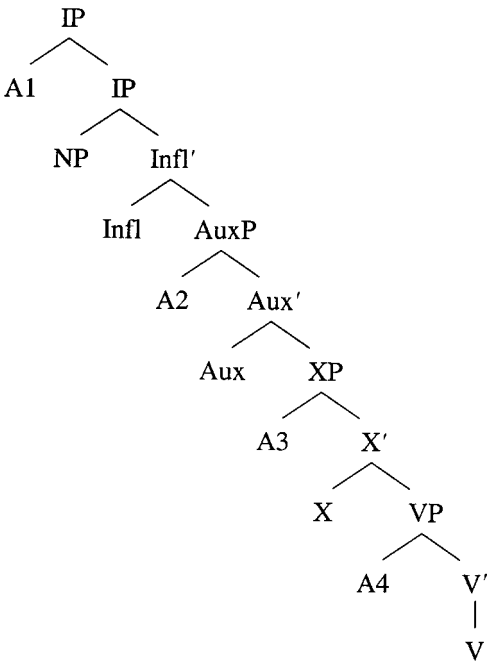
4.1.3 The Two Hypotheses

The LCH and traditional approaches posit radically different basic phrase structures for postverbal adjuncts. Given a sentence like (4.6), with the corresponding schema in (4.7), the LCH posits a structure like (4.8), while the PDH with right-adjunction is as in (4.9).[3]

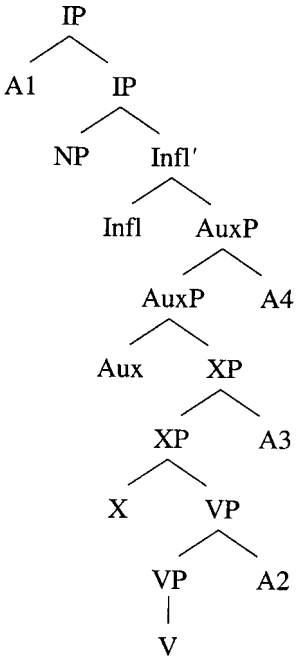
(4.6) She (often) had eaten (lightly) (on Sundays) (because of partying the night before).

(4.7) ADJCT1 – Infl – V – ADJCT2 – ADJCT3 – ADJCT4

(4.8)



(4.9)



(4.9) directly represents the surface order of the adjuncts in (4.6) and also correctly represents their scope relations in terms of c-command. (4.8) also represents the linear order directly but must resort to some other mechanism, such as raising adjuncts at the level of LF, to capture scope relationships. On other versions of the LCH (such as those adopted in Kayne 1994, Barbiers 1995, Alexiadou 1997, and Cinque 1999), where the positions of A2 and A4 would be reversed in (4.8), the scope relations are directly represented but various overt movements are required to produce the correct surface order. Much of my argumentation to follow rests on the theoretical cost induced by these movements, on either version of this theory.

4.1.4 Organization

In section 4.2 I discuss the traditional data in support of the PDH and then in section 4.3 present a detailed PDH analysis including right-adjoined adjuncts. Sections 4.4–4.5 present two alternative approaches, based on the LCH, in which I show how their attempt to bar right-adjunction ends up incurring unacceptably heavy theoretical costs. I thus conclude, in section 4.6, that the PDH is to be preferred.

4.2 Preliminary Evidence for the PDH: Concentric Phenomena

4.2.1 Introduction

Three sorts of data – linear order, scope relations, and constituent structure – meet in the guise of one generalization governing what might be termed "concentric phenomena." Regardless of base structure, the surface phenomena of languages appear to show concentric, verb-centered layering, with distance from V correlating with both (a) wider scope and (b) greater hierarchical distance from V (i.e., the farther an element X is from V, the bigger the minimal constituent containing X and V). The PDH with right-adjunction captures these facts directly, while the LCH does not. The next four subsections present four instantiations of this generalization.[4]

4.2.2 Constituent Structure (VP-Ellipsis, Substitution, Movement)

Among the classical demonstrations of constituent structure are those giving evidence for VP, that is, some constituent following an auxiliary with the main verb as its head (in some sense of "head"; the relevant constituent is often seen in current theory as some sort of "extended VP" à la Grimshaw 1991, whose main verb is only its "lexical head"). Such constituents are layered outward

from V, with the smallest containing V and its arguments, and successive constituents each containing this lowest one and one more adjunct (assuming binary branching). Restricting ourselves to the relevant cases of postverbal adjuncts, we find the patterns illustrated in (4.10)–(4.11).

(4.10) They said they certainly would win convincingly that first week,
a. and they did [___].
b. but they only did [___] the second week.
c. but they did [___] rather anemically in the second week.

(4.11) They said they would win convincingly that first week,
a. and they certainly [did so].
b. but they only [did so] this week.
c. but they only [did so] rather anemically this week.

For each of the second conjuncts in (4.10)–(4.11), one may informally think of its base structure as represented by the first conjunct. For the (a) sentences, the bracketed unit corresponds to *win convincingly that first week*, which is standardly therefore taken to be a constituent, some (possibly extended) projection of V. In the (b) sentences, the material in brackets is interpreted as *win convincingly*, and in (c) as *win*. This shows a layered constituent structure that is represented directly in (4.9) and at odds with (4.8).

4.2.3 Correlation of Scope Relations and Linear Order

The connection between linear order and scope is that the farther an adjunct is from V, the wider scope it takes; assuming that scope is mediated structurally by c-command, this can be rephrased as 'farther from V is higher'. For two or more preverbal adjuncts, an adjunct to the left always takes scope over another one to the right, while for postverbal adjuncts, the reverse holds: rightward adjuncts obligatorily take scope over any postverbal adjuncts to the left.[5] Observe (4.12)–(4.13).

(4.12) a. Carol willingly has frequently made extra trips.
b. Carol frequently has willingly made extra trips.

(4.13) a. Carol has made extra trips frequently willingly.
b. Carol has made extra trips willingly frequently.

(4.14) a. Purposely he again disobeyed orders.
b. Again he purposely disobeyed orders.

(4.15) a. He disobeyed orders purposely again.
b. He disobeyed orders again purposely.

In (4.12a) what Carol is willing to do is to frequently make extra trips, while in (4.12b) it is a frequent occurrence that she willingly makes extra trips. The same holds for (4.13), where (4.13a) has the same reading as (4.12a), and (4.13b) is synonymous with (4.12b). (4.14)–(4.15) are parallel; in (4.14a) what he did on purpose was to disobey orders for a second time, while in (4.14b) his intention was only to disobey orders, not to disobey them twice. In all eight sentences, the adjunct farther from V takes scope over the adjunct closer to V, concentrically. This pattern is predicted straightforwardly by the right-adjunction structure in (4.9) but cannot be captured directly if (4.8) is adopted.

4.2.4 Postverbal Adjuncts with Scope over Preverbal Adjuncts

As noted in section 4.1, there is no a priori fixed scope relation between one preverbal and one postverbal adjunct (though particular lexical items, structures, and contexts often result in only one relation being possible in a given sentence). In (4.16), for example, all sentences are ambiguous.

(4.16) a. Hal hasn't been in Paris for three weeks.
b. We have never left early because we were {tired/fascinated}.
c. They almost got hit again.
d. The patrol intentionally returned on Tuesday.

(4.16a) has two readings; on one, we are saying that there has never been a three-week period in which Hal has been in Paris – perhaps he never stayed over a week on any of his visits. Here negation takes scope over the postverbal duration PP. On the second reading, there is a period of three weeks, extending up to now, in which Hal has been absent from Paris (thus the PP takes scope over negation). In (4.16b) there is a reading brought out by using the phrase *because we were tired* in which it has never happened that we left due to fatigue (never > cause); on the other reading, favored by using *because we were fascinated*, it is due to fascination that we have never left early (cause > never). The two readings of (4.16c) are paraphrased by 'It almost happened that we got hit again' (almost > again) and 'It happened a second time that we almost got hit' (again > almost). Finally, in (4.16d) it could be that the patrol intended to come back, and this happened to occur on Tuesday (time > intention), or the patrol's intent was specifically to arrive on that day (intention > time). (4.17) provides further examples.

(4.17) a. They have occasionally stayed home out of fear of appearing too enthusiastic.
b. Lisa ostentatiously bought a Rolls Royce in order to impress her friends.
c. The volcano completely blew the top off the mountain {so/with the result} that the destruction was enormous.
d. They had surreptitiously recorded the meeting quite often.
e. We will merely wrap it in paper if you want.
f. They have often gone there for just a half hour willingly.

In general, at least the types of postverbal adjuncts given in (4.18) may take wide scope in this way.

(4.18) a. duration (4.16a)
b. cause (4.16b)
c. iterative (4.16c)
d. time (4.16d)
e. reason/purpose (4.17a–b)
f. result (4.17c)
g. frequency (4.17d)
h. conditional (4.17e)
i. intention (4.17f)

In none of these cases is any prosodic break required before the adjunct, despite the claim made by Fillmore ([1994] and repeated in Cinque [1999:25]), although a break is always possible (and preferred, in a few instances, such as (4.17c)). Neither is focal stress always necessary for the postverbal adverbial to take wide scope (contra Phillips 1996:38; see section 4.4 for further discussion), as for (4.16c) and (4.17e), which are fine without stress on the wide-scope final adjunct. As with the scope data in the previous section, these facts are expected with (4.9) but are not with the structure in (4.8).

Before moving on, it is well to note that the scope pattern shown here is sometimes denied in the literature. Two discourse factors, however, must be borne in mind. First, general left-to-right processing generally gives earlier elements a tendency to wide scope over later ones (see Kurtzman and MacDonald 1993 and references there;[6] also Klein 1994:145f. and Thompson 1999:149–50 for discussion with respect to adverbials). Second, adjuncts are optional elements by definition, so that when more than one is used in a sentence, there is a tendency to take them all as foregrounded. This is only a tendency, however: when all but one adjunct is backgrounded in context, the remaining one (often clause-final, given normal stress patterns) is focused

and therefore more easily processed as having wide scope. Taken together, the effect is that, in isolation, a preverbal adjunct tends strongly to take wide scope; but in normal speech, in context, postverbal adjuncts often take wide scope. Observe the effect of context in (4.19)–(4.21).

(4.19) Do you think the athletes don't know they're getting improper help? The athletes don't know they're getting improper help most of the time. (ESPN *Sports Center*, Sept. 27, 1999 5:52 PM)

(4.20) If I'd come [to the spaceport] two weeks before, I could have avoided a great deal of trouble. [. . .] I hadn't come here for one big reason. It scared me to death. (John Varley, *The Golden Globe*, 90)

(4.21) (After discussion of the Chrysler Corporation's financial troubles:) Chrysler almost went belly-up twice in the last 20 years. (Don Gonyea, NPR, Nov. 17, 1998)

In (4.19) the entire presupposed sequence is repeated by the second speaker, and the clause-final adjunct *most of the time* naturally takes wide scope. In (4.20) the preceding context establishes that the narrator did not go to the spaceport, so this is presupposed and *for one big reason* takes scope over negation; similarly, in (4.21) *twice* has wide scope over *almost*, as the company's closeness to collapse is already presupposed. Thus sentences with postverbal adjuncts possibly taking wide scope must be considered in an appropriate context.

4.2.5 Secondary Predicates

Adjunct secondary predicates linearize with object-predicates closer to V than subject-predicates ((4.22)–(4.23)).

(4.22) a. They drank their martinis dry standing.
b. *They drank their martinis standing dry.

(4.23) a. She bought it (the fruit) fresh still unaware that her refrigerator had broken.
b. *She bought it (the fruit) still unaware that her refrigerator had broken fresh.

On the standard assumption that objects are structurally closer to V than subjects are, at least in terms of S-Structure/Spell-Out, this is another

concentric phenomenon (see Winkler 1997). If (4.9) represents the correct structure, these adjunct predicates' interpretation is accounted for on any theory making use of some minimality principle, by which the object is associated with the lower predicate and the subject with the higher one. (4.8) makes precisely the opposite, and wrong, prediction.

4.2.6 Conclusion

All four concentric phenomena reviewed in this section support the existence of successive right-adjunction for adverbials to the right of the verb in a VO language, and as a result, the PDH gains support over LCH theories, which deny the possibility of right-adjunction.

This conclusion is only temporary, however. There is a great theoretical attraction to the LCH in that it derives linear order from hierarchical relationships in a restrictive and elegant way. In particular, all adjunctions are to the left of their heads, and the appearance of right-adjunction like those in (4.3) must result from movement of some sort. Thus if the PDH is correct and genuine right-adjunction exists, it must be shown that its approach of somewhat more complex principles for linearization, plus simpler movements, is simpler and more restrictive than the LCH approach of simpler linearization mechanisms with more complex movements. The rest of this chapter will show that this is so.

4.3 A PDH Theory, with Right-Adjunction

4.3.1 Introduction

There are of course many specific forms that PDH theories can take. In this section I propose an analysis that maps adjuncts directly onto base structure in the positions they will have at the surface (modulo Heavy Shift and similar rearrangements, the familiar types of A′-fronting rules, and the like). The key to this approach is its basis in the C(omplement)-complex and the F(unctional)-complex, each with an associated direction for XPs with respect to heads. These directions are invoked by a set of Directionality Principles to determine linear order, but they also have a role in deriving certain properties of movement (see chapter 5). Moreover, the Directionality Principles make strong claims about the connection between the basic order of complements and that of adjuncts in a given language. Thus there are theoretical simplifications and restrictiveness to be found in PDH theories as well.

Several sets of data concerning the distribution of adverbs are at issue throughout this chapter:

(4.24) a. Linear order, scope, and pro-forms all display concentric phenomena.
b. Head-final languages generally require all adjuncts to be preverbal; head-initial languages in principle allow adjuncts on either side of V.
c. Predicational adverbs are restricted to preverbal positions for their clausal readings in all languages.
d. In head-initial languages, some adjuncts are restricted to preverbal positions, some to postverbal positions, and some may occur in either position.[7]

The three groups of adjuncts identified in (4.24d) bear some discussion before we continue. To some extent, they can be identified by their semantics, but weight – including considerations of length, focus, and syntactic category – also plays a part.

Obligatorily preverbal adjuncts appear to be of two types. The first is made up of clausal Predicational adverbs, such as *apparently*, *oddly*, *similarly*, *politely*, and *unwillingly*. As noted in chapter 3, they do not occur clause-finally (although their manner versions do), as in (4.25d–e).

(4.25) a. Honestly, why would anyone do that (*honestly)?
b. (I think that) surely they will return covered in glory (*surely).
c. Patrick has unfortunately lost his armadillo (*unfortunately).
d. Juliet may have intelligently answered the questions (intelligently).
e. Martha was woodenly speaking of her embarrassing experience (woodenly).

This seems to hold true quite generally across languages. (4.26) illustrates the same for French, (4.27) for Italian (in part from Cinque 1999:15; judgments in (4.26)–(4.27) hold for clausal [non-manner] readings only).

(4.26) a. Honnêtement, pourquoi le ferait- il (*honnêtement)?
honestly why it would-do he (*honestly)
b. Sûrement il sera revenu à temps (*sûrement).
surely he will-be returned on time (*surely)
c. Patrick a malheureusement perdu son chameau
Patrick has unfortunately lost his camel
(*malheureusement).
(*unfortunately)

d. Juliette aura très intelligement répondu aux questions
Juliette will-have very intelligently answered to-the questions
(*intelligemment).
(*intelligently)

e. Marthe avait doucement parlé de son expérience
Marthe had softly spoken of her experience
gênante (doucement).
embarrassing softly
'Marthe spoke softly about her embarrassing experience.'

(4.27) a. Onestamente, non posso sopportare neanche Carol (*onestamente).
honestly not I-can stand not-even Carol
'Honestly, I can't stand Carol.'

b. Probabilmente prenderò il treno (*probabilmente).
probably I-will-take the train
'Probably I will take the train.'

c. Fortunatamente Mario si è rimesso dalla sua malattia
fortunately Mario self is recovered from-the his malady
(*fortunatamente).
(*fortunately)
'Luckily Mario has recovered from his illness.'

d. Ho saggiamente aspettato Gianni (*saggiamente).
I-have wisely waited-for Gianni
'I have wisely waited for Gianni.'

e. Marta aveva tranquillamente parlato della sua brutta esperienza
Marta had tranquilly spoken of-the her bad experience
(tranquillamente).
(tranquilly)
'Marta had spoken tranquilly about her bad experience.'

The same facts hold for head-final languages like Japanese and Hindi, as part of the broader generalization that they generally disallow postverbal adverbs.

The second type which must be preverbal is made up of a subset of functional adjuncts, such as *not*, *hardly*, *almost*, and *just*. Although there is a tendency for the more morphologically "light" adverbs to be restricted to preverbal position, this is not ironclad, and there is variation among speakers and languages for some lexical items (considering translations of "the same" adverb; compare the Chinese and Yoruba examples in (4.29)–(4.30) with their glosses, for example).[8]

(4.28) a. The government has (hardly) proven its case (*hardly).
b. The actors might be (not) doing their best (*not).[9]
c. The caravan has (just) left (*just).

(4.29) a. Ta bai pao-le (*bai) yi tang (*bai).
S/he in-vain run-PRF a trip
'S/he made a trip in vain.'
b. Lao Wang yijing zou-le (*yijing).
Old Wang already go-PRF
'Old Wang left already.'

(4.30) a. Ajike {tile/ tete/ sese} si lekun. (Akin Akinlabi, personal communication)
Ajike in fact/ early/ just now open door
'Ajike opened the door {early/just now/in fact}.'
b. *Ajike si lekun {tile/tete/sese}.

(See Cinque 1999 and Alexiadou 1997 for parallel facts in Italian, French, and Modern Greek.)

A second group of adverbials may occur on either side of the verb. These include manner-reading predicationals, as illustrated in (4.25)–(4.27) and the other functionals, as in (4.31).[10]

(4.31) a. The right-wing militants (once again) have started up (once again).
b. George had (twice) called over to Fabrizio (twice).
c. (Now) everyone has finished their tiramisu (now).
d. The lights (often) go out (often).
e. Herb (also) dances zydeco (also).

Again, this is a general pattern in head-initial languages; (4.32)–(4.33) provide examples of manner adverbials in both positions, and (4.34)–(4.35) provide functional examples.

(4.32) a. Il m' en a parlé intelligement. (French)
he me of-it has spoken intelligently
'He's spoken of it to me intelligently.'
b. Nell' intervista, Giulietta aveva controllato le proprie
in-the interview Giulietta had controlled the own
risposte rigorosamente. (Italian: Luigi Burzio,
answers rigorously personal communication)
'In the interview, Giulietta had controlled her answers rigorously.'

c. Dani ana al ha-sheelot be-savlanut.
Dani answered to the questions in-patience
(Hebrew: Asya Pereltsvaig, personal communication)
'Danny answered the questions patiently.'

d. Jialing ba gunzi wo de hen jin. (Chinese)
Jialing BA club grip MOD very tight
'Jialing gripped the club tightly.'

(4.33) a. Il a très intelligement parlé de cette affaire. (French)
he has very intelligently spoken of this matter
'He's spoken of this matter very intelligently.'

b. Nell' intervista, Giulietta aveva rigorosamente controllato
in-the interview Giulietta had rigorously controlled
le proprie risposte. (Italian: Luigi Burzio,
the own answers personal communication)
'In the interview, Giulietta had rigorously controlled her answers.'

c. Dani be-savlanut ana al ha-sheelot.
Dani in-patience answered to the questions
(Hebrew: Asya Pereltsvaig, personal communication)
'Danny patiently answered the questions.'

d. Jialing jinjin de wo-zhe gunzi. (Chinese)
Jialing tight DE grip-IMPF club
'Jialing was tightly gripping the club.'

(4.34) a. Ils ont (souvent) gagné de l'argent (souvent). (French)
they have often won of-the money often
'They have often won money.'

b. Le train de Bruxelles est (aussi) arrivé à temps (aussi).
the train of Brussels is also arrived at time also
'The Brussels train has also arrived on time.'

c. La direction a (maintenant) décidé l' affaire (maintenant).
the management has now decided the matter now
'The management has now decided the matter.'

(4.35) a. Hanno (spesso) vinto dei soldi (spesso). (Italian)
they-have often won some money
'They have often won money.'

b. Il treno da Roma (di nuovo) arriverà in ritardo (di nuovo).
the train from Rome again will-arrive late again
'The Rome train will arrive late again.'

c. La direzione ha (adesso) deciso la questione (adesso).
the management has now decided the question now
'Management has now decided the question.'

The third and final group is made up of obligatorily postverbal adjuncts. These include participant PPs like *with a shoe* or *for anyone listening*, as well as phrases of the "heavier" categories PP and CP that belong semantically in the functional class:[11]

(4.36) a. They (*for everyone there) sang (for everyone there).
b. Ice-fishermen (*because they like it) fish (because they like it).
c. The cupcakes (*over an hour before we got there) had been finished off (over an hour before we got there).

(4.37) a. Il avait (*pendant cinq minutes) regardé Pierre
he had during five minutes watched Pierre
(pendant cinq minutes).
during five minutes
'He watched Pierre for five minutes.'
b. Marie avait (*parce qu' elle aime les frites) mangé beaucoup
Marie had because she likes french fries eaten a-lot
(parce qu' elle aime les frites).
because she likes french fries
'Marie had eaten a lot because she likes french fries.'

Combined with the examples given in previous chapters and in section 4.1.2, this material shows that there are definite cross-linguistic patterns of the linear distribution of various types of adjuncts, according to whether the language in question is head-initial or head-final, as listed in (4.24). An adequate theory of adverbial distribution must predict these corrrectly and ought to provide some deeper explanation for them as well.[12]

4.3.2 The C- and F-Complexes

In section 4.3.3 I present the core formal principles that determine the basic position of adjuncts with respect to V. These principles apply to all phrases of a language and thus represent a full theory of linearization under the PDH, deriving the basic head-initial/head-final distinction. I claim that in doing so it allows a more restrictive grammar than is possible under the LCH, in part because it permits restrictive linkages among the positions of diverse elements.

Before doing this, however, it is necessary to consider the basis for linearization of Specs and complements. I believe that the difference between

them goes deeper than a mere structural distinction; both the distinction itself and many of the different properties adhering to the two positions can be derived. I suggest that these two positions represent, respectively, the C-complex and the F-complex, the former suggested by both *content* and *complement*, the latter by *functional*. Each is a set of linked properties, as shown in (4.38).

(4.38) a. C-complex: content: overtness, tendency toward heaviness, PF conditioning
direction: right
b. F-complex: function: may be covert, tendency toward lightness, LF conditioning
direction: left

Complements typically have content, in the traditional sense that nouns, adjectives, and verbs have content semantics, as opposed to functional morphemes like negation, complementizers, aspect markers, and the like. Thus, of course, they are overt items (or at least strongly tend to be, if we consider pro/PRO). They also may be licensed in part by PF principles; this is discussed in section 4.3.5. By contrast, what defines Spec position is some special grammatical function (Ernst 1991b). Surface subject positions are those to which a verb's external argument moves, triggered by a Case or EPP feature (depending on the exact analysis); Spec,CP is the landing site for *wh*-versions of arguments and adjuncts licensed in their base positions; the same sort of function holds for the Spec positions of FocusP, NegP, and the like. While of course the items in these Specs may be overt, it is also widely accepted that there may be corresponding covert operators (e.g., a zero *wh*-operator in Spec,CP when Comp is filled by *whether*). Even if functional elements are not covert, it is well known that they tend to be morphologically light (see Croft 1990:156ff., among others). Finally, it is a central idea in current Principles and Parameters theory that such functional items are licensed at LF.

The two directions in (4.38a–b), which will be referred to (respectively) as C(omplement)-Dir(ection) and F(unctional)-Dir(ection), are associated with the properties of content and function. It is a common assumption that Spec positions are universally to the left of their head, and this is taken as derived from F-Dir.[13] C-Dir is in effect parameterized and is responsible for the head-final/head-initial distinction.[14] The C-complex and F-complex are to be viewed as prototypes; it is not being claimed that the properties listed in (4.38a–b) are always linked formally in every case. However, I do suggest that (4.39) holds.

(4.39) A grammar is more highly valued to the extent that it is consistent with the patterns of the C- and F-complexes.

4.3.3 Directionality Principles

The basic principles for linearization are given in (4.40).[15]

(4.40) Directionality Principles:
a. [+F] items are licensed only in F-Dir; otherwise
b. Languages are parameterized for whether C-Dir is active or inactive:
If C-Dir is inactive, then all XPs are [−R];
If C-Dir is active, then for any [−F] YP in XP, if X^0 or YP bears a C-complex feature, then YP is [+R].

The role of features is important for Directionality Principles, and before examining the effects of (4.40) their nature must be made clear. [±R] is a feature which gives "instructions" to PF, such that any [+R] constituent is linearized to the right of its sister. It may be seen as a diacritic on category labels at each node. There are two central C-complex features, conforming to the set of properties defined in (4.38a): [+Lex], which defines lexical categories like N and V as opposed to Tense, Aspect, Focus, Comp, and so on, and [+S], which is used to indicate an element selected by a head, that is, its complement.[16] F-complex features include the familiar ones in P&P grammar that license items in Spec: Case and EPP features, agreement features, Focus, *wh*, and so on. All of the features just listed will be considered [+F], making up the subset of F-complex features defined as those that license elements according to some grammatical relationship in a Spec-head configuration. Following Hornstein (1999), I take internal θ-roles (whether arranged in a θ-Hierarchy or considered as the semantic roles for specific positions within L-syntax, as for Hale and Keyser [1993]), to be assigned as [+F] features (contra Chomsky 1995b). [+F] is the most basic realization of F-Dir, and for the moment I take items bearing this feature to be in Spec position by definition:[17]

(4.41) Spec_{def} = an adjoined position marked [+F]

In this way, the leftwardness of Spec is derived.[18]

Now let us examine how the basic parameterization in (4.40b) derives the linear ordering of both arguments and adjuncts in head-initial and head-final

languages. (As before, we abstract away from the irregularities of head-final languages that allow postverbal constituents or head-initial CPs, such as Dutch and German, and from verb raising, topicalization, and other well-known movements.) First, if C-Dir is inactive, then all nonheads are [−R] and therefore are to the left of their heads.[19] This holds for (a) all items in Spec positions (including some arguments of V and moved items like subjects, *wh*-phrases, and so on), (b) all complements of functional heads, and (c) all adjuncts.

If C-Dir is active, then linearization is sensitive to C-complex features on sister constituents when the nonhead is [−F], according to (4.40b). If either the head X or the nonhead YP bears a C-complex feature, then YP is [+R]. There are two subcases: either the head is lexical (bearing the C-complex feature [+Lex]), or the YP is a selected item and thus a complement (the canonical C-complex constituent). Notice that this assignation of [+R] does *not* apply to θ-marked arguments of V, because they are licensed by [+F] features, and thus are in Spec. (4.42) summarizes the results for head-initial languages.

(4.42)

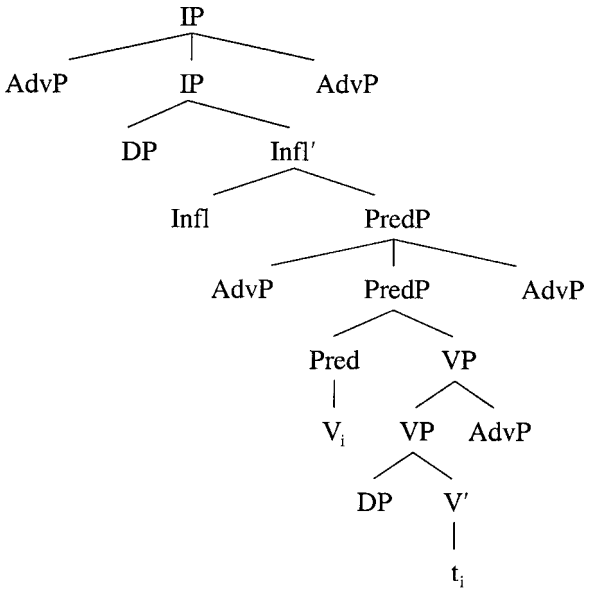
		HEAD:	
	YP	[+Lex]	[−Lex]
a.	[+F] (Spec position)	L (arguments of V)	L (Specs of functional heads)
b.	[±F] (complement position)	(L) (arguments of V)	R (complements of functional heads)
c.	[−F] (adjunct position)	R (manner/measure)	L or R (various)

(4.42a) represents Spec positions, both arguments of V and Specs of functional heads; as noted, they are always to the left of the head. In (4.42b), given this view of base structure, arguments of V are never structurally complements and so are actually already accounted for as Specs (with V raising over them). Functional heads, however, do not assign θ-roles to their complement YP; they merely select YP, which therefore bears a C-complex feature, and by (4.40b) this YP is marked [+R], so that it will be linearized to the right of its functional head. Finally, (4.42c) accounts for adjuncts. Within VP all adjuncts must be right-adjoined, because the relevant head X is of the category V (a lexical category bearing a C-complex feature), so by (4.40b) they must be marked [+R]. Above VP, in projections of functional heads, neither the head

nor the adjunct bears a C-complex feature, since the heads are [−Lex] and the adjuncts are not complements. As a result, (4.40) says nothing for this case – adjuncts above VP in head-initial languages may thus be either preverbal or postverbal in principle.

These results may be seen graphically in (4.43) for head-initial languages (where ternary branching represents the two possibilities for binary branching and AdvP stands in for any adjunct).

(4.43)



(Recall that V is assumed to always raise to PredP, moving above direct objects in Spec,VP; see chapter 5.) F-Dir plays the more important role in linearization, determining the leftward position of Specs (since they are [+F]), both (a) landing sites in functional projections (as for subjects in Spec,IP) and (b) base positions of arguments of V within VP. Complements of functional heads (such as PredP) are to the right of their heads, since they bear [−F] and [+S] (a C-complex feature). Adjuncts within VP are necessarily to the right of V because they are [−F] and V is [+Lex] (a C-complex feature); combined with obligatory V-to-Pred movement, this in essence embodies the claim that the lexical VP is strictly head-initial in VO languages.[20] Finally, adjuncts above VP are unspecified for direction, because neither they nor the heads of functional projections bear a C-complex feature. Thus other considerations determine their position (as discussed momentarily in section 4.3.4 and in chapter 5).[21]

All these results come from (a) the definitions of directions and features associated with the C- and F-complexes, and (b) the parameter in (4.40b) (preventing or allowing some effect of C-Dir in a language), corresponding to the traditional head-initial/head-final parameter. The features are independently necessary except for [±R], which merely implements the two fundamental directions that also predict other results. There is also no need to stipulate the X′-schema, since the nature of Spec is derived.

I assume that the Directionality Principles are realized formally as a kind of checking of [±R]. Consider first (4.40a). [+R] is randomly assigned, perhaps in the lexicon;[22] by treating it as illegitimate at LF (since it is concerned only with linear order and not semantic interpretation), we may take (4.40a) as ruling out any [+F] co-occurring with [+R] by forcing the latter to remain visible at LF. Just as checking a strong [+F] feature strips it from a node at Spell-Out for a representation on its way to LF, only where it does not co-occur with [+F]. In effect, then, [+R] is checked at Spell-Out and any derivation in which it co-occurs with [+F] on some node crashes.

For all other phrases, lacking [+F] features, I take the first part of (4.40b) as the PF requirement that the phrase be marked [−R]: this expresses the inactivity of C-direction in (rigidly) head-final languages. The second part of (4.40b), for head-initial languages, is also realized at PF, as the requirement that YP in the indicated configuration (involving a C-complex feature) bear [+R]. (This sort of checking at PF holds for a sister relationship of binary branches and thus presupposes a more general mechanism for features than in Chomsky 1995b, whose conclusions can be taken here to apply to the subcase of checking [+F] features.)

4.3.4 Obligatory Left-Adjunction for Predicational Adverbs in Functional Projections

The mechanisms proposed in section 4.3.3 allow us to make some sense of the restriction on clausal readings for predicational adverbs. To my knowledge, the only suggestions to this effect in the literature (e.g., Costa 1997, Ernst 1998d) are rather stipulative and/or redundant, and do not provide more than a technical reason for the generalization.[23] Here, I propose that clausal predicationals are uniformly leftward because their sister FEO constituents are complements, thus aligned with the C-complex, yet are exempt from the purely syntactic linearizations of (4.40) and therefore always follow C-Dir.

It was established in chapter 2 that predicational adverbs take events or propositions as their (main) argument, and this is corroborated syntactically,

in a certain way, with the oft-repeated observation that "adverbs do not take complements":

(4.44) a. *Fortunately that he left, he went to town. (Cf. *It is fortunate that he left*.)
b. *Possibly that it will explode, the bomb was ticking. (Cf. *It is possible that it will explode*.)

This fact, illustrated in (4.44), can be accounted for if we assume that what distinguishes a predicational adverb from its adjective counterpart is that (while both take complements) the adjective is a semantic and syntactic head, while the adverb is a syntactic head as $Advo^0$ but as an AdvP acts as a "semantic head," that is, a predicate. As proposed in chapter 2, the entire AdvP is mapped onto semantic representation as the predicate ADJ (its argument being its sister constituent, representing an FEO). Thus CPs like *that he left* or *that it will explode* in (4.44a–b) cannot be part of the AdvP, since there is no way for them to fulfill their role as argument if the rest of the sentence following the adverb is taken as the AdvP's one argument (its complement).[24]

There is a revealing piece of supporting evidence for this view. Note that some predicational adverbs do take complements in the syntactic sense, as (4.45) shows.

(4.45) a. Unfortunately for our hero, he went into town as the asteroid was about to hit.
b. Quite obviously for (to) most of us, the referee missed the call.

Adverbs like these regularly take *for*-PP complements indicating who is affected by the judgment, as in (4.45a), as well as other types of PPs. These are complements in the syntactic sense only (i.e., they are not semantic arguments of the ADJ predicate represented by the adverb); I assume that these adverbs are lexically marked for these possibilities. Now, among these complements are some that relate closely to a second argument of the adverb, not realized by the sister of AdvP. Observe (4.46a–b).

(4.46) a. They built it very sloppily for such trained craftsmen.
b. Similarly to what had happened in New Hampshire, he took an early lead in the Iowa polls.

In (4.46a) *sloppily* is an agent-oriented adverb that tabs some agent as sloppy on the basis of a building event. The PP *for such trained craftsmen* helps

to specify the comparison class for mapping this event onto the scale defined by SLOPPY (where normally it would be specified for people in general, as adjusted by contextual information). In (4.46b) the exocomparative AdvP headed by *similarly* takes the rest of the sentence as its FEO argument, but for this subclass there must be a second FEO of an identical type whose relationship to this FEO is established by the adverb (in this case, it is a relationship of similarity). Normally expected in the preceding discourse or implicit in the context, this second FEO is expressed overtly as part of the AdvP in (4.46b). While the (syntactically allowed) complements may relate in some way to the semantic arguments of ADJ, the latter arguments cannot be expressed as part of the AdvP, since they only permit compositional rules to operate correctly if they are denoted by clausal projections.

Thus predicational adverbs straddle the syntax-semantics line: in syntax they may specify possible complements that are not semantically selected, as in (4.45)–(4.46); in semantics the whole AdvP translates as a predicate ADJ (a "head") taking its sister (complement) as an FEO argument. Now suppose that where syntax cannot mandate a direction for a nonhead (i.e., where none of the syntactic requirements of the features [+Lex], [+S], or [+F] are in force), C-Dir is always active for this purely semantic complementation, that is, where it is not realized according to the canonical syntactic X^0-YP configuration. (In (4.42) this corresponds to the right side of (c).) If so, then for the purposes of linearization the sister of AdvP is a complement, and by (4.40b) it is linearized to the right of its AdvP "head," parallel to the case of normal complements of functional heads, as in (4.42b). The result is that predicational AdvPs are preverbal when adjoined to a functional projection, regardless of the basic parameterization in (4.40) – for both head-final and head-initial languages. Predicational adverbs inside VP (manner adverbs) follow linearization as in (4.42c), since the feature [+Lex] on V is at work, requiring the adverb to follow the same direction as complements.[25]

4.3.5 Weight Theory: A First Look

So far the principles proposed here predict uniformly preverbal adjuncts of all types for SOV languages, and for head-initial languages (a) fix predicational adverbs in preverbal position, except for manner adverbs, which may also be postverbal, and (b) allow functional and participant adjuncts to occur (in principle) on either side of V. However, in SVO languages, some functional adjuncts must be preverbal, and all participant adjuncts, along with

some functionals, must be postverbal. In particular, it appears that the former group is made up of short, light adverbs, and the latter of larger, heavier phrasal categories – PPs, DPs, and CPs, of both participant and functional semantic types. This requires a first examination of Weight theory, which is developed more fully in chapter 5.

It was noted that head-initial languages often restrict a given adjunct to either preverbal or postverbal position, as illustrated in (4.47) (= (4.28)) and (4.48) (= (4.36)), respectively.

(4.47) a. The government has (hardly) proven its case (*hardly).
b. The actors might be (not) doing their best (*not).
c. The caravan has (just) left (*just).

(4.48) a. They (*for everyone there) sang (for everyone there).
b. Ice-fishermen (*because they like it) fish (because they like it).
c. The cupcakes (*over an hour before we got there) had been finished off (over an hour before we got there).

The first group seems to be made up primarily of functional AdvPs that are short and/or unmodifiable, while the second is composed of heavier phrasal categories. Their position is in accord with, respectively, F-Dir (leftward, light, and functional) and C-Dir (rightward, heavier, and more contentful).

Cardinaletti and Starke (1994, 1996) suggest that light elements must move to Spec positions; among other effects, this captures their obligatorily preverbal position. The same has been suggested for adverbs by Alexiadou (1997, 1998), Laenzlinger (1997), and Costa (1997), among others. In the framework being developed here, the connection between the lightness and position of these elements can be stated directly in terms of the F- and C-complexes. Rather than positing a [+F] feature that triggers movement of light items to Spec, let us say that such obligatorily preverbal light adverbs (termed Lite adverbs) bear a feature [+Lite], which is related to the F-complex, requiring leftward position.[26] For this we may posit another principle of linearization, formalized as a feature co-occurrence constraint:[27]

(4.49) [+Lite] → [−R]

The obligatoriness of the other group's postverbal position appears to be less absolute. While postverbal Lite adverbs are crashingly bad (see 4.50)) and preverbal heavy adverbials are usually so (see 4.51)), the contrast in (4.52a–b) shows that as the preverbal phrase becomes *relatively* lighter with respect to the rest of the sentence, it becomes more acceptable.[28]

(4.50) a. *She could have left not.
b. *Yvonne has eaten scarcely.

(4.51) a. Albert has (*with a screwdriver) opened the tin (with a screwdriver).
b. John D. Rockefeller (*for his sons) bought a set of blocks (for his sons).
c. Dan (*because he had won) was jumping for joy (because he had won).
d. They will (*for three days) be meditating (for three days).

(4.52) a. Maureen (*for several days) walked (for several days).
b. The relief officials have for several days tried to move tons of supplies into the devastated valley.

This is typical of more formal and journalistic styles, as brought out by the further examples in (4.53).

(4.53) a. Democratic leaders from the start expected a trap. (Daniel Schorr, NPR, Nov. 14, 1990)
b. David Wilson says, the distributor at this stage has two options. (Richard Gonzales, NPR, Oct. 31, 1996)
c. We can for the time being identify a QP as any NP that begins with a quantifier, where . . . (Riemsdijk and Williams 1986:218)
d. The fact that what has for a long time been observed to be a feature of certain adjectives is a common feature of them all. (Kamp 1975:127)
e. The intent . . . was that the voyagers would at some point redirect the ship toward a star they would choose themselves. (Robert Silverberg, *Starborne*, 69)
f. . . . that which a Quebec statesman more than a year ago unwisely described as tempting lobsters into the pot. (*Wilson Quarterly*, Winter 1997, p. 27)
g. On current views, which are as far as I know nearly universally accepted by phonologists, the units of phonological structure are . . . (Jackendoff 1997:26)

These PP-adjuncts seem to most often be temporal, frequency, and durative phrases, though others exist (as in (4.53g)). Their acceptability in this position climbs as the length of the string of postverbal material increases, confirming that it is relative (not absolute) heaviness that is at stake.[29] This effect is predicted by (4.54), in conjunction with the active statement of (4.40b), repeated here as (4.55).

(4.54) Sufficient weight licenses the C-complex feature [+Heavy]. ("Sufficient" is variable for style and relative weight.)

(4.55) If C-Dir is active, then for any [−F] YP in XP, if X^0 or YP bears a C-complex feature, then YP is [+R].

The [−F] preverbal adverbials in (4.48) and (4.51) are heavy enough to bear [+Heavy], and as YPs in (4.55), they must be [+R] and therefore will be linearized in postverbal position at PF. As noted, (4.54) is waived in more formal styles, permitting the sentences in (4.52b) and (4.53).[30] Of course, in head-final languages (4.54) does not apply, because C-complex features only have an effect on linearization in head-initial languages (as before, we temporarily ignore OV languages with postposed adjuncts or complements).

Let us summarize the proposals for a right-adjunction account of adjuncts' position with respect to V. Most central is (4.40) embodying general principles of linearization that are not adjunct-specific but that cover all nonheads, including Spec and complement positions as well, and that have the conceptual grounding of universal rightward C-Dir and universal leftward F-Dir. (4.40) gives the basic parameter under the PDH. Beyond this, predicational adverbs' obligatory preverbal position is accounted for by saying, in effect, that they act like heads taking (FEO) complements for the purposes of linearization whenever the primary principle in (4.40) cannot have any syntactic effect, so that the universal rightward C-Dir is always in effect in this case. Finally, Weight theory enters the story with [+Lite] and [+Heavy] adjuncts, which are linearized once again in accordance with the two complexes: the former to the left and the latter to the right (where this is possible by (4.40b), i.e., head-initial languages). Thus a theory allowing right-adjunction can be constructed making use of very simple, general, and conceptually grounded linearization principles, without positing any extra movement rules, ad hoc functional heads, or the like.

Before moving on, recall that we must abstract away from a number of syntactic processes, especially head movement. I have assumed that V moves to its immediately c-commanding functional head Pred in SVO languages like English, and since left-adjunction in VP is barred, this movement has no effect on adjunct order with respect to other elements. Further movement is possible, though, as in the Romance languages, given the thrust of Pollock 1989 and the voluminous literature that has followed it (e.g., Lightfoot and Hornstein 1994, Belletti and Rizzi 1996, Cinque 1999, and references therein). I follow this tradition and therefore take *souvent* 'often' in (4.56) to be left-adjoined to some functional projection above VP, with the verb *mangent* '(they) eat'

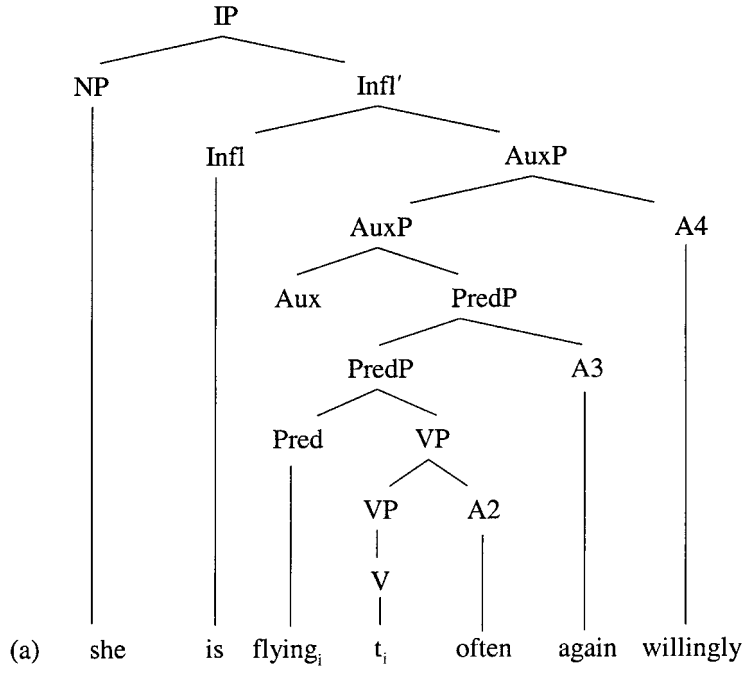
having raised over it. In the terms I have been using so far, *souvent* is a preverbal adverb at base structure.

(4.56) Les tigres mangent$_i$ souvent t$_i$ le thon. (French)
the tigers eat often the tuna
'Tigers often eat tuna.'

4.3.6 Scope and Constituency

In the last section we saw how (4.40), (4.49), and (4.54) go a long way toward predicting the positions of adjuncts with respect to V in both head-final and head-initial languages. Before continuing, it is important to review how the traditional theory captures scope and constituency facts. Observe the tree in (4.57), representing the string of words in (4.57a).

(4.57)



(a) she is flying$_i$ t$_i$ often again willingly

(b) … she is doing so again willingly

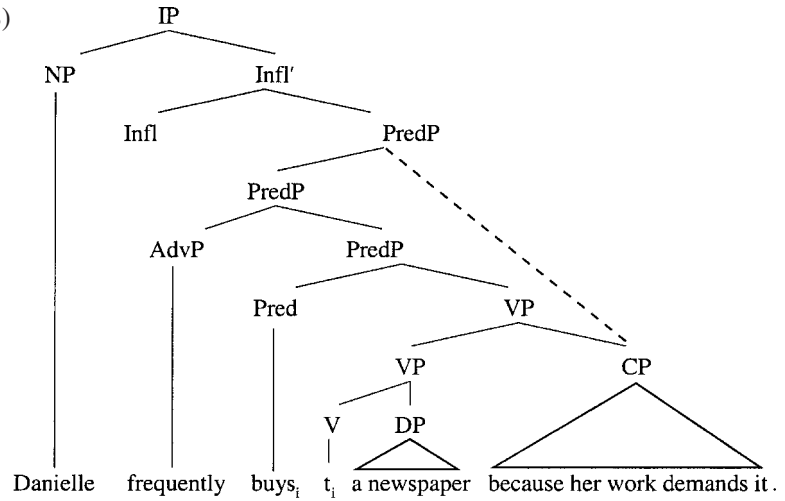
(c) … she is doing so willingly

(d) … she is doing so.

For (4.57b) *doing so* is interpreted as *flying often*, and, as is standard on the traditional theory, this is captured in part because this phrase is represented as a constituent (PredP). In (4.57c) *doing so* corresponds to *flying often again*, and again this is a constituent; the same holds true in (4.57d), where it corresponds to *flying often again willingly*.

(4.57) also can be used to illustrate scope relations, on the traditional assumption that if A c-commands B, A takes scope over B.[31] The c-command relations shown in (4.57) directly predict that each of the three postverbal adverbs obligatorily takes scope over the one(s) to its left. Similarly, in a case like (4.3d), reproduced in tree form here as (4.58), the two possible attachment sites for the causal CP allow for two readings with respect to *frequently*.

(4.58)



(The actual projection to which the CP adjoins is unimportant here, as long as it is permitted to adjoin either above or below *frequently*, which the system proposed here does do. Certain other irrelevant aspects of (4.58) have been simplified for clarity's sake.)

4.3.7 Theoretical Consequences

The proposals in section 4.3 make a number of empirical predictions about linear order, constituency, and scope in a fairly large number of languages,

both head-final and head-initial. To my knowledge, none of the versions of LCH theories do a better job in this regard, as discussed in sections 4.4–4.5.

Before moving on to the consideration of LCH theories, we should take a look at the theoretical advantages of the right-adjunction approach. First, the role of precedence relations is still severely constrained, the choice of left and right being restricted to the parameterization in (4.40b), and a wide range of facts follow from this one specification. Aside from the direction of complements, following from this choice are (a) the uniform preverbal base positions of all adjuncts in head-final languages, (b) the obligatory preverbal placement of clause-modifying predicational adjuncts, along with the possibility for manner adverbs to be either pre- or postverbal, (c) the universal leftward position of Spec, and (d) the variable position (in principle) of adjuncts adjoined to functional projections (further specification of position being possible according to weight-theoretic considerations).

Second, cross-linguistic word order facts fall out from the same mechanism used for language-specific facts, and the connection between them is motivated. That is, the leftward position of complements in head-final languages follows from the same parameterization that makes all adjuncts preverbal in these languages; the rightward position of complements in head-initial languages must coincide with the possibility (or obligatoriness, within VP) of postverbal adjuncts. In this way this PDH theory is restrictive, making strong predictions about the covariance of possible complement and adjunct positions in a language.[32]

Third, movement theory is also more restrictive, in that there can be a ban on adjunct-specific movements and a ban on unmotivated movement triggers, such as would be required to move adverbs around from one base position to alternate, truly optional positions, as was often assumed in theories making use of PS rules (e.g., Keyser 1968), and still seems necessary on some versions of the LCH, to be examined in section 4.4.

Fourth, the differences of direction are conceptually motivated always in terms of the fundamental F-complex and C-complex, which have independent effects elsewhere in the grammar.

Fifth, basic adjunct-licensing holds at one syntactic level only – LF – where both semantic selectional requirements and feature co-occurrences are verified. The absence of adverb-movement rules (not counting *wh*-movement, focus movement, and others whose interpretation properties independently allow moved adjuncts to be licensed as if they were in base positions) allows treating the base and LF positions of an adjunct as identical.

Finally, it should be noted that by adopting the Directionality Principles we obviate the criticism often leveled at theories that allow right-adjunction (e.g., by Cinque 1996), namely, we do not find the "expected" mirror image effect of SOV and VOS languages being the two dominant types. The Directionality Principles embody the claim that word order is only *partially* symmetrical, by parameterizing C-Dir but not F-Dir.

4.4 LCH: The "Larsonian" Version

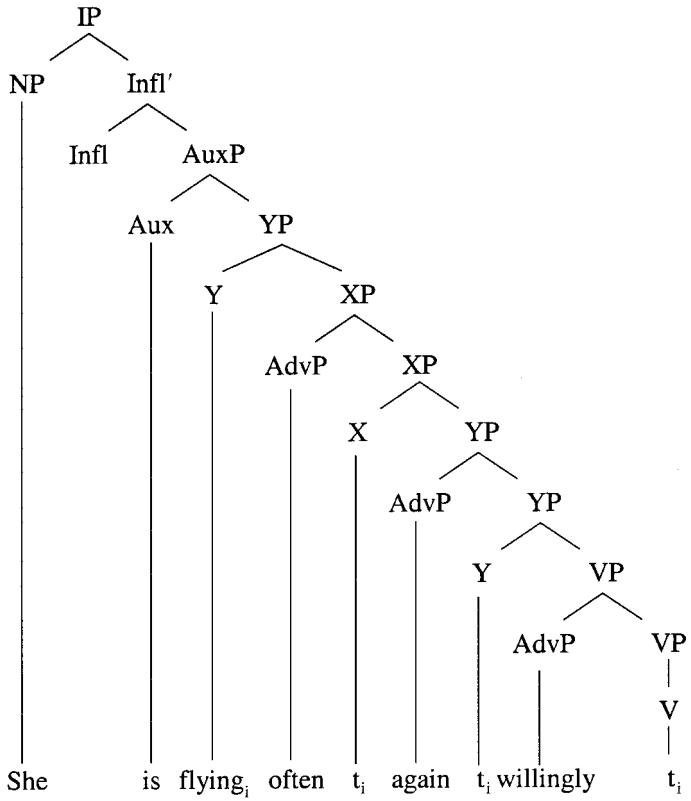
4.4.1 Introduction

Theories based on the Linear Correspondence Hypothesis come in two versions, as far as adjuncts are concerned. The first dates from Larson (1988b), and to my knowledge no one has specifically advocated in print treating all adjuncts as proposed there, although it has been invoked for a subset of adjunct subclasses (e.g., by Larson [1990], Huang [1991], Stroik [1996]). The main idea is that adjuncts are mapped onto base structure "down to the right," each one lodged in the Spec position of a different "shell" VP or functional category (the lowest adjunct possibly being in complement position), with V raising across adjuncts that are postverbal in surface order. Neither the exact categorial identity of the maximal projections nor the matter of whether the adjuncts are in Spec or left-adjoined to these projections is important to the essence of the proposal.

The major advantages of this treatment are that (a) surface order is obtained directly in base order and (b) where Barss/Lasnik effects (Barss and Lasnik 1986) obtain with adjuncts (see section 4.4.4), it allows preserving the simple c-command condition for the principles that derive these effects, that is, Binding theory, NPI (negative polarity item) licensing, and principles for the proper binding of variables. However, the aim of this section is to show that there are rather serious problems for this version of the LCH in other areas. Because the advantage in (a) is a rather weak one and because there is some doubt in current theory that c-command is in fact the correct structural condition for handling Barss/Lasnik effects, I contend that the problems of the LCH far outweigh its advantages and that, therefore, if it is to be adopted at all, at the very least it should not be adopted in this form.

(4.59) shows the structure that would have to be assumed on this theory for (4.57).

(4.59)



There is no problem for this version of the LCH in predicting the postverbal position of the adverbs, assuming that something triggers verb raising to a sufficiently high landing site; it does not seem difficult to ensure that this site is above obligatorily postverbal adjuncts and below obligatorily preverbal ones. Ensuring the correct word order may be slightly more difficult, but presumably one would need an expanded version of the θ-Hierarchy making reference to adjunct subtypes and stipulating their order (cf. Speas 1990:74 and Stroik 1996:33).

4.4.2 Arguments against the Larsonian LCH

This section presents four specific arguments against the version of the LCH shown in (4.59), based on constituent structure and on the need for an extra set of movements to capture scope relationships. First, the constituents

that were identified in this sentence by the *do so*-test are not represented correctly by the structure given; this is a general problem with respect to arguments in this theory as well. Further movements have been proposed to derive the right sort of constituent structure from (4.59), in particular Light Predicate Raising (Larson 1988a, 1988b), but these are problematic. I do not discuss the problems with these proposals, as they have been addressed extensively elsewhere.[33] In any case, any such movement approach adds a layer of complexity (avoided if right-adjunction is allowed) to the account of adjunct distribution.[34]

The second, third, and fourth arguments depend on the fact that the Larsonian LCH requires covert, LF-movement rules to derive the correct scope relationships (Richard Larson, personal communication; Rosengren 2000), assuming that it is worth keeping the c-command condition on scope, as all proponents of the theory seem to do. I refer to such movements as *LF Adjunct Raising (LFAR)*, a species of rule that has often been assumed for negation or modal adverbs like *probably* (e.g., Linebarger 1987, Laenzlinger 1996). Ernst (1991a, 1998a) (see also Cinque 1999, e.g., p. 221 n. 45) argues against this rule on a number of general grounds, but there are reasons specific to structures like (4.59) as well.

The second argument against the Larsonian LCH is based on the conditions one would need for triggering LFAR, specifically, that it would have to apply only to postverbal adjuncts. Observe (4.60)–(4.61).

(4.60) a. Carol has made extra trips frequently willingly.
(WILLING > FREQ)
b. Carol frequently has willingly made extra trips.
(FREQ > WILLING)

(4.61) a. The committee hasn't called him in again.
(NOT > AGAIN, AGAIN > NOT)
b. The committee hasn't again called him in.
(NOT > AGAIN, *AGAIN > NOT)

As illustrated in (4.60a–b), postverbal adjuncts take scope over other, preceding postverbal adjuncts, but among preverbal adjuncts scope proceeds left to right; and a postverbal adjunct can take scope over a preceding preverbal one, as in (4.61a), but this does not hold if both adjuncts are preverbal (cf. (4.61b)). Thus in (4.60) *willingly* must raise via LFAR in (a) but not in (b), and the same holds for *again* in (4.61a–b). This difference, it

seems, would have to be stipulated – why should this be this way at all, that is, why should the position of an adjunct with respect to V condition its raising?

Moreover, it must be stipulated that preverbal and postverbal be defined with respect to the base position. It is unclear why this position of V counts for conditioning LFAR and not the surface or (more plausibly) LF position of V. Observe that LFAR could correctly predict the nonambiguity and scope relation between the causal and frequency adjuncts in (4.62a) assuming that a postverbal adjunct of this sort must raise over another, preceding one. When *frequently* is preverbal, raising of the *because*-clause must be optional, since (4.62b) is ambiguous.

(4.62) a. Danielle buys a newspaper frequently because of her work.
(BECAUSE > FREQ)
b. Danielle frequently buys a newspaper because of her work.
(ambiguous)

(4.63) Danielle achète fréquemment un journal à cause de son travail.
(ambiguous)
Danielle buys frequently a newspaper because of her work.

But the French equivalent of (4.62) (ignoring the position of the object), in (4.63), patterns rather with (4.62b), where *frequently* is preverbal. This follows easily only if we take the base position of the verb (root) *achète* to be to the right of the adverb (cf. (4.56)), so that the latter counts as preverbal, making (4.63) like (4.62b). In sum, it appears that empirical adequacy for LFAR depends on numerous stipulations about the conditions under which it can apply.

A third argument against LCH approaches that embody LFAR concerns the determination of landing sites for this movement, which ends up being rather complex and stipulative in at least three ways. First, the movements must be stipulated as "nesting" rather than random or "crossing," as (4.64) illustrates, where again each postverbal adjunct takes scope over those to its left in (a), and (b) represents the LF structure, with the adjuncts having moved to the landing sites ① ② ③.

(4.64) a. They've ① ② ③ done it twice on purpose for years.
b. They've [for years]$_i$ [on purpose]$_j$ [twice]$_k$ done it t_k t_j t_i.

Aside from having to stipulate this, the theory must also reconcile it with the fact that most (if not all) other A′-movements are conceived of as allowing crossing in principle, though they may be disallowed in particular cases when crossing of adjuncts is involved (see Nakamura 1992, Ernst 1994a, and discussions of LF-movements in Kayne 1984, for example). Second, something must ensure that two postverbal scopal adjuncts have only one reading – while a combination of one preverbal and one postverbal adjunct allows ambiguity (4.65) (cf. also (4.62a–b).

(4.65) a. The committee ① hasn't ② again called him in. (unambiguous)
b. The committee ① hasn't ② called him in again. (ambiguous)

To handle this distinction in terms of landing sites, *again* in (4.65b) must be allowed to land in either of the two landing sites ① and ②, while in the unambiguous (4.65a) only ② is available. (Alternatively, if one were to say for (4.65) that movement is simply blocked for preverbal *again* but optional to ① for postverbal *again*, one must explain why the latter movement is optional for this adverb but obligatory for *willingly* in (4.59).) Third, the need for "nesting" landing sites entails that there can be no simple, standard movement triggers. Landing sites somehow must be specifiable for four different values, depending on the position of *willingly*, as illustrated in (4.66).

(4.66)

Sentence	Scope Relations	*willingly* to ①?
a. Carol ① has made extra trips frequently *willingly.*	(WILLING > FREQ)	OBL
b. Carol ① frequently has made extra trips *willingly.*	(ambiguous)	OPT
c. Carol ① frequently has *willingly* made extra trips.	(FREQ > WILLING)	blocked
d. Carol ① has *willingly* made extra trips frequently.	(ambiguous)	blocked

In other words, adopting LFAR requires explaining how a landing site and/or an adverb low in structure can "know" whether raising applies or not according to the position of an intervening adverb.

The fourth argument against LFAR is that it requires a system where adjuncts are licensed twice, at two levels of the derivation. That is, it requires two sets of licensing conditions, the first (as noted, perhaps part

of an expanded θ-Hierarchy) to fix the base/surface order as illustrated in (4.59) and the second, underlying the movement triggers discussed, to ensure the correct c-command (and thus scope) relations at LF. The natural question is: why should language be so uneconomical as to systematically map scope-taking items onto base phrase structure in the reverse order of their scope, only to have the mapping "corrected" covertly? A theory that does not require this double licensing, especially when the second licensing precisely undoes the effect of the first, would seem preferable.

4.4.3 On the Scope of Postverbal Adverbials

As noted, there are sentences where, given two postverbal adjuncts, the rightmost one takes scope over the one closer to the verb:

(4.67) a. She kissed him many times willingly.
b. She kissed him willingly many times.

(4.68) a. They played again on Friday.
b. They played on Friday again.

Phillips (1998:30) claims that such pairs do not take into account "the fact that sentence-final focal stress has an independent effect on what material is interpreted as background and new information. Once this is controlled for, which can be done by adding a third adverbial ([4.69]), we find that the strong left-to-right scope preference seen among the first two adverbials . . . no longer obtains."

(4.69) Sue kissed him willingly many times in front of the boss.

Further, he says that sentences like (4.67)–(4.68) "most likely do not reflect obligatory right-to-left c-command among multiple adverbial phrases, but instead reflect the independent effect of focal stress assignment, which associates by default with a sentence-final adverbial." Phillips assumes essentially Larsonian structures for sentences like (4.67)–(4.69), and although he does not flesh out the details for scope interpretation (apparently via LFAR; Phillips 1996), his proposal would seem to predict that among postverbal adverbials, all and only those with sentence-final focal stress should allow wide scope. The data do not bear this out, however.

First, there are numerous cases where a sentence-final adverbial does not receive focal stress and yet takes wide scope; second, the preceding adverbial may get stress but take narrow scope. (4.68) is one of these cases, and others are listed in (4.70).

(4.70) a. They haven't ever done that voluntarily before.
b. She doesn't do that often now.
c. The horse shook its head gently once or twice.
d. Since he started drinking again, he has come home late a lot.
e. She didn't take her medicine at noon again.
f. They ran around in the kitchen for a minute (, and then calmed down).
g. She's won the race twice already.
h. The forwards haven't finished their warm-ups completely yet.

In all of (4.70a–h) the right-hand adverbial is (or can be) pronounced without focal stress and yet is interpreted with wide scope. In (4.70a–b) this is a temporal (location-time) adjunct; in (4.70c–d) it is a frequency adjunct; in (4.70e) it (*again*) is iterative; in (4.70f) it is a duration phrase; and in (4.70g–h) it is an aspectual adverb. The preceding adverbial, such as *voluntarily* in (4.70a) and *often* in (4.70b), take narrow scope, despite having focal stress. (Also, as noted, no intonation break is necessary between the two adjuncts.)

This is not merely an effect in sentences with just two postverbal adjuncts. Observe (4.71).

(4.71) a. I was finally able to sleep on a Saturday morning for the first time last weekend.
b. I hadn't seen him this early voluntarily before.
c. They did it on Friday on principle again.
d. We haven't sung this piece there twice a lot.

Sometimes neither of two postverbal adverbials has stress (focal stress goes on the verb), and still the rightmost one takes wide scope:

(4.72) a. I'm sorry I can't help you yet this time.
b. We're going dancing again next Thursday.

Third, there are many instances where the existence of sentence-final focal stress does indeed correlate with wide scope, but two postverbal adverbials

preceding the focused sentence-final one maintain the traditionally expected scope relations, with the rightmost one taking scope over the one to its left:

(4.73) a. They hadn't done it quickly again {anyway/in any case} (, so we gave up on them).
b. She has taught at 8 AM willingly many times.
c. The psychologist spoke to him sharply twice on purpose.

Fourth, in certain cases focal stress specifically signals *narrow* scope while stresslessness indicates *wide* scope:

(4.74) a. She hasn't done it {today/*today*}.
b. They didn't win the game {again/*again*}.

The most natural interpretations of (4.74a–b) are that, for the first option with an unstressed adverb, the latter takes wide scope over negation; for a stressed adverb, the natural reading is for it to be within the scope of negation (although wide scope is also possible).

Thus Phillips' (1996, 1998) proposals make the wrong predictions in (4.67)–(4.74), and it does not seem possible to reliably correlate wide scope with some independent effect of focus.

Haider (2000) essentially adopts Phillips' phrase structural proposals and suggests that the typical postverbal scope patterns for adverbials can be predicted without movement, by "linear incrementality."[35] He proposes that there is an alternative syntactic condition for semantic composition besides the standard one of c-command or sisterhood ("structural compositionality"), termed *incremental compositionality*, by which successively lower postverbal adjuncts in a Larsonian structure are added compositionally to the basic event structure, one by one. Although Haider notes that his proposals are somewhat speculative, they ultimately require that incremental compositionality be triggered by empty heads in head-initial VP-shell constructions. Thus it not only (a) adds complexity beyond the minimal c-command requirement and (b) requires restricting the two types of compositionality to different parts of the clause, but also (c) again raises the question noted in section 4.4.2: what licenses such base structures (e.g., what property of an arbitrarily chosen verb, of features on VP, or of phrase structure theory creates a "down-to-the-right" string of empty V nodes with, say, *willingly* and then *frequently* in successively lower Specs?) and, more important, why should the grammar license the postverbal adjuncts in base positions that will precisely duplicate, in

reverse, the semantic licensing conditions determining scope positions at LF? I conclude that this approach is no more promising than LFAR, at least in its current form.

4.4.4 Barss/Lasnik Effects

An important argument for Larsonian structures came from the so-called Barss/Lasnik effects (Barss and Lasnik 1986) in double object constructions, made famous by Larson (1988b) and illustrated in (4.75)–(4.78) (his (3a–c) and (3f)).

(4.75) a. I showed Mary herself.
b. *I showed herself Mary.

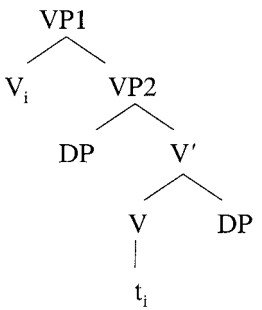
(4.76) a. I gave every worker$_i$ his$_i$ paycheck.
b. I gave its$_i$ owner every paycheck$_i$.

(4.77) a. Which man$_i$ did you send his$_i$ paycheck?
b. *Whose$_i$ pay did you send his$_i$ mother?

(4.78) a. I showed no one anything.
b. *I showed anyone nothing.

(4.75)–(4.78) show (respectively) the effects of Binding theory, variable binding with pronouns as variables, weak crossover (WCO), and negative polarity item (NPI) licensing. Larson argued that the left-right asymmetry could be reduced to an asymmetry in c-command relations if the second of the two objects were lower than the first; that is, if the first one asymmetrically c-commands the second. This is shown schematically in (4.79), where V raises from its base position to the head of VP1.

(4.79)



Stroik (1990:656) showed that the same pattern holds when the second of the two phrases is an adjunct, as in (4.80)–(4.82).

(4.80) a. I saw the men$_i$ somewhere near each other's$_i$ homes.
b. *I admired each other's$_i$ sunsets those days$_i$.

(4.81) a. I saw everyone$_i$ the day before he$_i$ died.
b. *I see a man who plays Santa on it$_i$ every Christmas$_i$.

(4.82) a. John saw no one anywhere.
b. *John saw anyone nowhere.

Stroik and others argued from this sort of data that (at least some) adjuncts therefore are attached progressively downward as "specifiers" in VP shells, just as for arguments in (4.79).

However, a number of authors – among them Jackendoff (1990a), Kuno and Takami (1993), Williams (1993), Ernst (1994c), and Pesetsky (1995) – have pointed out the problems this conclusion causes for phrase structure and scope. Larson proposed certain remedies, including Light Predicate Raising (Larson 1988a) and (some version of) LF adjunct raising, but these are problematic (see note 32). Pesetsky used the conflict between Barss/Lasnik effects and the contradictory scope and constituency evidence to propose his "Dual System," where a Larsonian and a layered phrase structure representation (with right-adjunction, as proposed here) exist simultaneously; as noted by Ernst (1998c), such a dual system entails a considerable cost. Yet most of the problems are avoided if the structural condition for Binding theory, NPI licensing, and the like is changed. Rather than invoking c-command, the same effects, including those in (4.80)–(4.82), hold just as well in a single right-branching structure, under a revised version of m-command plus precedence (proposed by Ernst [1994c]).

A common formulation of m-command is shown in (4.83) (Chomsky 1986:8, with X taken as maximal projections).

(4.83) A c-commands B iff A does not dominate B and every X that dominates A also dominates B.

However, given the current theoretical development of numerous functional heads where Infl and Comp used to be, (4.83) must rather be interpreted with X taken as extended projections (see Grimshaw 1991 for an early and influential discussion of this idea); I will refer to this as x-command.[36] I adopt

a system in which the extended projections are as shown in (4.84), from top to bottom.

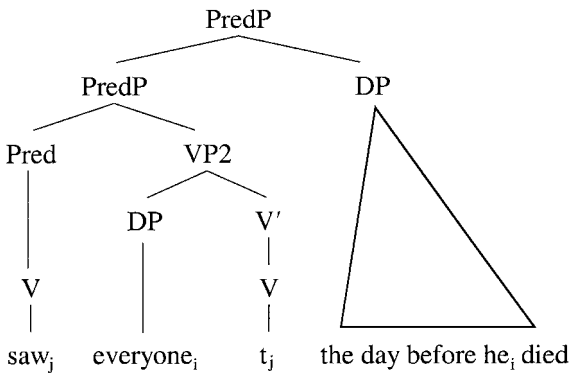
(4.84) Extended Projections
a. CP[37]
b. TP (=IP)
c. XP complement of Tense (i.e., what used to be called VP)
d. lexical VP
e. DP

I term (4.84a–d), excluding DP, *clausal extended projections*. Evidence for this set of extended projections is presented in chapter 5; all that is important at this stage is that the functional clausal extended projections in (4.84a–c) can be referred to in the definition of x-command:

(4.85) A x-commands B iff A does not dominate B and every functional clausal extended projection that dominates A also dominates B.

Given right-adjunction of adverbial expressions and assuming that those in (4.80)–(4.82) may adjoin somewhere below Tense, the facts of (4.80)–(4.82) as well as (4.75)–(4.78) are accounted for by conditioning them with x-command and precedence, with no need for LF adjunct raising, incremental composition, or a dual system of phrase structure. Observe (4.86).

(4.86)



Here, *everyone* x-commands and precedes *the day before he died*, since no functional clausal extended projection intervenes; this holds as long as the

adverbial is adjoined to some projection below TP. The same explanation works for (4.80) and (4.82).

Conditioning these effects by x-command and precedence also accounts for sentences like (4.87)–(4.88).

(4.87) a. She could see everyone$_i$ on his$_i$ birthday.
b. *On his$_i$ birthday she could see everyone$_i$.

(4.88) a. She could see everyone on Friday.
b. On Friday she could see everyone.

In (4.87a) the normal reading is 'She was able to see each person on that person's birthday'. Since the modal takes scope over the time adverbial, we may assume that the latter is adjoined below Tense (to which the modal moves, as do all English auxiliaries) and thus is within the same extended projection as *everyone*. Thus binding of the pronoun *his* is legitimate. But, as (4.88) shows, there is one reading of a temporal adjunct in which it has a framing function, taking scope over the modal; this is the normal reading of (4.88b) ('On Friday it was the case that she was able to see everyone') and is one possible reading for (4.88a). Crucially, (4.87a) cannot have this reading, because of the x-command and precedence condition on pronominal variable binding: if *on his birthday* in (4.87a) is high enough to take scope over *could* it must adjoin to a projection of Tense, in which case it is outside the smallest clausal functional extended projection containing *everyone*; thus pronominal variable binding is illegitimate. (4.87b) is out for the same reason.

(4.89) follows a parallel pattern.

(4.89) a. She didn't scold them$_i$ because of each other's$_i$ mistakes.
b. *Because of each other's$_i$ mistakes, she didn't scold them$_i$.

A *because*-clause normally can take either wide or narrow scope with respect to negation, as shown in the ambiguous (4.90) (in which either Bob's reason for leaving was fatigue, or his reason for not leaving was fatigue).

(4.90) Bob didn't leave because he was tired.

But (4.89a) only has one reading, where negation takes wide scope. Assuming that *-n't* is generated as part of the dummy modal *do*, this result follows: if the

adverbial clause is adjoined high enough to take wide scope it is outside the functional clausal extended projection (the complement of Tense) containing *them*, so that *each other* cannot be properly bound.

Two remarks are in order about the theoretical status of the proposal that Barss/Lasnik effects are accounted for by x-command and precedence. First, the main argument against invoking precedence has been that it is unnecessary. However, in addition to arguments that certain cases in fact still require precedence (see Jackendoff 1990a, Napoli 1992, Ernst 1994c, Kuno and Takami 1993:136ff., Williams 1993:194ff., Culicover and Jackendoff 1995), the analysis proposed in this chapter shows that precedence (i.e., left-right relations) has a major role to play – that it is crucial to understanding the distributional patterns of adjuncts and the fundamental reasons for these patterns. On this view, precedence is in no way dispensable and in fact is not an extra complication for grammatical theory, but rather allows for greater simplicity and restrictiveness.

Second, and more important, the introduction (or retention) of x-command plus precedence must be balanced against the corresponding requirements of theories where Barss/Lasnik effects are based on c-command. The classic Larsonian approach needs to add, at the least, (a) some expansion of the θ-Hierarchy to provide base positions for adjuncts and (b) a complex system of covert adjunct-raising rules. The Dual System approach of Pesetsky (1995:231–32) entails duplication or stipulation for a number of syntactic mechanisms (including principles for mapping between the two systems). The Kaynean approach considered in section 4.5 requires stipulative and complex movements as well as lost restrictiveness in the principles of movement and selection. I believe it is a valid argument that invoking x-command and precedence for the principles deriving Barss-Lasnik effects allows a significantly simpler analysis than the alternatives.

4.4.5 Conclusion

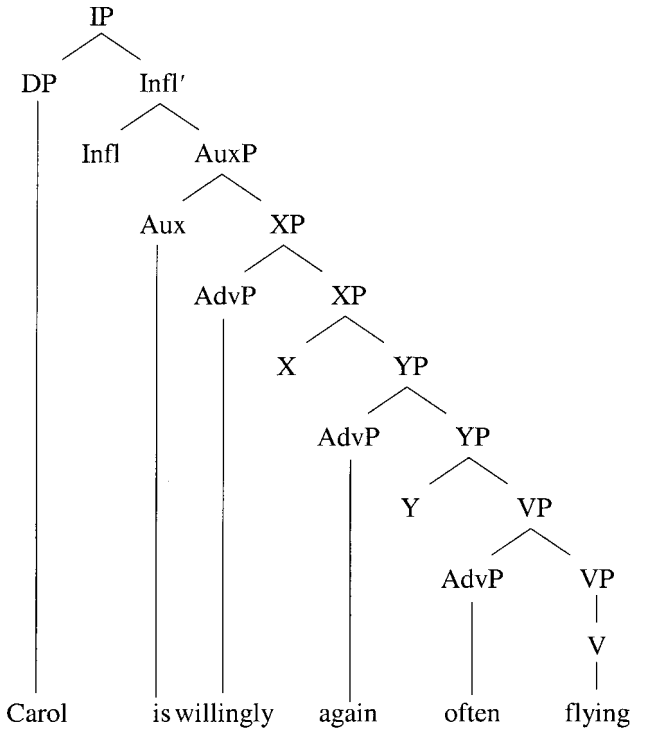
I conclude that there are serious drawbacks to the Larsonian version of the LCH making use of LFAR. In particular, it has no straightforward account of constituent structure, and its way of handling scope relations, LF-raising of adjuncts, is fraught with stipulations and extra complications with respect to the traditional theory, which posits only one set of licensing conditions and no movements. Therefore, it appears that if the LCH is to succeed a different form of it must be adopted (section 4.5).

4.5 LCH: The Intraposition Version

4.5.1 Introduction

A more promising version of LCH theories is that promoted in Kayne 1994, 1998, Alexiadou 1994, Barbiers 1995, and Cinque 1999. Here, unlike a strictly Larsonian structure, a series of postverbal adverbials appears in the base in the correct c-command relationships for scope interpretation, arranged left to right preverbally; then, constituents below and to their right raise over them into higher Spec/adjoined positions by a process sometimes termed *intraposition*. (Kayne [2000 and elsewhere] also refers to it as "predicate raising" or "predicate preposing.") (4.91) shows the base structure required for (4.57a) (omitting projections needed to provide landing sites for intraposition).

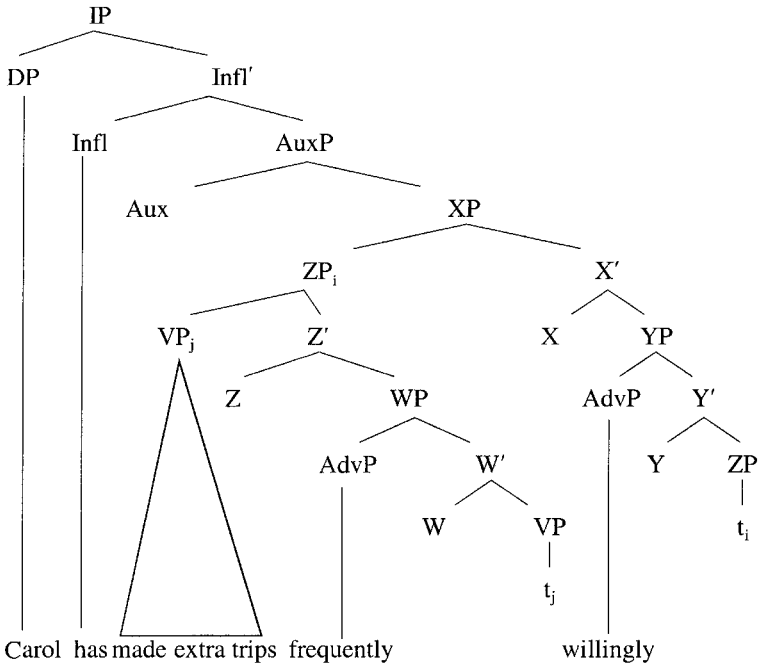
(4.91)



To get (4.57a) the lowest VP *flying* would intrapose to a position just above *often*; the combined phrase *flying often* would intrapose over *again* to form *flying often again*, and this constituent would intrapose to form *flying often again willingly*.

(4.92)–(4.93) provide a slightly simpler example, with (4.93c) corresponding to the final (surface) state in (4.92) and with (4.93a) representing the base order and (4.93b) an intermediate stage, after the first intraposition.

(4.92)



(4.93)

a. willingly frequently [made extra trips]
b. willingly [[made extra trips]$_j$ frequently t$_j$]
c. [[made extra trips]$_j$ frequently t$_j$]$_i$ willingly t$_i$

In intraposition theories adjuncts do not move; what move instead are VPs or functional projections corresponding to what would be projections of V in a less elaborated phrase structure theory.

Intraposition theories do reasonably well in being empirically adequate for the concentric phenomena reviewed in section 4.2: scope relations are represented by c-command configurations in the base (which may be referred to via some form of Reconstruction after intrapositions have applied); linear order variations can be produced correctly by conditions making the movements (in effect) obligatory, optional, or barred; and the derived structures, such as that in (4.92), represent constituent structure correctly for the purposes of tests

like *do so* substitution. In this section, however, I argue that this empirical adequacy comes at a considerable theoretical cost, the theory being either very stipulative or unconstrained, or both, in crucial areas. This is important in part because the claim has been made that this version of the LCH shows a special restrictiveness and a high level of explanation. However, if the conclusions here are correct, whatever restrictiveness and explanatory power are inherent in the LCH is offset by looseness and stipulation elsewhere in grammatical theory.

4.5.2 "Morphologically" Triggered Intraposition

I consider first an approach in which intrapositions are triggered by "morphological" features, in the sense of Chomsky (1995b): these are features on a functional head that can only be satisfied if some XP bearing the appropriate agreeing feature lands in that head's Spec, so that the feature(s) can be checked off; if this does not happen, the derivation crashes. This theory must rely, to a great extent, on properties of these features.

The first difficulty this causes is that intrapositions are not morphologically triggered in the sense apparently intended by Chomsky: they do not have a semantic/pragmatic correlate that is potentially marked morphologically. Intrapositions produce normal, unmarked word orders with postverbal adverbs, sometimes the only possible order, usually free of topic, focus, or similar meaning/discourse requirements; and as far as I know, no language morphologically marks such constructions, as opposed to those with preverbal occurrences. In other words, there is no real motivation for this movement, so that positing this sort of intraposition represents a weakening of movement theory in that it removes one of the few constraints on movement triggers. (This point has been made by a number of other people; see, inter alia, Laenzlinger [1997], Donati and Tomaselli [1997], Rackowski [1997], Rochemont and Culicover [1997], and Shaer [1998]).

The second problem faced by morphologically triggered intraposition is that various properties of the movements must be stipulated. First, it must be ensured that the correct constituent is moved. For example (4.94) (though a grammatical string of words) represents the wrong structure and predicts the wrong scope relations for the base structure in (4.93a), and would be derived if VP moves to the position before *willingly* in (4.92) instead of ZP.

(4.94) *Carol has [made extra trips] [willingly [frequently t]].

Second, the moved constituent must land in the right place. To give one example: (4.95) shows the result when ZP in (a slightly adjusted version of) (4.92) moves too high, to Spec,AspP instead of to Spec,XP.

(4.95) *Carol has [making extra trips frequently] been willingly t.

The third stipulation is that intraposition must be correctly specified as optional, obligatory, or barred. This is crucial as a way of accounting for adjuncts that, respectively, are freely ordered with respect to V, obligatorily postverbal, and obligatorily preverbal. (4.96) illustrates one possible case where this has gone wrong, in that ZP has intraposed from its base structure in (4.92) when it should have stayed put.

(4.96) *Carol has [made extra trips frequently] probably. (without comma intonation)

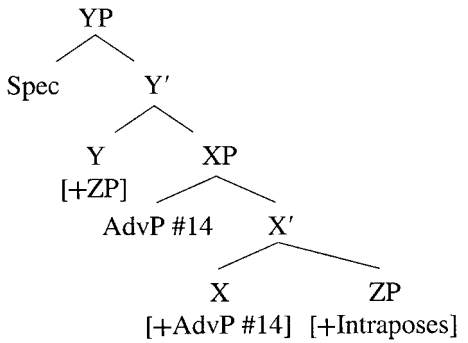
To my knowledge, no way of deriving these movement properties from something else has been proposed in the literature, so that they remain stipulations.

One can at least generalize over some of these properties. The generalization about intrapositions' landing site and the identity of the moved expression appears to be as stated in (4.97).

(4.97) For any given adjunct XP,
   a. intraposition applies to the complement of the head in whose Spec XP sits, which
   b. must land in the Spec just above that XP;
   c. Specs have intraposition trigger features, which must be fulfilled, of three values: obligatory (for obligatorily postverbal adjuncts), barred (for obligatorily preverbal adjuncts), or optional.

If (4.97a–b) hold, the level of stipulation noted in the last section can be reduced (although this is not true for (4.97c), which embodies a stipulation holding to some extent for the traditional theory as well). Still, some sort of feature mechanism seems required, such that a head X with an adjunct-licensing feature requires that its complement have a feature to be checked by means of intraposition, and that the functional head just above X bear the corresponding checking feature. This is illustrated in (4.98), where [+AdvP #14] (some arbitrary adverb-licensing feature) induces the movement trigger [+ZP] on Y and [+Intraposes] on ZP, which can only be satisfied by ZP moving to Spec, YP.

(4.98)



(4.99)–(4.101) provide examples of how this schema would account for the position of adjuncts according to the three-way effect of movement-triggering features; in each case, note that at least the identity of the moved constituent and its landing site are predictable.

(4.99) a. They drank their martinis dry standing.
b. They [① standing [② dry [drank their martinis]]]
(VP to ② and movement of the resulting *drink their martinis dry* to ① are obligatory)

(4.100) a. Carol has made extra trips frequently willingly.
b. Carol has [① willingly [② frequently [made extra trips]]]
(VP to ② is optional; further movement of the resulting *make extra trips frequently* to ① is optional)

(4.101) a. Martha has hardly paid $1,000 willingly.
b. *Martha has [paid $1,000 willingly]$_i$ hardly t_i.
(VP intraposition is barred)

Still, to be able to predict these properties, the complex featural mechanisms in (4.98) seem necessary, and it is not clear how motivated they are. In particular, the arrangement in (4.98) hides what amounts to an end run around the (usually assumed) locality of selection, in that the identity of the phrase ZP that must land in Spec, YP can only be ensured by having Y select for a property of X, which in turn selects ZP. This suggests that the intervening projection XP is in fact superfluous (as it is, on an adjunction account).

The third problem this version of the LCH faces is that it offers no easy way to explain why adjunct subclasses have the distribution they do. In the right-adjunction theory proposed in section 4.3, predicational adverbs are obligatorily preverbal in functional projections because they always are sisters of a constituent representing their FEO complement, and they act like

heads in that this complement is always mapped to their right (in C-Dir). On the LCH, however, this fact can only be expressed by saying that predicational adverbs are obligatorily preverbal in functional projections because they (more specifically, something about the functional heads licensing them) block intraposition, but there is no obvious reason why this should be so.

The fourth problem involves cross-linguistic word order typology and UG constraints on it. Recall first an advantage claimed for LCH theories: that they dispense with the head-initial/head-final parameter. Of course, the difference between the two resulting groups of languages must be expressed somehow in syntactic theory, and LCH theories essentially require an equivalent parameterization, usually in terms of whether V and/or objects raise (producing SVO/V1 if so; see Kayne 1994:50ff. and Zwart 1997). Thus there is less of an advantage in restrictiveness than is sometimes claimed: there still must be a parameterization.

The right-adjunction theory is restrictive in a way that the LCH theory is not. As noted, the former correctly predicts that the basic distribution patterns of adjuncts always follow from the same parameterization (in 4.40) as for its complements and therefore that basic complement direction and basic adjunct direction will always covary (cf. Saito and Fukui 1998:449). To take one example: head-final languages should never have an unmarked, postverbal base position for the adjunct subclasses that are postverbal in SVO languages: the parameterization of C-Dir being inactive simultaneously requires complements and all adjuncts to be mapped to preverbal positions. On intraposition-type LCH theories, however, basic headedness is determined by the eventual landing site of V-raising and/or objects, while an adjunct's position is determined by whether intraposition applies to a constituent below it. Thus the two phenomena do not necessarily covary. This is set out schematically in (4.102)–(4.103), where the mechanisms necessary to get basic order (of complements) and the position of adjuncts with respect to V are given for the LCH approach in (4.102) and for the traditional approach in (4.103).

(4.102) LCH Theory with Intrapositions

Type	Complements	Adjuncts
SVO	V may raise	Intraposition applies (for nonpredicationals)
SOV	V, O raise	No intraposition for any type

(4.103) PDH Theory with Directionality Principles

Type	Complements	Adjuncts
SVO	C-Dir: active	C-Dir: active
SOV	C-Dir: inactive	C-Dir: inactive

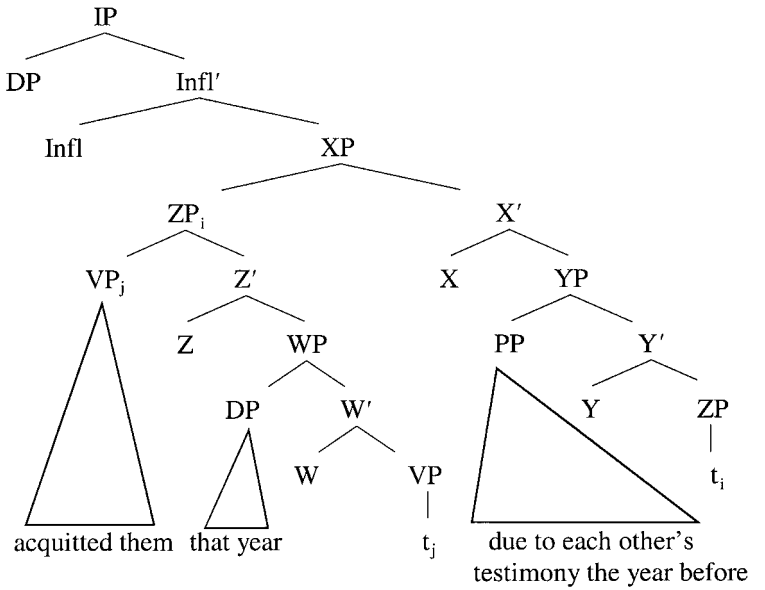
The absence of obligatorily postverbal adjuncts in SOV languages, as well as their presence in SVO languages, is predicted by the same mechanism that gives the basic order (4.103). The LCH theory, however, uses V-raising for the latter facts and intrapositions for adjunct positions. Nothing in principle prevents the existence of obligatory postverbal adjuncts in an SOV language because of the same sort of movement applying as is posited for English in (4.92). Similarly, nothing predicts that postverbal functional and participant adjuncts should always be possible in SVO languages, that clause-level predicational adjuncts are (apparently) never postverbal in any language, and so on.

The fifth problem for the intraposition approach is that, if it is to capture scope relationships properly, it cannot account for Barss/Lasnik effects. Observe (4.104).

(4.104) We acquitted them that year due to each other's testimony the year before.

This is interpreted with the *due to*-PP taking scope over *that year*. To predict this, the underlying structure must be as shown in (4.105), with the VP *acquitted them* first moving over *that year* into Spec,ZP and then the entire ZP moving over the PP *due to . . .* into Spec,XP.

(4.105)



In this structure the proper binding of *each other* by *them* cannot take place under any normal definition of c-command (although x-command would work). More important, (4.105) cannot be the final LF representation of (4.104) because scope can only be properly represented according to the base structure c-command relationships; (4.104) must undergo Reconstruction of the two intrapositions. Thus at LF, where anaphor binding applies, *them* is in its base position where neither it nor *each other* c-command the other.[38]

To summarize the point of this section, it seems that there are several rather considerable drawbacks to LCH theories making use of morphologically triggered intrapositions: they (a) weaken movement theory by allowing unmotivated movement triggers, (b) must make several stipulations about the moved phrase, landing site, and optionality/obligatoriness of individual intrapositions, (c) lack a plausible conceptual basis for the restriction on predicational adjuncts, (d) do not capture the covariance of basic word order and possible adjunct positions in terms of cross-linguistic word order typology, and (e) cannot account simultaneously for scope interpretation and Barss/Lasnik effects.

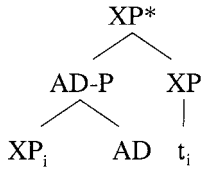
4.5.3 Semantically Triggered Intrapositions

It appears possible to reduce the level of stipulation in intraposition-based LCH theories if morphological triggers are abandoned in favor of semantic triggers, as proposed by Barbiers (1995). This variant of the theory, though, also has serious theoretical drawbacks.

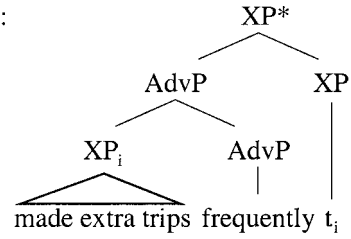
Barbiers essentially gets the equivalent of (4.97) by changing (4.97a–b) as shown in (4.106a–b), in the context of the schematic phrase structure in (4.107a) and exemplified for (4.93a) in (4.107b) (where AD-P is any sort of adjunct phrase). All adjunct modification relationships must take place in this configuration.[39]

(4.106) For any given adjunct XP,
- a. intraposition applies to the sister of XP, which
- b. must land in the Spec of that XP;
- c. Specs have intraposition trigger features, which must be fulfilled, of three values: obligatory (for obligatorily postverbal adjuncts), barred (for obligatorily preverbal adjuncts), or optional.

(4.107) (a)



(b) ex:



Barbiers ensures this by imposing a structural condition on semantic interpretation, in (4.108).

(4.108) Principle of Semantic Interpretation (Barbiers 1995:7):

[a.] A node Z establishes a S(emantic)-Relation between a node X and a node Y iff X immediately c-commands Z and Z immediately c-commands Y.

[b.] A node Z is a Qualifier of a node X iff Z establishes a S(emantic)-relation between X and Y, and X and Y are coindexed.

(4.109) C-command (Barbiers 1995:24): X c-commands Y iff

[a.] X does not dominate Y and Y does not dominate X, and

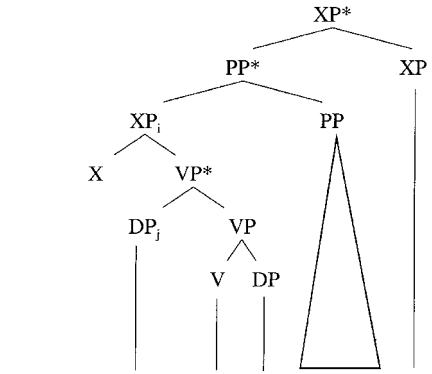
[b.] there is a (connected) path of left branches from Z, the minimal node that dominates X and Y, to X.

If this system is successful, it provides motivation for the identity of moved constituent and landing site, thus eliminating some of the stipulations discussed in section 4.5.2.

It does not solve two problems mentioned in that section, however. First, it still has no conceptually grounded explanation for the special behavior of predicational adverbs. Second, in terms of word order typology, it still needs a parameterization equivalent to fixing C-Dir for complements, which is still separate from the mechanism that produces differences in adverb positions. To see this, consider that if Barbiers' version of the LCH uses verb raising to account for the SOV/SVO difference, then the problem is exactly the same as for the earlier version we examined. It could also use an intraposition-like movement to distinguish SOV from SVO: assuming a base SVO order, one could raise objects (complements in general) into Spec positions or alternatively raise V out of VP and then intrapose the remnant VP, producing a derived SOV order. But on a theory like Barbiers', with semantic motivations, such movements must be taken as happening in all languages – the difference

being that they happen overtly for SOV languages and covertly for SVO (see (4.110)).

(4.110) a. They frequently eat fish on Sundays.
b. Syottyuu nitiyoobi-ni sakana-o tabeta. (Japanese)
frequently Sundays-on fish ate
c.



						Type	Mvt of XP	Mvt of DP
(English)	fish	eat	t_j	on Sundays	t_i	SVO	overt	covert
(Japanese)	sakana-o	tabeta	t_j	nitiyoobi-ni	t_i	SOV	covert	overt

As (4.110c) and (4.111) show, this is precisely the opposite of what one needs to get postverbal adjuncts, where overt intraposition is required for SVO languages and covert intraposition for SOV.

(4.111) LCH theory with Semantically Motivated Intrapositions:

Type	Complements	Adjuncts
SVO	Covert obj-raising	Overt intraposition
SOV	Overt obj-raising	Covert intraposition

(4.112) PDH theory with Directionality Principles:

Type	Complements	Adjuncts
SVO	C-Dir: active	C-Dir: active
SOV	C-Dir: inactive	C-Dir: inactive

We are left with a counterintuitive, inverse (if strictly predictable) relationship between the two types of movements required to link complement and adjunct order cross-linguistically. While the fact that the link is predictable is a step up from what was needed with morphologically motivated movements, (4.112) still seems preferable to (4.111), at least on conceptual grounds.

We have seen that at least two problems remain despite the move from morphological to semantically motivated intrapositions. There are two further

difficulties (which the morphological-trigger version of LCH does not have).

The first is a conceptual one. Notice that Barbiers posits a structural requirement on semantic interpretation in (4.108) (illustrated graphically in (4.107a)), where currently the standardly assumed requirement is sisterhood, for example, in the head-complement relation or modifier relation (as between adjectives and projections of N, or adjuncts and projections of V). The imposition of this extra requirement is made necessary, in large part, by the need (a) to ensure that only the sister of Ad-P moves, not some lower constituent in (4.107a) (as noted in (4.106)) and (b) to get the correct surface word order for postverbal adjuncts and for focused expressions (see Barbiers 1995:43ff.). Barbiers' theory claims that this structure may in some cases be overtly realized (parallel to the conceptualization of *wh*-movement in Huang 1982 and subsequent work), and when it is, it just happens to mirror a particular, complex structural configuration *required by semantics*. Given that sisterhood is the null hypothesis at LF and that the structural requirement seems to do no work for semantics at all, (4.108) appears to be a case of putting the semantic cart before the syntactic horse.[40]

The final difficulty faced by this version of the LCH is that it, like the Larsonian version, ends up requiring adjunct licensing at two separate levels. Remember that something must account for the position of adjuncts in base structure. Though Barbiers does not state in detail how this is to be done, it appears that adjuncts' hierarchical and linear order at this level is determined in essence by their semantics, according to the scope relations, either directly or indirectly (Barbiers 1995:104–5, Cinque 1999). However, Barbiers' system also requires the constituent below each adjunct to raise into the latter's Spec for the correct modification relation between them to be established. When this has been done, at LF, the correct c-command relationships for scope have been destroyed; in (4.92), for example (which has the same c-command relationships when converted to Barbiers' system), neither *frequently* nor *willingly* c-command the other, though the latter takes scope over *frequently*. Therefore, one must either (a) add some mechanism to "lock in" the correct scope relations before intrapositions apply or (b) undo all the intrapositions at LF for a full-scale Reconstruction, in order to get the scope relations right. The first case clearly adds considerable redundancy and complexity; the second in essence requires two levels of LF, since anaphor and variable binding must apply at LF but *before* Reconstruction. Either way, the grammar becomes needlessly complex and ends up splitting adjunct licensing over two levels, that is, base structure (in some sense) for scope and LF for establishing modification relationships. Since the PDH theory proposed

here can accomplish modification and scope by the same mechanism at the same time, in an intuitive way, the bifurcation forced by semantically driven intrapositions seems unnecessarily complex.

4.5.4 Conclusions for Intraposition Versions of the LCH

Intraposition theories were originally motivated (as were all versions of the LCH) by the desire to uphold a ban on right-adjunction and to eliminate the need to parameterize languages in terms of left-right relations. My goal in this section was to examine how such theories can be compared to right-adjunction theories like the one outlined in section 4.3.

Empirically, intraposition theories do the job. They build layered structures that correctly represent concentric phenomena. They correctly represent scope relationships among adjuncts, encoded via c-command in base structure. Also, they handle the three-way distinction between obligatorily postverbal, obligatorily preverbal, and unrestricted adjuncts by means of obligatory, blocked, and optional intrapositions, respectively. In terms of simplicity and empirical adequacy, these make intraposition versions of LCH theory roughly equivalent to the right-adjunction theory.

On the theoretical level, however, both intraposition versions of the LCH are notably more complex, and less motivated, than the traditional right-adjunction approach. First, if intrapositions are morphologically triggered, they weaken the theory of movement by allowing movement triggers with no semantic/pragmatic or morphological correlate, in essence merely stipulating the movement. Second, they must use unconstrained, stipulative mechanisms to ensure movement of the correct constituent to the correct landing site, circumventing the normal locality of selectional mechanisms. Third, they provide no plausible explanation for the obligatorily preverbal distribution of clausal predicational adjuncts. Fourth, they do not make the apparently correct connection between basic word order and adjunct distribution patterns, which covary strictly. Fifth, they have no good account of the Barss/Lasnik effects that originally motivated "down to the right" structures in the first place.

If intrapositions are semantically triggered, two of the problems carry over: there is no explanation for predicational adjuncts' distribution, and the covariance of basic and adjunct orders is treated as an accident. In addition, the intraposition account encodes crucial syntactic restrictions into a semantic principle, counterintuitively. Finally, the semantically based intraposition account forces an unnecessary bifurcation in the semantic licensing of adjuncts between base and LF structures.

4.6 Summary and Conclusions

4.6.1 Summary of the PDH Theory

The PDH approach allows adjuncts to adjoin on the right side of maximal projections, and the version outlined in section 4.3 proposes that the Directionality Principles in (4.40) govern both basic word order for complements and position of adjuncts with respect to the base position of V, with one parameterization for activation of C-Dir. This correctly accounts for the fact that head-final languages generally disallow postverbal adjuncts, while head-initial languages allow them. The further proposal that predicational adverbs act as if they were heads taking complements (regardless of the language's head-initial/head-final status) accounts for why they are universally preverbal when they have clausal readings and, additionally, may be postverbal with manner readings in head-initial languages. I also proposed that for non-predicational adjuncts in functional projections, though they are unrestricted by the Directionality Principles in head-initial languages, considerations of weight may require that some subclasses are obligatorily preverbal and others obligatorily postverbal.

4.6.2 Comparison to LCH Theories

Consider first the concentric phenomena of constituent structure, scope interpretation, and linear order. How do the approaches examined here fare in this regard?

Both the right-adjunction and intraposition theories capture the layered constituent structure indicated by postverbal adjuncts correctly, but the Larsonian LCH analysis has trouble. The right-adjunction and intraposition theories again do reasonably well in accounting for scope interpretation (though the latter is forced to encode scope relations according to base structure in some way). The Larsonian LCH needs to posit special rules (LFAR) that both require rather complicated stipulative mechanisms to derive the correct results and force redundant licensing of adjuncts at two levels. Given these drawbacks, the Larsonian version of the LCH seems inferior to the other two.

The traditional, right-adjunction theory accounts for linear order by means of the Directionality Principles. Intraposition theories restrict base structures to left-adjunction but allow departures from this via movement: to account for differences between adjunct classes' position with respect to V, they may specify nodes as triggering optional, obligatory, or barred movement (for freely ordered, postverbal, and preverbal adjuncts, respectively). A further parameterization of properties of movement triggers – either for height of verb

movement, for overt versus covert movement, or for barring intrapositions for adjuncts versus allowing them (depending on the version of the theory) – accounts for the cross-linguistic differences in basic word order typology. Thus both theories can correctly account for the different positions of various adjunct subclasses with respect to V.

However, there are several theoretical reasons to prefer the right-adjunction theory over the LCH. First, it is more highly constrained with respect to movement theory: it bars adjunct-specific movements (like LFAR), and it disallows the unmotivated movement triggers required for intraposition. Second, it is more highly constrained in the way it connects the positions of complements and adjuncts, which covary cross-linguistically; the correlations schematized in (4.111)–(4.112) are captured directly on the traditional theory with Directionality Principles, while they are accidental on the LCH.

Third, the PDH analysis is less complex than the intraposition-based approaches. One the one hand, if morphological triggers for intraposition are adopted, much of the information about what moves, where it moves to, and so on, must be stipulated. On the other hand, with semantic motivation for intraposition, it is necessary to posit either a mechanism to encode scope relationships in the base so that they can be preserved until LF or there must be two levels of LF so that scope can be represented after Reconstruction. The PDH requires nothing comparable, since it represents both linear order and scope relationships directly, without movements, unchanged from the base through to LF.

Finally, the PDH theory is more conceptually motivated than the LCH. Morphologically triggered intrapositions were already seen to lack motivation, and the semantic motivation proposed by Barbiers in fact encodes a hidden structural condition whose place in the semantic component is suspect. Also, neither intraposition version of the LCH theory has an obvious way to capture the restriction on predicational adjuncts that is possible with the PDH. By contrast, the PDH motivates all the required adjunct positions with respect to V in terms of the F- and C-complexes: where the latter is activated (for lexical heads, complements, or heavy adjuncts, all of which are aligned with the C-complex), nonheads are to the right; while Specs, defined as positions licensed by means of [+F] features, are aligned with the F-complex and are to the left.

4.6.3 Conclusion

I conclude that the traditional theory of adjunct position, allowing right-adjunction in base structure, is superior to LCH theories, which disallow it at

that level but then introduce movements to produce what amounts to right-adjunction on the surface. Despite proponents' claims that LCH theories are more restrictive than right-adjunction theories, I believe I have shown the opposite to be true with respect to adjunct distribution: once the mechanisms required for intrapositions are examined closely and once a Directionality Principle account along the lines of (4.40) is elaborated for a traditional right-adjunction theory, the latter turns out to be more restrictive, simpler, and more highly motivated. If this held only for adjuncts, there might be a reasonable claim that other successes of the LCH should militate in its favor; however, evidence from sources like Borsley 1997, Büring and Hartmann 1997a, Kural 1997, Rochemont and Culicover 1997, Müller 1997, and McCloskey 1999 suggests that right-adjunction accounts of such phenomena as Heavy NP Shift, extraposition, and other rightward movements, as well as the right-side positioning of relative clauses in NPs, are also to be favored over LCH analyses. Thus it seems that adjuncts are indeed allowed in principle to adjoin to the right.

5

Noncanonical Orders and the Structure of VP

5.1 Introduction

5.1.1 Setting the Stage

In the previous chapters I established that adjuncts are adjoined freely, either to the left or to the right of various projections in a clause, and I proposed that they are licensed primarily by whether they can be properly interpreted where they adjoin and secondarily according to weight-theoretic features, if any. This approach to adjunct distribution assumed a compositional system (the FEO Calculus), Directionality Principles, Weight theory, and lexical specifications for individual adjuncts.

In developing this system, great emphasis was placed on the linear order of various adverbials in preverbal positions, including their order with respect to auxiliary verbs, and on strings of postverbal adjuncts. Very little attention was paid to cases where arguments and adjuncts co-occur. The usual assumption is that adjuncts are all licensed to the outside of the verb from its arguments (or, at least, its complements). That is, sentences like (5.1a–c) display the canonical order for head-initial languages:

(5.1) a. Tim gave the money to Ray quickly on Sunday.
b. Grubby hands reached for the money greedily.
c. She was singing beautifully that day.

But, of course, there are many instances of noncanonical orders, as in (5.2).

(5.2) a. Tim gave the money immediately to Ray.
b. Tim gave quickly to Ray all the money he had collected over the last year.
c. Grubby hands reached greedily for the money.
d. She was singing that day more beautifully than I had ever heard her.

My main goal in this chapter is to establish that the derivation of orders like (5.2a–d) involves rightward movement. I adopt and support the common view that V always raises to Pred and that DP objects are in Spec,VP in English. I also elaborate a theory of rightward movement based in part on Weight theory, defending this approach against analyses that derive sentences like (5.2a–d) exclusively via movements to the left, and confirm the prediction of the Directionality Principles that no left-adjunction is allowed within VP. In the grand scheme of things, this will complete discussion of the most important theoretical principles for adjunct distribution, allowing us to move on to a more detailed examination of the licensing of individual adverbials (chapters 6–8).

5.1.2 Data and Issues

Any theory must account for a number of basic word order facts for English complements and postverbal adjuncts. First, adjuncts do not occur between the verb and a nonheavy direct object DP:[1]

(5.3) a. The Shakers made (*skillfully) boxes (skillfully).
b. The city council blocked (*frequently) their proposals (frequently).

Second, they are allowed to precede complements belonging to other categories, such as PP, CP, or IP:

(5.4) a. The hurricane moved dangerously up the coast.
b. I clashed often with my boss.
c. We referred to them collectively as the Harpies.

(5.5) a. The CEO told her immediately that she was to be promoted.
b. They moved quickly to close the gap.

This applies to particles in verb-particle constructions, although much less commonly:

(5.6) a. ([The stallion] immediately issued a reassurance to Tillie that he would protect her.) She neighed supportively back. (Jane Smiley, *Moo*, 220)
b. They watched as the second deathangel [died], and the third flew tirelessly on. (John Varley, *Demon*, 182)

Third, adjuncts may come between a verb and its DP object when the latter is heavy enough; such heavy objects may also appear after other complements that they normally precede (cf. (5.7a) and (5.7b)).

(5.7) a. They read with relish both *T. Rex and the Crater of Doom* and *Passion of the Western Mind.*
b. Natalie put on the shelf every piece of fiddle music she had collected in Nova Scotia.

That this process, commonly referred to as *Heavy NP Shift*, is really a more general process of *Heavy Shift* (see Pesetsky 1995:254 n. 204, Culicover 1997:210–11), since phrases other than DP objects may be displaced, such as PP complements or AdvPs, as shown in (5.8a–b) (where moved phrases are italicized).

(5.8) a. She treated them out of respect *more like VIP guests than the vagrants that they were.*
b. Sarah danced last night *more elegantly than I had ever seen her.*
c. I suspect that we would do more good now apart *than together.*
d. Rogelio had talked for a while *of smuggling in a few breeding pairs and turning them loose.* (Nevada Barr, *Track of the Cat*, 69)

(5.8b) shows that it must be possible for not just complements but also adjuncts to occur in noncanonical orders, with Heavy Shift applying to them as well.

(5.3)–(5.8) can be seen as representing two phenomena: the ban on adjuncts between a verb and direct object (in (5.3)) and various deviations from the canonical order ((5.4)–(5.8), schematized in (5.9)) (where PP subsumes particles in some cases, and the numbered adjuncts represent any two adjuncts normally ordered as shown).

(5.9) [V – DP – PP/CP] – Adjunct1 – Adjunct2

The fact shown in (5.3) has often been attributed to an adjacency condition on Case assignment (Stowell 1981, Chomsky 1981), but in recent years this has been seen as a rather problematic analysis. The challenge is to replace this condition with something that is not just a matter of shifting a stipulation from one part of the grammar to another. One way to do this (starting at least with Johnson 1991) is to posit leftward movement of both the verb and its object, and to ban adjunction between their landing sites. The phenomenon in (5.4)–(5.8) has been analyzed in two ways. One is to say that the apparently displaced constituent, such as the heavy phrase in (5.7)–(5.8), has moved rightward. The other is to say that various leftward movements have occurred; in this case, one would usually say that the verb raises (leftward) in (5.4) and (5.6), while in (5.5) and (5.7a–b) both the verb and the following XP (*her* in (5.5a), the immediately postverbal PPs in (5.7)) move leftward, possibly together as one unit.

Thus these noncanonical orders raise two issues: (a) which projections disallow adjunctions, if any, and if so why, and (b) are leftward or rightward movements (or both) primarily responsible for these data? The answer I give for (a) is that left-adjunction to VP is barred, according to the Directionality Principles, and combined with leftward movement of the verb to Pred, this produces the strict adjacency of verb and object (which is in Spec,VP). My answer for (b): rightward movement is primarily responsible for noncanonical orders. Overall, then, I support the view that movement in both directions is allowed by UG, although only rightward movement is responsible for the noncanonical orders in (5.4)–(5.8). Naturally, this requires justification, since it makes for a simpler grammar to posit movement in only one direction (a common assumption in current grammatical theory), but we will see that there is ample evidence to support it.

5.1.3 Organization

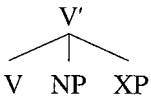
Section 5.2 starts with a review of the basic VP-shell structure for complements, with raising of V to Pred, laying out some of the assumptions that come into play later. Section 5.3 then presents arguments that left-adjunction to VP is impossible and, therefore, that verb movement alone is not responsible for sequences in which an adverb comes between the verb and its non-DP complements (like (5.4a–d)). Section 5.4 presents the details of Weight theory and the rightward movements it conditions, and the predictions of the resulting theory are reviewed in section 5.5. In section 5.6 I argue that a rightward movement approach is superior to LCH theories that derive cases like (5.4)–(5.8) via leftward movement only. Section 5.7 presents a brief summary and conclusion.

5.2 The Structure of Complements and V-Raising

5.2.1 Larsonian Structures

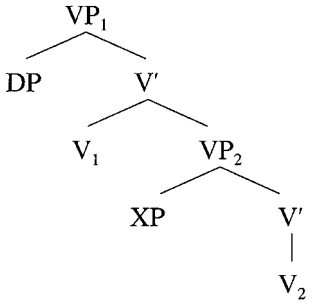
Until the late 1980s it was often assumed that multiple complements are arranged in a flat structure, illustrated schematically in (5.10) (where XP represents any second complement).

(5.10)



However, though there is some doubt about the original argument based on Barss/Lasnik effects (as noted in chapter 4), there are still good reasons to adopt a Larsonian structure for internal arguments of the verb (see (5.11)).[2]

(5.11)



First, (5.10) would make the wrong prediction for the scope of quantified arguments in double object constructions (5.12).

(5.12) They gave someone every advantage.

Assuming that c-command is relevant for quantifier scope interpretation,[3] a flat structure makes the wrong prediction that cases like (5.12) should be ambiguous; (5.11) makes the correct prediction.[4] Second, den Dikken (1992) shows that to account for sentences like (5.13) we must allow a leftward movement of object DPs that has the properties of A-movement, requiring an argument position right after V that is higher than subsequent complements.

(5.13) They made (*out) Kevin (out) a genius (*out).

In den Dikken's account one needs to posit the base order in (5.14), with *out* being a head taking a small clause complement and *Kevin* raising to be assigned case.[5]

(5.14) make [$_{SC}$ [$_{PP}$ out [$_{SC}$ Kevin a genius]]]

A number of desirable results come out of this analysis, including the impossibility of *wh*-movement for the predicative DP, as in (5.15), as well as the obligatory position of *out* between *Kevin* and *a genius* in (5.13).[6]

(5.15) *What kind of genius did they make Kevin out?

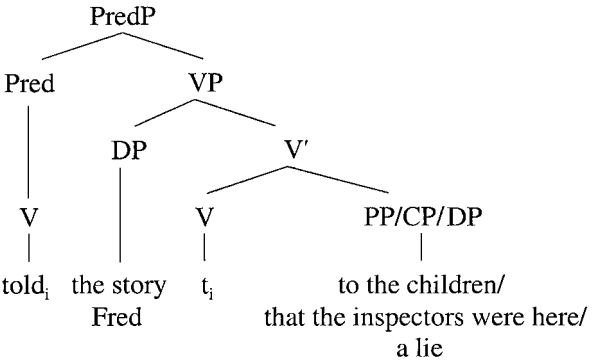
(See den Dikken 1992: 42ff.) This result clearly is compatible only with a Larsonian shell structure, not a flat structure.

5.2.2 Multiple Complements

Thus I adopt the (now-standard) type of structure shown in (5.11). Of course, this requires the further movement of V into the immediately c-commanding functional head Pred (Bowers 1993).[7] Accordingly, for the different types of multiple complements in (5.16a–c), I assume the structure of PredP in (5.17).

(5.16) a. We told the story to the children.
b. We told Fred that the inspectors were here.
c. We told Fred a lie.

(5.17)



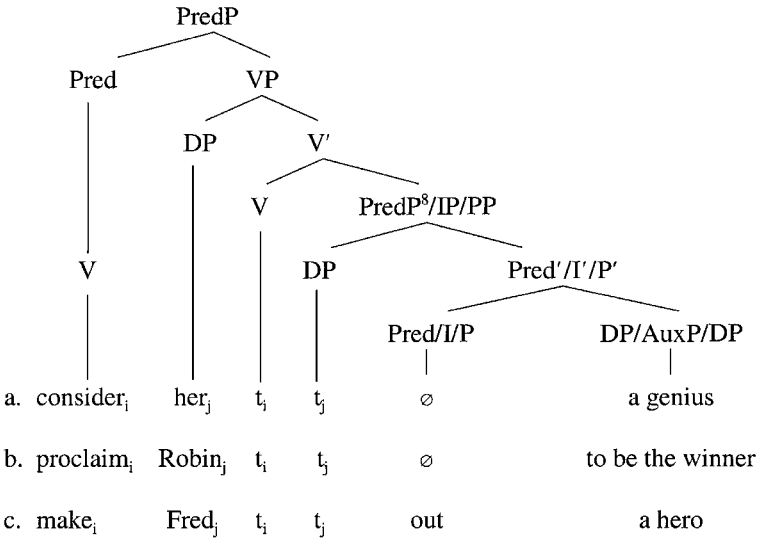
(5.18)–(5.19) represent somewhat more complex structures.

(5.18) a. The committee considers her a genius.
b. The committee proclaimed Robin to be the winner.
c. The committee made Fred out a hero.

(5.19) a. A giraffe picked the branch up.
b. A giraffe picked up the branch.

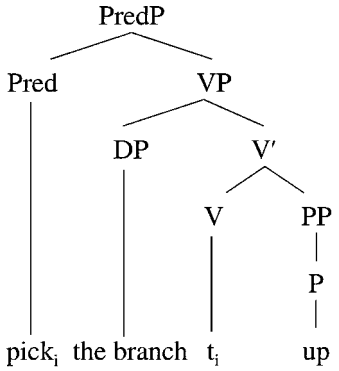
(5.18a–b) show cases where a usual assumption is to take the object of *consider* and *proclaim* to be a clausal unit consisting of a subject and a predicate: a small clause in (5.18a), and an IP in (5.18b). In these cases we must posit the structure in (5.20), with the embedded subject raising to Spec,VP, assuming that Case is assigned under government from the raised V and that government cannot be long-distance. (5.20c) essentially follows the analysis of den Dikken (1992) for cases where small clause and particle constructions are combined.

(5.20)

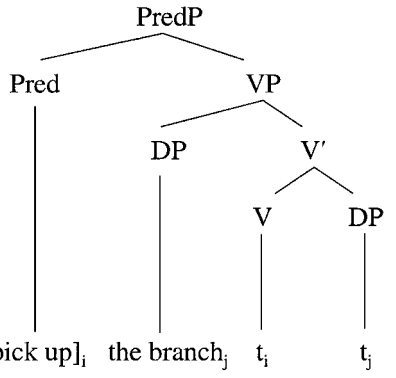


However, I assume a different structure for the simpler cases of particle constructions in (5.19a–b), as shown in (5.21a–b), respectively.

(5.21) a.



b.



As den Dikken (1992) and others have noted, analyses like that of Johnson (1991), on the one hand, are problematic in treating these patterns as starting from the morphologically complex V + Prt unit, since the theoretical status of excorporation (which moves the root V and strands the particle in its base position; see (5.22)) is so shaky.

(5.22) V_i DP $[_V\ t_i$ Prt]

On the other hand, analyses like den Dikken's, which treat all particles as heads of small clauses as in (5.20c), cannot account for the fact that the simpler pattern shown in (5.21) allows particles to the right of adverbs, while the small clause pattern does not, nor does it allow particles to the right of secondary predicates; compare (5.23) and (5.24).

(5.23) a. Albert squired her happily around.
b. We shall sort them well and [truly] out. (William Gibson, *Idoru*, 98)
c. Laurent Blanc goes smoothly and strongly on. (*World Soccer*, Apr. 1999, p. 33)

(5.24) a. *The committee made him unfairly (out) a villain (out).
b. *She turned (out) quickly very intelligent (out).

(For the pattern in (5.23), see also (5.6) and (5.25b).) I suggest in section 5.4 that there is a limited option for particles to move rightward, but not if they are heads. Thus the contrast can be captured if we adopt den Dikken's analysis for (5.18)/(5.20) but not for (5.19)/(5.21), where the particles are "defective" PPs and are free to move via XP-movement.[9]

5.2.3 Prospectus

In the rest of this chapter I support an analysis of (5.3)–(5.8) with rightward movement as the primary mechanism. First it will be established that left-adjunction is barred in VP, making an analysis based merely on verb-raising implausible. Then I show that rightward movement can be properly motivated and constrained, and that it can account for noncanonical orders like those in (5.2). After a review of the predictions of this theory, I compare it to the "antisymmetric" LCH analysis, with the finding that the former has both empirical and theoretical advantages.

5.3 Arguments against Left-Adjunction in VP

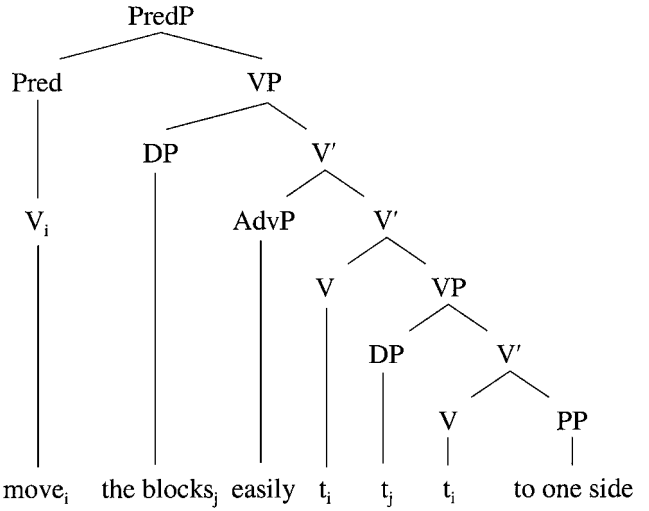
5.3.1 The Ungrammaticality of Adverbs before Direct Objects

Theories based on the Linear Correspondence Hypothesis (LCH), such as those by Kayne (1994) and Cinque (1999), require all adjuncts to be adjoined

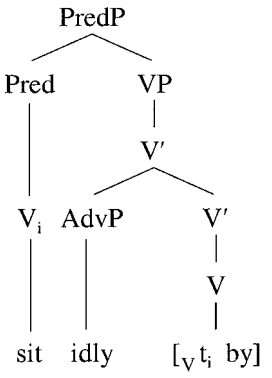
to the left of their maximal projections. Other writers on adjunct syntax who do not necessarily adopt the LCH, such as Tang (1990), Johnson (1991), and Bowers (1993), also assume that adjuncts may be left-adjoined as a way to derive the noncanonical orders shown in (5.3)–(5.8) (among others). To take two simple instances: in Johnson's analysis we would have the structures in (5.26)–(5.27) for (5.25a–b). In (5.26) the direct object raises to Spec of the highest VP to get case from V, which itself has raised to Pred (Johnson's μ), and in (5.27) V excorporates out of a verb-particle complex. These derivations account for an AdvP preceding a subcategorized PP and a particle, respectively.

(5.25) a. She moved the blocks easily to one side.
b. They would not sit idly by.

(5.26)



(5.27)



But there must also be some way to account for the contrast in (5.3) and (5.4)–(5.5), that is, why an AdvP cannot precede a DP object but is fine before other types of complements. If one assumes that adverbials can generally adjoin to VP, then sentences like **The Shakers made skillfully boxes* as in (5.3a) should be grammatical. One solution is the adjacency requirement on accusative case assignment proposed by Stowell (1981) and Chomsky (1981). But as noted by many other writers (e.g., Johnson [1991], Bowers [1993], Ernst [1993]; cf. also Chomsky [1995b:330]), this is too stipulative and does not apply straightforwardly to nominative case assignment (given tensed Infl as the Case assigner and the possible order Subject – AdvP – Infl). The alternative suggested by Johnson and Bowers is to restrict left-adjunction of VP-internal adjuncts to V′ nodes; this correctly predicts, for example, that for the structure in (5.26) **move easily the blocks to one side* is ungrammatical, as *the blocks* must move to into Spec, VP, to the left of *easily.* However, restricting some adverb subclass to V′ has two strikes against it: (a) it essentially just substitutes one ad hoc restriction for another and (b) it requires the grammar to be able to refer to X′ nodes as opposed to XP nodes in the same projection, which seems otherwise unnecessary, and in fact should be ruled out in the sort of phrase structure theory assumed here (and by Chomsky [1995a]).[10] Thus in accordance with our program of seeking maximally general and motivated principles of adjunct licensing, this analysis should be rejected.

Chomsky (1995b:331) and Takano (1998:845) propose a different sort of solution, in which a direct object must raise to get Case, as in (5.26), but if it has to cross over an adverb like *easily*, the movement is barred by the Minimal Link Condition (or any equivalent constraint that blocks moving one element across another of the [in]appropriate sort). This is implausible, however, both empirically and theoretically. Empirically, it ought to apply equally well to movement of subjects from within VP (or PredP/VoiceP, etc.) or of objects in passives, to Spec,TP, wrongly predicting that (5.28a–b) should be ungrammatical.

(5.28) a. George$_i$ always has t_i liked broiled eel.
b. The director$_i$ was often impressed t_i by their performance.

Theoretically, this solution would have to allow for blocking an A-movement (for Case) across an A′-element (the adverb), while normal A′-movements are not blocked.

(5.29) a. What$_i$ has George always liked t_i?
b. That sort of eel$_i$, the chef has always broiled t_i.

Since this sort of blocking mechanism is understood to be relativized to types of elements, so that the moved and intervening ones should be of the same general type (cf. Rizzi 1990), this is precisely the wrong sort of correlation.[11]

Thus the extant accounts of (5.3) all fail for one reason or another. However, the facts are explained if V always raises to Pred, direct objects are in Spec,VP, and adjuncts may not left-adjoin to VP, on very general grounds supplied by the Directionality Principles: in head-initial languages, where C-direction (C-Dir) is active, any adjunct in the lexical VP is required to right-adjoin. In the remainder of this section I present four pieces of evidence supporting this analysis and the claim that left-adjoined adjuncts are indeed disallowed in VP, further implying that the noncanonical orders of sentences like (5.4)–(5.5) are not derived just by verb raising, as claimed by Alexiadou (1997), Costa (1997, 1998), and many others.

5.3.2 Scope of Focusing Adverbs

Examine the following sentences containing the focusing adverb *only* (similar sentences may be constructed with *even*, *just*, *mainly*, and others of this class; see Ernst 1984:chapter 3, for discussion):

(5.30) a. Carol only had bought barbecue sauce for the picnic on Friday.
b. Carol had only bought barbecue sauce for the picnic on Friday.

(5.31) a. Carol had bought only barbecue sauce for the picnic on Friday.
b. Carol had bought barbecue sauce only for the picnic on Friday.
c. Carol had bought barbecue sauce for the picnic only on Friday.

As is well-known (see, for example, Jackendoff 1972 and Rooth 1992), these adverbs may focus any element within their c-command domain. Thus (5.30a) may have any of the interpretations indicated by stressing the various italicized constituents in (5.32a–d) (among others) but not in (5.32e).

(5.32) a. Carol had only *bought* barbecue sauce for the picnic on Friday.
b. Carol had only bought *barbecue* sauce for the picnic on Friday.
c. Carol had only bought barbecue sauce for the *picnic* on Friday.

d. Carol had only bought barbecue sauce for the picnic on *Friday.*
e. *Carol *had* only bought barbecue sauce for the picnic on Friday.

(5.32a) indicates that she bought barbecue sauce but did not (for example) make it from scratch, as was expected; (5.32b) might be used where we expected her to bring a whole selection of sauces, and so on. This follows on the usual assumption that *only* is adjoined to VP (or some functional category above it, like PredP) and thus c-commands everything to its right. (5.32e) is not felicitous because *only* does not c-command the preceding auxiliary *had.*

Now observe the range of interpretations for (5.31a) in (5.33a–e).

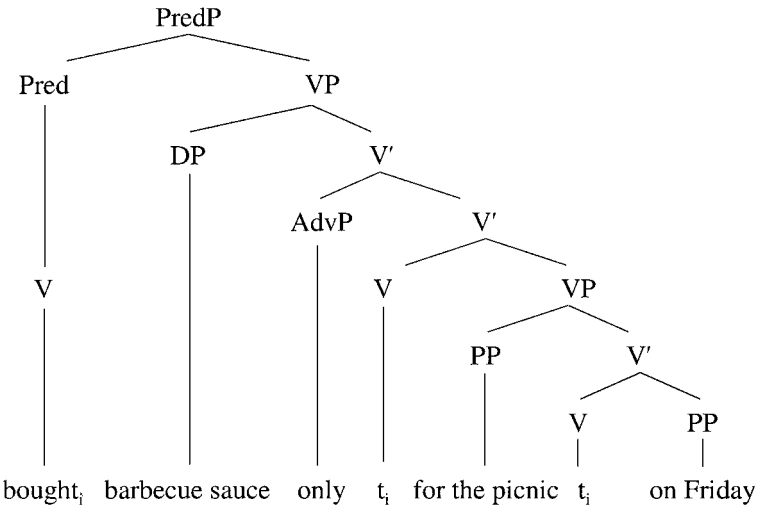
(5.33) a. *Carol had *bought* only barbecue sauce for the picnic on Friday.
b. Carol had bought only *barbecue* sauce for the picnic on Friday.
c. *Carol had bought only barbecue sauce for the *picnic* on Friday.
d. *Carol had bought only barbecue sauce for the picnic on *Friday.*
e. *Carol *had* bought only barbecue sauce for the picnic on Friday.

(5.33a) and (5.33c–e) are not possible with the italicized word as the focus of *only.* This is accounted for straightforwardly by the assumption that such adverbs may adjoin to DP and PP (as well as VP, CP, AP, etc.), since if *only* is adjoined to DP in (5.31a)/(5.33a), its scope is correctly restricted to the rest of the DP *barbecue sauce.* The same effect holds when it is adjoined to the PPs *for the picnic* and *on Friday*; only an item within *only*'s c-command domain in PP may be focused, as (5.34) shows (the judgment in (5.34d) is for the reading where *on Friday* modifies *buy*; the sentence is fine if the PP modifies *picnic*).

(5.34) a. *Carol had *bought* barbecue sauce only for the picnic on Friday.
b. *Carol had bought *barbecue* sauce only for the picnic on Friday.
c. Carol had bought barbecue sauce only for the *picnic* on Friday.
d. *Carol had bought barbecue sauce only for the picnic on *Friday.*
e. *Carol *had* bought barbecue sauce only for the picnic on Friday.

Theories allowing left-adjunction cannot account for these facts directly, since they should allow a structure like (5.35) for, say, (5.31b) (the point still holds with a slightly different tree if adjunction to VP is allowed in addition to V′) and incorrectly predict that (5.34d) is acceptable.

(5.35)



These sorts of theories can avoid this problem only by adding a further stipulation, such as one banning focusing adverbs from lexical projections. No stipulation is necessary if left-adjunction is always barred in such structures.

This argument depends on the assumption that focusing adverbs indeed may adjoin to phrases other than clausal projections like VP, AspP, and the like; there is strong evidence that a focusing adverb may form a constituent with a DP or PP. There are at least four arguments to this effect.

First, focusing adverbs may occur between a preposition and its object DP:

(5.36) a. We based our verdict on only those considerations allowed to us by law.
b. I was struck by just that same thought a moment ago.
c. He was aware of even the slightest movement of her fingers.

Assuming binary branching, an adverb in this position can only be adjoined to the preposition to its left or to the DP to its right; movement and insertion tests like those illustrated in (5.37) show that the latter is correct.

(5.37) a. What we based our verdict on were only those considerations allowed to us by law.
b. I was struck a moment ago by – of all things – just that same thought.
c. Even the slightest movement of her fingers(,) he was aware of.

Second, observe that Aux movement to Comp disallows any material between Aux and the subject:

(5.38) a. *Has just now Bob been fired?
b. *Will frequently Francine get scared?
c. *Is definitely this what we can do?

But focusing adverbs may appear in this position, as in (5.39), this seeming exception falls out without difficulty if they are part of the subjects.

(5.39) a. Has only Bob been fired?
b. Will even Francine get scared?
c. Is mainly this what we can do?

Third, consider the fact noted earlier that English direct objects immediately follow the verb, with no intervening adverb. This being so, the focusing adverbs in (5.40) only can plausibly be part of the direct object DP; (5.41a–c) confirm (as was done for (5.37)) that this is indeed the correct analysis.

(5.40) a. Sylvia has bought just those textbooks she expected to use.
b. We have considered mainly the candidates who could yodel.
c. The head office ignored even the nastiest memo that Bill sent.

(5.41) a. It was just those textbooks she expected to use that Sylvia bought.
b. We have considered, as far as I can tell, mainly the candidates who could yodel.
c. Even the nastiest memo that Bill sent, the head office ignored.

Fourth (5.37a–c) and (5.41a–c) themselves illustrate further (overlapping but logically separate) tests for DP constituents containing an initial focusing adverb: clefting, topicalization, niching (i.e., insertion of parentheticals, as in (5.37b) and (5.41b)). In all of them, the adverb is clearly grouped with the DP.

Taking these four tests together, it seems clear that DPs indeed permit an initial adverb, at least a focusing adverb.[12] Thus there is no reason to doubt the constituent structure assumed in connection with (5.32)–(5.35), leading us to conclude that the postverbal focusing adverbs in these sentences are initial elements of the various postverbal complement DPs, PPs, CPs, and so on, and cannot adjoin to VP.

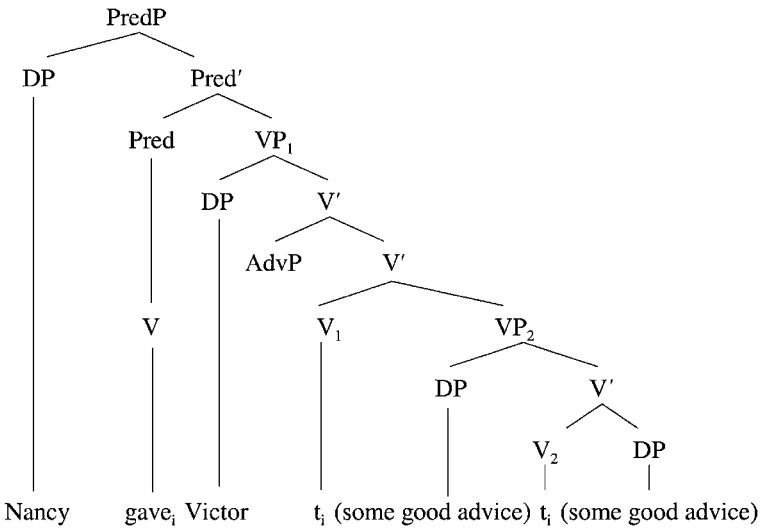
5.3.3 Case Adjacency

As noted, one advantage of allowing adverbs to left-adjoin within VP is that the order V – DP – AdvP – PP[subcat] is easily accounted for, on the assumption that V and DP raise from their base positions. As also noted, however, this

requires something to keep adverbs from adjoining to the edge of VP, between V and DP. To this end, both Johnson (1991) and Bowers (1993) claim that adverbs may only adjoin to V′ when in VP, but besides being stipulative, there is evidence from double object constructions against such a condition.

Bowers (1993) and (Ernst 1998a) take the surface structure of the V – DP – DP pattern to be roughly as shown in (5.42); two variants of this analysis are given, with different possible positions for the second object shown (it is also possible that *Victor* moves to the position shown from a lower position, but this does not affect the point at hand).

(5.42)



It can be readily seen that in either version of (5.42), even though we predict the ungrammaticality of the order *V – AdvP – DP, the possibility of left-adjunction to either V′ as shown, or to VP_2, incorrectly predicts that V – DP – AdvP – DP is possible (see (5.43)).

(5.43) a. *Nancy gave Victor quickly some good advice.
b. *They sent the brokerage eagerly their proposal.
c. *The judge fined harshly the miscreants $1,000.

Note that on any double object analysis where there are two tiers of VP, one per object (possibly with accompanying functional projections above each one), any possibility of left-adjunction for adverbs to VP (or the functional projection) will make the same claim.[13] Thus it seems clear that neither the restricted left-adjunction to V′ nor regular adjunction to VP can handle double object sentences correctly. A ban on left-adjunction to VP correctly predicts these facts.

5.3.4 Chinese Postverbal Manner Phrases

Mandarin Chinese has an unusual kind of postverbal manner adverbial of the form *de*-AP, which has the oddity of excluding all other postverbal constituents; that is, it must occur alone to the right of the verb. (5.44) is an example where the direct object appears optionally in preposed position (Ernst and Wang 1995).

(5.44) Guorong (qiu) fa -de hen youli.
Guorong ball serve-DE very strong
'Guorong served (the ball) hard.'

Chinese is a head-initial language with regard to complements, so that direct and indirect objects, CP complements, and so on all canonically occur to the right of the verb. But, when the direct object or any other normally postverbal element comes between the verb and the manner adverbial, the result is ungrammatical, as shown in (5.45) (the parentheses at right give equally ungrammatical versions where the manner expression precedes the other postverbal element).[14]

(5.45) a. *Guorong fa-le qiu de hen youli. (* . . . de hen youli qiu)
Guorong serve-PRF ball DE very strong
'Guorong served the ball hard.'
b. *Guorong kai dao chengli de hen shoulian. (* . . . de hen shoulian dao chengli)
Guorong drive to town DE very skillful
'Guorong drove to town skillfully.'
c. *Guorong pao-le liang ci de hen kuai. (* . . . de hen kuai liang ci)
Guorong run-PRF two time DE very fast
'Guorong ran fast twice.'
d. *Guorong wen ni lei-bu-lei de hen keqi. (* . . . de hen keqi ni lei-bu-lei)
Guorong ask you tired-not-tired DE very polite
'Guorong asked politely if you were tired.'

(5.45b–c) show that the *de*-marked adverbial may not co-occur with a selected PP or with postverbal adjuncts, and (5.45d) illustrates their nonoccurrence with a CP complement. As Ernst (1996a, 1999a) shows, the only way to account for sentences like this in a principled way is to assume that the manner expressions are obligatorily adjoined to the right, outside all other adjuncts, and that the initial, complementizer-like element *de* obligatorily

cliticizes to the verb stem under adjacency at PF. As a result, if anything intervenes between the adjunct and V, the sentence violates *de*'s morphological requirements at PF.

Note also that Chinese has directional verbs that act similarly to English particles, especially in being able to occur either before or after direct objects:

(5.46) a. Zhangsan shen-chu-lai shou.
Zhangsan extend-out-come hand
'Zhangsan stuck out his hand.'
b. Zhangsan shen shou chu-lai.
Zhangsan extend hand out-come
'Zhangsan stuck his hand out.'

(5.47) a. Ta ji-hui-qu le nei-feng xin.
s/he send-back-go PRF that-CL letter
'S/he sent back that letter.'
b. Ta ji le nei-feng xin hui-qu.
s/he send PRF that-CL letter back-go
'S/he sent that letter back.'

I assume, along with Tang (1990), Zou (1998), and others, that the alternations in (5.46)–(5.47) result from raising of V to Pred, with the direct object in Spec,VP as in English. The directional verb may be either a part of the complex verb that raises ((5.46a), (5.47a)) or the head of a directional VP complement to V ((5.46b), (5.47b)) having the same function as a directional PP.

If manner adverbials can adjoin to the left in VP, either to VP itself or to V′, we incorrectly predict that (5.48) (the parenthetical version of (5.45b)) should be as grammatical as its English gloss and that (5.49c) should also be fine (where the *ba*-construction, which preposes an object, is fully compatible with postverbal manner expressions, as (5.49b) shows).

(5.48) *Guorong kai de hen shoulian dao chengli.
Guorong drive DE very skillful to town
'Guorong drove skillfully to town.'

(5.49) a. Zhangsan ba shou shen-chu-lai.
Zhangsan BA hand extend-out-come
'Zhangsan stuck his hand out.'
b. Zhangsan ba shou shen-chu-lai de hen kuai.
Zhangsan BA hand extend-out-come DE very fast
'Zhangsan stuck his hand out fast.'

c. *Zhangsan ba shou shen-chu de hen kuai lai.
Zhangsan BA hand extend-out DE very fast come
'Zhangsan stuck his hand out fast.'

We cannot say that Chinese manner adjuncts are generally barred from adjoining to the left in principle, either, since they occur preverbally, as in (5.50) (albeit in a slightly different form, with *de* on the right edge).[15]

(5.50) Zhangsan jinjin de na-zhe daozi.
Zhangsan tight DE hold-ASP knife
'Zhangsan tightly holds the knife.'

The contrast in (5.48) and (5.50) follows directly if manner adverbials are adjoined only to the right in VP and to the left in PredP. Thus denying the possibility of left-adjunction to VP in head-initial languages gains support.

5.3.5 Manner Adverbs in Particle Constructions

Observe (5.51)–(5.54).

(5.51) a. They immediately skated over smoothly.
b. They immediately skated smoothly over.

(5.52) a. They skated immediately over.
b. They skated smoothly over.

(5.53) a. *They skated immediately smoothly over.
b. *They skated smoothly immediately over.

(5.54) a. They skated smoothly over immediately.
b. They skated immediately over smoothly.

A theory allowing only right-adjunctions in VP handles this data set easily on the assumptions that *immediately* in (5.51) is left-adjoined to PredP and that particles like *over* may optionally move rightward a very limited distance. Starting from the base order V-Prt-AdvP in (5.51a), this movement derives (5.51b), (5.52a–b), and (5.54a–b). (5.53a–b) are ungrammatical because *over*, being extremely light, cannot move from its base position right after V over more than one adverb (see section 5.4 for discussion). By contrast, if left-adjunction to VP is allowed and rightward movement of particles is not, then (5.52a–b) can only be derived by verb movement across the adverb. This would be possible for both *immediately* and *smoothly*, as (5.52a–b). If this

is so (5.53a–b) ought to be grammatical as well, since nothing forbids simultaneous generation of the two adverbs and movement of V leftward across both of them. One might bar these sentences by forcing "short" movement of Prt to some position between the adverbs, producing (5.54a–b), but this requires positing two adjunction sites for *immediately*, one below and one above this putative landing site for Prt. This solution is problematic in that it both entails the multiplication of empty heads that we saw in chapter 3 (if Prt is taken as a head in this case) and adds another movement with an obscure movement trigger (i.e., no plausible motivation). Thus leftward movement has no easy explanation for the judgments in (5.53).

5.3.6 Asymmetries Between Preverbal and Postverbal Adverbs

In the previous four sections, we saw four arguments that left-adjunction of adjuncts is barred in the lexical VP. As such, preverbal manner adverbs cannot adjoin to VP but must instead be adjoined to a higher projection, PredP. In this section I give evidence that this is indeed the case.

Examine manner adverbs that show a nonweight-related asymmetry in their position with respect to the verb. This class of adverbs including *poorly*, *beautifully*, and *horribly* has been discussed by a number of authors (e.g., Bowers [1993:605ff.] for English and French, and Eckardt [1998] for parallel cases in German):[16]

(5.55) a. *Joe poorly built the house.
b. */?Molly beautifully played the flute.
c. *?Al horribly performed the pirouette.
d. *Laura perfectly cooked the roast.

(5.56) a. Joe built the house poorly.
b. Molly played the flute beautifully.
c. Al performed the pirouette horribly.
d. Laura cooked the roast perfectly.

For Bowers (1993), these adverbs can only adjoin to V′ nodes, which predicts the asymmetry in (5.55)–(5.56): after verb-raising to Pred, with direct objects in Spec,VP, a V′-adjoined adverb like *poorly* will end up after both the verb and its object, regardless of whether it is left- or right-adjoined to V′.

Note, however, that these adverbs *can* occur preverbally if the verb is less transitive, as shown in (5.57) (speakers' judgments vary, but these cases are felt to be much better than those in (5.55)).

(5.57) a. Jane poorly understood what was required of her.
b. This idea (rather) poorly correlates with the facts.
c. She beautifully interprets these ideas in her new play.
d. Al horribly resented those remarks.
e. The first two or three chapters he didn't quite understand or perfectly comprehend, but then I began to notice that. . . .
(*New York Times*, Apr. 26, 1999, p. E1)

All the verbs in (5.57) involve predicates of knowledge or emotion, or otherwise do not involve a change of state in a Theme, while those in (5.55) do. The contrast between (5.55) and (5.57), both with preverbal occurrences, shows that we must be able to account for a semantic difference between preverbal and postverbal position for manner adverbs. Since we are taking the strong (and fairly standard) position that only a difference in hierarchical position can be responsible for this (i.e., attachment to a different projection), it must be that the postverbal adverbs of (5.55) and the preverbal ones of (5.57) are adjoined to different projections.[17]

5.3.7 Summary

I have presented four arguments that adjunctions to the left in VP are uniformly barred. First, when focusing adverbs like *even* and *only* occur postverbally, they take scope only over the immediately following DP or PP (or other subclausal constituent), which is predicted only if they may adjoin to that phrase but not to VP. Second, the apparent case-adjacency condition on English objects, in both monotransitive and ditransitive clauses, follows directly if these objects are generated in Spec positions in VP shells and nothing adjoins to the left in VP. Attempts to explain the condition by allowing left-adjunction, but restricting it to the V′ level, merely exchange one ad hoc condition for another and cannot account for the ditransitive cases easily; accounts that block raising of the object over an adverb are also inadequate. Third, the restriction on Chinese postverbal manner phrases (that the latter must occur alone) is predicted easily only if they are generated to the right of all arguments, not preverbally in base structure. Fourth, the ungrammaticality of the pattern *V – AdvP – AdvP – Prt is explained if left-adjunction to VP is impossible, but not otherwise.

An important conclusion is that the Directionality Principles receive a measure of confirmation: adjuncts in VP follow a language's C-Dir (if activated) as complements do and thus do not left-adjoin in head-initial languages. In addition, manner adverb interpretation facts show that preverbal occurrences

are indeed adjoined above VP, so that the prohibition on adjunction within VP may be upheld.

If left-adjunction is forbidden in VP and adjuncts are licensed in positions to the right of all arguments in the base structure of head-initial languages, then orders in which a postverbal adjunct precedes a complement, like V – AdvP – DP (with heavy objects) or V – (DP –) AdvP – PP (where PP is subcategorized) must be the result of rightward movement of the complement.[18] Such rightward movement is, of course, the traditional analysis (see Ross 1967, Kayne 1985, Rochemont and Culicover 1990, Pesetsky 1995, and references in the latter two), and although many recent authors have argued that UG should ban it in principle (e.g., Kayne [1994], Zwart [1997]), others have presented evidence that it is indeed part of UG. Most of these discussions, however, have centered on extrapositions of PP or CP from inside a subject or of relative clauses in DP (Borsley 1997). In the next sections I argue that the facts of noncanonical orders of arguments and adjuncts to the right of V also support the existence of rightward movement and provide evidence for rightward movement theories over LCH theories, which deny its existence.

5.4 A Theory of Rightward Movement

5.4.1 Introduction

There has been relatively little explicit discussion about rightward movement of elements with postverbal base positions. The one area that has been discussed to a significant extent is the boundedness and A′-properties of Heavy Shift (a more general version of Ross's (1967) Heavy NP Shift; see Pesetsky 1995:254 n. 204 and Culicover 1997:210–11). Noncanonical orders of adjuncts, like those in (5.58), have received less attention.

(5.58) a. Yves performed last night more brilliantly than I've ever seen.
b. Jeanne packed a bag for Jules only halfway, but packed one full for Jim.

For a case like (5.58a), it is common to assume that the movement of *more brilliantly than I've ever seen* is allowed because it is especially long and thus qualifies as heavy; in (5.58b) the contrast (and perhaps the unexpectedness of only packing a bag halfway) focuses *only halfway*, again making it count as heavy and allowing it to move over *for Jules*.

In this section I propose an analysis of such sentences invoking rightward movement. Although the LCH denies the possibility of rightward movement and a number of arguments against it have been advanced in recent years, the

existence of multiple postverbal constituents, particularly those in noncanonical orders, provides evidence in favor of rightward movement, to go alongside Müller 1995, Büring and Hartmann 1997a, Kural 1997, and others.[19] The account includes a formalization of aspects of Weight theory, which, although surely needing more work, is (I believe) a step forward. It and the notion of extended projections play important roles in motivating a restrictive and empirically adequate theory of noncanonical orders in head-initial VPs.

5.4.2 Weight Theory

In chapter 4 the two principles in (5.59)–(5.60), were proposed to account (respectively) for adverbs that are obligatorily preverbal in head-initial languages and for adjuncts that normally are postverbal in such languages, occurring between subject and verb only in more formal styles (we may call this the *AuxRange Effect*).

(5.59) [+Lite] → [−R]

(5.60) Sufficient weight licenses the C-complex feature [+Heavy]. ("Sufficient" is variable for style and relative weight.)

Weight theory is the set of syntactic principles formulated in terms of grammatical weight, a notion going back at least as far as Behaghel 1909–10 (cited in several places, including Wasow 1997), with heaviness involving some measure of the length (or complexity) of phrases but also sometimes encompassing stress, lexical, or categorial factors (see (5.61a)). The generalization about "endweight" (Quirk, Greenbaum, Leech, and Svartvik 1972, p. 943) is that the longer/more complex phrases are ordered progressively to the right (see (5.61b)).

(5.61) Weight Theory
   a. Weight is determined by
      Category (CP > PP > DP > AP > AdvP with complement > AdvP without complement > Adv) (Adv = [+Lite] AdvP, Underlined phrases = [+Heavy], as first approximation)
      Stress/Focus (more = heavier)
   b. Endweight Template: In a sequence of postverbal constituents at PF, the preferred order is of increasing weight to the right.[20]

A detailed examination of the various factors going into the determination of weight, a notoriously difficult issue, would take us too far afield,[21] but the

generalization in (5.61) is sufficient for our purposes. In (5.61a) the first criterion (corresponding to the heaviness hierarchy in Hawkins 1984:90) is labeled category for convenience, but actually is largely a rough reflection of some measure of length or complexity, such as the number of words in the constituent (Hawkins 1990:246; see Wasow 1997 for discussion of length and complexity criteria), though it may also relate to some notion of major categories, excluding AdvP.[22] The effect of the second criterion in (5.61a), stress/focus, is also well documented (see Rochemont and Culicover 1990, Zubizarreta 1998, and references cited there).[23]

5.4.3 Predictions of Weight Theory

5.4.3.1 AuxRange Effects

One effect of Weight theory has already been discussed: the restrictions that keep [+Lite] adverbs in AuxRange positions in head-initial languages and that normally keep heavier adjuncts from those same positions. (5.62)–(5.63) repeat some of the examples, with the patterns of ungrammaticality predicted by (5.59)–(5.60).[24]

(5.62) a. *She could have left never.
b. *Yvonne has eaten scarcely.

(5.63) a. Albert has (*with a screwdriver) opened the tin (with a screwdriver).
b. Dan (*because he had won) was jumping for joy (because he had won).

Aside from this, there are two other effects of Weight theory that concern us here: (a) the direction of movement for heavy elements (rightward in head-initial languages and leftward in head-final languages, with a possible option of rightward movement in some SOV languages like German and Dutch), and (b) the endweight effect embodied in (5.61b).

5.4.3.2 Direction of Heavy Shift

Heavy items are ranked on a relative scale, and (5.61b) serves as a trigger for rightward movements, that is, Heavy Shift, or more generally "NP-Shift" as characterized by Rochemont and Culicover (1990) (thus including also Presentational *There*-Insertion). I term such movements *R-movement*, with the understanding that they may also occur leftward, in head-final languages, but with different properties from movements triggered by [+F] features.

(5.60) partially represents the trigger for R-movements, in that any moved phrase must bear [+Heavy]. Recall that this is a C-complex feature, and in a head-initial language an XP marked [+Heavy] will also bear [+R] by the Directionality Principles; therefore, when it moves in a head-initial language it must move rightward. In a head-final language this principle is inoperative, since all nonheads are necessarily to the left of their heads; the Directionality Principles apply to derived positions as well. Thus movement is always leftward, including R-movements. This is illustrated for Japanese in (5.64) (Hawkins 1990; his (12) and (13b)), where (5.64a) represents the canonical order but (5.64b) shows the preferred order with a heavy CP complement.

(5.64) a. Mary-ga kinoo John-ga kekkonsi-ta to it-ta.
Mary yesterday John married that said
'Mary said that John got married yesterday.'
b. Kinoo John-ga kekkonsi-ta to Mary-ga it-ta.
yesterday John married that Mary said
'Mary said that yesterday John got married.'

In general, the heavier a complement CP is in Japanese, the more likely it is to be preposed (Dryer 1980:134). Thus R-movements normally follow the direction of complements in a given language. This falls out naturally from the Directionality Principles and the trigger's association with the C-complex (essentially the notion of "X′-Compatibility" in Saito and Fukui 1998).

Some head-final languages, such as German, Dutch, and Hindi, allow CP complements (and some other items) postverbally; this may occur even in embedded SOV clauses:

(5.65) a. . . . weil der Kellner t_i glaubt [daß der Gast betrunked ist]$_i$
because the waiter believes that the customer drunk is
'because the waiter believes that the customer is drunk'
(German: Büring and Hartmann 1997b:60; their(1a))
b. Siitaa-ne kahaa thaa ki raam aayaa hɛ.
Sita-ERG say-PRF be-PST that Ram come be
'Sita has said that Ram has come.'
(Hindi: Mahajan 1997:186; his(3))

These cases present their own difficulties, including the fact that they seem to have some different properties with respect to Heavy Shift in head-initial languages. Though this is somewhat speculative, I tentatively propose that (5.66) holds for these languages.[25]

(5.66) Exceptional Directionality:
a. C-Dir may exceptionally be activated for CP only.
b. Exceptional C-Dir in CP permits limited R-movement.

This idea comes essentially from Hawkins (1990), although for him it is part of a different, parsing-based mechanism. Clearly, V2 languages like German and Dutch must have a head-initial CP, on the usual assumption that the V2 pattern is derived by movement of the finite verb into Comp. (5.66) applies to Hindi as well, which shows an overt Comp preceding IP in non-V2 clauses, as seen in (5.65). Languages like these, as opposed to Japanese, Korean, Turkish, and other more rigid SOV languages, also regularly allow heavy complements postverbally. Although many problems remain, (5.66) makes the right sort of correlation: an exceptionally allowed direction for the heaviest type of constituent (CP) allows exceptional linearization, having C-complex properties (such as is applying only to heavier constituents, as illustrated for German in (5.93)–(5.94)) and aligning with the universal C-Dir.[26]

5.4.3.3 Noncanonical Postverbal Orders

The principles in (5.61) also serve to condition alternate orders of complements and adjuncts in postverbal positions of SVO languages. (5.67) supplies some representative cases.[27]

(5.67) a. Miranda brought to the meeting all the equipment she thought we would need.
b. Dan was richer now in Boise than he had ever been in New York.
c. The observers moved easily to one side.
d. The police said they did not sit idly by. (NPR, May 8,1998 7:35 AM)
e. The awful days of ’61 were called back so vividly to mind by the plaza. (Kim Stanley Robinson, *Blue Mars*, 307)
f. She said to them {quietly/then} that we’d come.
g. Vanya tried {hard/once again/that day} to be gracious.

In (5.67a–b) a heavy direct object DP and a comparative clause, respectively, have moved over a PP. In (5.67c–e) a subcategorized PP or particle has moved across a manner adverb; and in (5.67f–g) complement clauses (finite and nonfinite, respectively) have moved over a manner, iterative, or temporal adverb, and also across a PP in (5.67f).

As (5.61b) states, Heavy Shift is more acceptable to the extent that heavier items are farther to the right than lighter items. I assume that, suitably

extended, (5.61b) also serves to assign relative acceptability to alternative base positions of an adverb, as in (5.68).

(5.68) a. ?Lou had extremely quickly arrived.
b. Lou had arrived extremely quickly.
c. Lou had extremely quickly devised a new way to get the products to market.

As these sentences show, the identical AdvP may be fine in preverbal position if the VP is relatively heavy (as in (5.68c)) but much less acceptable if not (cf. (5.68a)), in relative terms *extremely quickly* is heavy in (5.68a–b), so that the latter is preferred but light relative to VP in (5.68c) and thus is acceptable preverbally.

Heavy Shift is prosodically driven: the grammar prefers to arrive at the optimal PF representation, embodied in the Endweight Template in (5.61b).[28] The movement is optional, with the result assigned degrees of acceptability according to how well it matches the template. Movement may, and must, be to the right because it does not need to satisfy a [+F] syntactic/functional feature, which can only be fulfilled in leftward positions (Spec, in the normal case; see chapter 8 for discussion of the marked case); following Last Resort (see, e.g., Chomsky 1995b:256ff.), movement may not be to the left. Chomsky (1995b:333 and 1999 n. 45) in fact suggests that extrapositions of this sort are not feature-driven but rather possibly determined by different sorts of principles in the PF component. To the extent that Weight theory represents different sorts of principles (as it might, given the differences in bounding discussed in section 5.6.2), this is correct at least in part; but it is clear that Heavy Shifts are not entirely PF phenomena: among other indications, they may create new configurations for anaphor binding (as demonstrated in Pesetsky 1995:266; (5.69) = Pesetsky's (643b)).

(5.69) We gave__to them$_i$ at the interviews [copies of reports on each other$_i$].

Thus rightward movement must be subject to at least some of the core principles normally assumed for P&P grammar (see also Müller 1995:221).

There seem to be two further conditions on Heavy Shift shown in (5.70).

(5.70) a. Economy for R-movement: shorter movements are preferred.
b. A′-movements that connect the same position type are preferred.

First, shorter movements are preferred over longer movements, which I assume follows from an appropriate addition to economy principles (see (5.70a)). Second, movement of an adjunct is slightly easier than movement of a

complement, that is, it is easier for the latter objects to be heavy and stay in situ (see Pesetsky 1995:255 for related discussion).[29] This follows from (5.70b) because complements are in Spec positions, so that R-movement would create a chain from a Spec position to an adjoined position; by contrast, adjuncts move from adjoined to adjoined positions.[30]

Observe now how Weight theory determines the relative markedness of noncanonical orders. As is well known, extraposition of a CP or PP complement (see (5.71)) tends to be better than that of an DP (direct object) or AP (cf. (5.72)), as predicted by (5.61).

(5.71) a. She said slowly that we should leave now.
b. She talked slowly to the old doorman.

(5.72) a. ?She said slowly each difficult word.
b. ?She became slowly very fond of Max.

The length of each right-moved phrase is the same in these examples, as measured in syllables; thus category, probably reflecting structural complexity, appears to be involved. The same effect seems to be at work in (5.73), though it is slight; an adverb following a time expression is not quite as felicitous as a participant PP (assuming both to have moved rightward over the temporal PP; again, there is no difference in length).

(5.73) a. They worked on Sunday for my brother.
b. ?They worked on Sunday diligently.

(5.74a–b) provides examples to show the effect of length; they are clearly better than (5.72a) and (5.73b), respectively.

(5.74) a. She said slowly each difficult word that was presented on the test.
b. They worked on Sunday more diligently than I would have thought possible.

Now observe three examples with more than two constituents. First, other things being equal, heavier items are farther to the right in English than lighter ones, as predicted:

(5.75) a. ?*Jane opened all the boxes she had packed earlier with a knife again.
b. ?Jane opened again all the boxes she had packed earlier with a knife.
c. Jane opened again with a knife all the boxes she had packed earlier.

In (5.75), even though (a) represents canonical order, it is heavily disfavored where *again* modifies *open*, because the very light adverb occurs after two relatively heavy constituents; speakers vary in their preference for the Heavy-Shifted (b) or (c), but both are better than (a), and (b) appears to be slightly preferred, as expected. Second, as noted in (5.52)–(5.53), repeated here as (5.76)–(5.77), a (relatively heavy) particle may occur to the right of a manner adverb in (5.76). However, this is disfavored anyway, since the particle is light with respect to the adverb and, having a longer distance to go, as in (5.77), is enough to quash the move (by (5.70a)).[31]

(5.76) a. They skated immediately over.
b. They skated smoothly over.

(5.77) a. *They skated immediately smoothly over.
b. *They skated smoothly immediately over.

Third, observe how the canonical order V – PP[subcat] – PP in (5.78)–(5.79a) is better than the reversed order, with the complement PP extraposed over the adjunct (participant PPs in the first two, a temporal PP in the third, in the (b) sentences).

(5.78) a. They accounted for the unexpected results with the new theory.
b. ?They accounted with the new theory for the unexpected results.

(5.79) a. They asked him to check with the design staff for the project chief.
b. ?They asked him to check for the project chief with the design staff.

(5.80) a. They took it onto the beach in the morning.
b. ?They took it in the morning onto the beach.

By contrast, (5.81)–(5.83) show much less of a difference between the two orders, when two adjuncts are involved.

(5.81) a. They accounted for it very easily with the new theory.
b. They accounted for it with the new theory very easily.

(5.82) a. They asked him to do it as soon as possible for the project chief.
b. They asked him to do it for the project chief as soon as possible.

(5.83) a. They took it surreptitiously in the morning.
b. They took it in the morning surreptitiously.

Although these contrasts are slight, they are consistent, showing that postposing of a complement is less favored than postposing an adjunct. This follows

from (5.70b), since the base position of a complement is a different sort of position from its (adjoined) landing site, while when adjuncts move the two sites are both adjoined.

5.4.4 Summary

In this section I examined a proposal for Weight theory, which determines the relative order of adjuncts and R-moved complements. This is not new material but represents merely an attempt to elaborate traditional ideas in a more formal way and to integrate them into an account of adjunct distribution. Most important, the order of adjuncts determined by semantically based principles, yielding the canonical order in base structure, may be adjusted according to the Endweight Template in (5.61b) (which responds to relative weights as in (5.61a)), as constrained by (5.70a–b). In section 5.5 I defend this approach against proposals that UG disallows R-movement.

5.5 Review of Predictions for Adverbial Positions in PredP

Let us review the predictions of the theory as outlined up to now for adjuncts interspersed with arguments of the verb. The crucial aspects of the theory are given in (5.84).

(5.84) a. V obligatorily raises to Pred; object DPs are in (or move to) Spec,VP.
b. Left-adjunction to VP is forbidden.
c. Phrasal categories may move rightward, according to Weight theory.
d. Particles are either a part of V or are very light PPs.

In the following discussion I ignore adverbs in preverbal position, since they are always possible, adjoined to PredP or above.

For the [V – DP (– XP)] structure shown in (5.17), where XP is a selected phrase, the prediction is that adverbials can occur (a) to the right of XP or (b) between DP and XP if the latter moves to the right over the adverbial. (5.85) (cf. (5.16)) shows that these are the correct predictions (recall that we are leaving aside the question of why double object constructions disallow rightward movement).

(5.85) a. We told (*quietly) the story (quietly) to the children (quietly).
b. We told (*anxiously) Fred (anxiously) that the inspectors were here (anxiously).
c. We told (*quickly) Fred (*quickly) a lie (quickly).

The small clause structure in (5.20), with the examples in (5.18), is schematized in (5.86), where SC is a cover label for the small-clause-like categories PredP, IP, and PP shown in (5.20).

(5.86) $[_{\text{PREDP}}\ V_i\ [_{VP}\ DP_j\ t_i\ [_{SC}\ t_j\ XP]]]$

Adverbials may not occur immediately to the left of DP, but they may occur before XP if they are semantically appropriate for internal modification of SC, or if they can modify V and XP is heavy enough to move rightward. Consider (5.87a–c) (cf. (5.18a–c)). In (5.87a), where adverbial modification of the embedded small clause makes modification by an adverb difficult, an adverb like *naturally* (cf. *She is naturally a genius*) can precede *a genius*, at least marginally; and *by now*, interpreted with the matrix clause, is fine sentence-finally or before the DP if the latter is heavy enough.

(5.87) a. The committee considers (*naturally) her {?naturally/by now} a genius of the first order (by now).
b. The committee proclaimed (*suddenly) Robin {always/?this year} to be the winner (this year).
c. The committee made (*many times) Fred (*many times) out (many times) an indispensable and awe-inspiring hero (many times).

(5.87b) shows a similar pattern, where *suddenly* cannot adjoin to VP and therefore cannot modify *proclaimed*; *always* may adjoin to the embedded IP (what they proclaimed was that Robin should always be the winner); *this year* may right-adjoin to IP, either sentence-finally or before *to be the winner* if the latter postposes. In (5.87c) it would seem that nothing may modify the small clause PP *out a hero*, since it has meaning only in combination with *make*; but a matrix clause adverbial like *many times* is possible either sentence-finally or after *out*, following rightward movement of the DP. As before, adverbials are barred before *Fred* by virtue of the Directionality Principles.

Finally, examine sentences in the simple verb-particle constructions represented by (5.88a–)(= (5.19a–b)).

(5.88) a. A giraffe picked the branch up.
b. A giraffe picked up the branch.

When the particle precedes the direct object, this is the result of raising of the $[_V$ V-Prt] complex to Pred (as in (5.21b)), and naturally nothing comes between the verb and particle (since they form a lexical item) or between the particle and object (since left-adjunction to VP is impossible), unless the object is especially heavy. This is illustrated in (5.89).

(5.89) a. A giraffe picked (*skillfully) up (*skillfully) the branch (skillfully).
b. A giraffe picked up (skillfully) the branches it found lying on top of the rock.

When the object precedes the particle, this comes from the structure shown in (5.21a), in which the particle represents a light PP. In this case, as usual, the position between verb and object is impossible, and final position is allowed (see (5.90)).

(5.90) A giraffe picked (*skillfully) the branch (*skillfully) up (skillfully).

The prediction of the theory is that particles should occur to the right of adverbs marginally. Although this does not seem to be possible for (5.89), there are indeed cases where they are found, as in (5.6a–b) and (5.23a–c). (Ideally, a full account should explain the conditions under which such cases are allowed. In the absence of one, I provisionally consider this [V – DP – AdvP – Prt] order to be grammatical and derived by rightward AdvP movement.)

In the next section, I present evidence that an alternative theory of noncanonical postverbal orders making exclusive use of leftward movements is inferior to the one proposed here.

5.6 The Kaynean-LCH Account of Postverbal Adjuncts

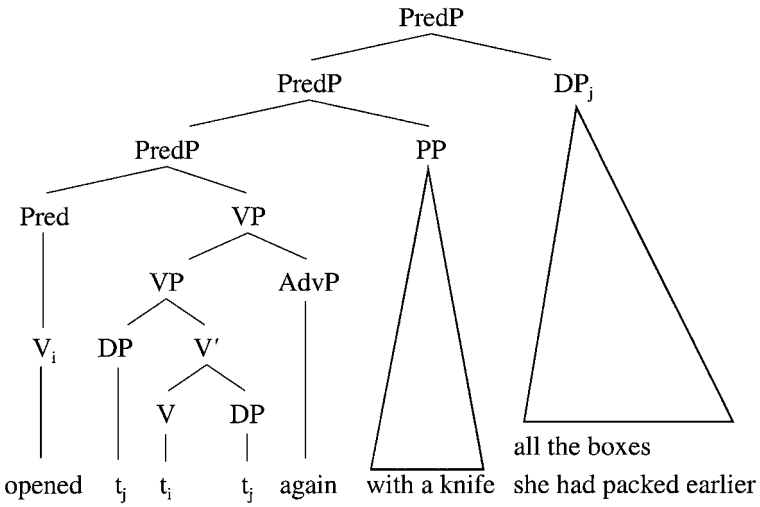
5.6.1 Introduction

In the previous sections, I argued for uniformly right-adjoining postverbal adjuncts in SVO languages and have assumed a traditional account of postverbal noncanonical orders, governed by Weight theory. Recent work in the LCH framework of Kayne 1994, such as Haider 1994 and Zwart 1997, though, posits that UG forbids rightward movements. I consider this alternative here, contrasting the traditional rightward movement account (abbreviated RM) for sentences like those in previous sections with the LCH theory allowing only leftward movements (for proposals in the same spirit, see Müller 1995 and Saito and Fukui 1998). The main goal is to help motivate the RM theory as the best available account of noncanonical orders of adjuncts and arguments in head-initial languages.

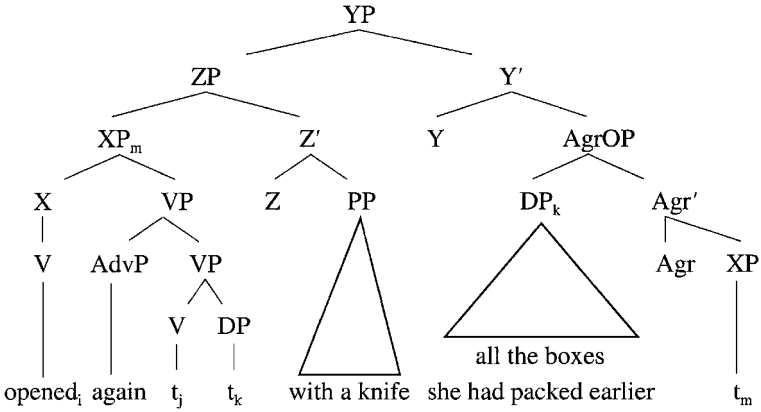
Although the LCH has not been worked out in great detail in this area, (5.92)–(5.93) are representative sketches of derivations of the relevant section of (5.91) (= (5.75c)) in RM and LCH, respectively.[32]

(5.91) Jane opened again with a knife all the boxes she had packed earlier.

(5.92)



(5.93)



In (5.92) there is one A′-movement, of the heavy DP *all the boxes she had packed earlier*, triggered by the (PF) prosodic requirement for heavy items to occur to the right. In (5.93), starting from the assumption that the base order is *with a knife again* + VP,[33] there are two movements: first, the heavy DP moves to a higher Spec than a normal DP does (the exact label for the landing site's projection is irrelevant), and then the remnant phrase raises above the DP (Kayne 1994:72; Rochemont and Culicover 1997, Kayne 2000:46).

5.6.2 The Arguments for RM over the LCH

5.6.2.1 Complexity and Generality

Beyond the theoretical problems noted in chapter 3 for intraposition, which continue to hold in this case, shifting heavy DPs as shown in (5.93) requires

additional complication and stipulations that RM avoids. RM requires a fairly simple statement: Heavy Shift may move any complement or right-adjoined adverbial, adjoining it to any projection within the extended VP.[34] The acceptability of various movements under Heavy Shift is determined by Weight theory. There may be more than one such movement, and there are no constraints on crossing movements.

The LCH requires one of two analyses. In one, as in (5.93), intrapositions are required to get the correct constituent structure. We have already seen that this causes several difficulties, but the problems multiply with three postverbal constituents to take care of. Consider the order V – AdvP – DP – PP (e.g., *open once again all those boxes with a knife*), assuming the same base order as in (5.93) (PP – AdvP – V – DP) and that DP must raise to get case. The correct constituent structure on the surface is [[[V AdvP] DP] PP].[35] So suppose we have the movements represented schematically in (5.94) to derive this structure.

(5.94)
a. PP [AdvP V DP]
b. PP [V [AdvP DP]]
c. PP DP [V [AdvP]]
d. PP [[V [AdvP]] DP]
e. [[V [AdvP]] DP] PP

The extra-high movement of DP from (5.94b) to (5.94c) is possible for heavy XPs (for Rochemont and Culicover [1997:352], it is an instance of Focus Preposing); subsequent movement of the remnant XP containing [V-AdvP] (from (5.94c) to (5.94d)) is obligatory, giving the noncanonical order V – AdvP – DP – PP (in (5.94e)).

(5.95) shows the movements necessary to derive (5.93); the main difference with respect to (5.94) is that the heavy DP moves even higher, to a position above PP.

(5.95)
a. PP [AdvP V DP]
b. DP [PP [AdvP V]]
c. DP [PP [V [AdvP]]]
d. DP[[[V[AdvP]]] PP]
e. [[[V[AdvP]] PP] DP

The LCH needs the two derivations in (5.94)–(5.95) to get the two variant orders shown in (5.94e) (for 5.75b) and (5.95e) (for (5.75c) = (5.91)). At the very least, this requires positing (a) two special landing sites for heavy DPs and (b) something to ensure that every time a heavy DP moves, whatever is

immediately to its right obligatorily intraposes over it to the left.[36] In this way it acts just like derivations for adjuncts that are obligatorily postverbal in surface order, as discussed in chapter 3; that is, intrapositions only work correctly to derive a postverbal position for an adjunct A if everything below A obligatorily moves above it. However, neither of the ways of getting this to work discussed in chapter 3 extend easily to heavy DPs. Barbiers' analysis would require the DP to be a semantic modifier of the V – AdvP – PP sequence, and the Kayne/Cinque analysis (based on morphologically-triggered intrapositions) would require stipulating that the nonadjunct heavy DP is associated with same sort of intraposition trigger that obligatorily postverbal adjuncts have. By contrast, the RM theory avoids these sorts of ad hoc movement triggers and landing sites.[37]

5.6.2.2 Direction of Movement and Categorial Restrictions

The second argument for RM rests on the fact that there are two types of movement restrictions that differ systematically between preverbal and postverbal landing sites in SVO languages. Leftward movement both often disallows multiple movements and allows any syntactic category to move, while rightward movement usually allows multiple movements and sometimes permits only certain categories to move. RM links these properties with the landing sites in a natural way, while the LCH cannot do this easily.

Extraposition of arguments and adjuncts of V to postverbal position in German and Dutch is restricted to CPs and PPs, while *wh*-movement and topicalization in these languages is essentially unrestricted as to the category of the moved item. (5.96)–(5.97) (from Haider 1997:125–26) illustrate this in German, where a CP and a PP are postposed in (5.96) (as is well-known, they may also topicalize) while (5.97) shows that APs, DPs, and VPs may be topicalized but not postposed.

(5.96) a. Er hat [die ganze Nacht t_i] geschlafen, [die er im
he has the whole night slept which he in
Verlies zubrachte]$_i$. (CP)
dungeon spent
'He slept the whole night that he spent in the dungeon.'

b. Er hat [häufiger t_i] protestiert, [als ich
he has more-frequently protested than I
zugestimmt habe]$_i$. (PP)
agreed have
'He has protested more frequently than I have agreed to.'

(5.97) a. [Stolz auf sie] ist er gewesen. (AP)
proud of her has he been
b. *Er ist gewesen [stolz auf sie]
c. [Eine NP] wurde hier geworden. (NP)
an NP was here moved
d. *Hier wurde verschoben [eine NP].
e. [Nach Rom gefahren] ist er nicht. (VP)
to Rome traveled has he not
f. *. . . daß er nicht ist [nach Rom gefahren].

As for multiple movements, it is a central fact of much work over the last 30 years that they are frequently disallowed for *wh*-movement and topicalization:

(5.98) a. *Who$_i$ do you wonder why$_j$ they picked t_i t_j?
b. *When$_i$ did you say that [those horses$_j$, they would surely buy t_i t_j]?

But multiple postposings are not as restricted as (5.99) illustrates.

(5.99) a. [The idea t_i] occurred t_j immediately [to me]$_j$ [that we could get rich that way]$_i$.
b. They work t_j [faster t_i] now [on their projects]$_j$ [than I would have expected after so little training]$_i$.
c. Justice Morehouse judges t_j [quicker t_i] now [than before]$_i$ [the complicated and morally challenging cases that used to take him a long time]$_j$.

It appears that multiple rightward movements are restricted mainly (if not exclusively) by the mostly prosodic factors of Weight theory, while multiple leftward movements are restricted by pragmatic and/or syntactic factors, such as conditions on traces (such as Relativized Minimality [Rizzi 1990]) or minimal movements (subjacency, the Minimal Link Condition [MLC]; [Chomsky 1995a]). For example, (5.98a) can be taken as a violation of the MLC in that *who* raises to the matrix Spec,CP across *why*, but the latter is closer to the [+*wh*] feature that attracts them, and thus only *why* may legitimately move. (5.100) summarizes the differences.

(5.100)

Phenomenon	Leftward Movement	Rightward Movement
a. Rightward Direction?	no	yes
b. Categorial restrictions possible?	no	yes
c. Easy multiple movement?	no	yes

How can these correlations be predicted? Recall that if rightward movements are barred, as on the LCH, an XP must be moved leftward to its surface position in some Spec above VP, and then there is a subsequent, obligatory leftward intraposition of one or more other phrases YP (, ZP, . . .) to the left of XP's landing site. If so, then some property of one or the other (or both) of these leftward movements must be responsible for the right-hand column of (5.100). On current theories, if there is a need to distinguish between movement types, the most natural way to do so is to encode the distinction in terms of properties of landing sites: whether the site is an A- or A′-position, whether it agrees with a *wh* head or a Topic or Focus head, and possibly the category of the maximal projection dominating the site (e.g., whether it is adjunction to VP or IP), and so on. Thus there ought to be some feature licensing the two movements that derive sentences like (5.99), differing from [+*Wh*], [+Topic], [+Focus], and the like ([+F] features). For the sake of argument, call this feature [+$\mathfrak{R}$] for LCH theories; [+*Wh*], [+Topic], and like heads are [−$\mathfrak{R}$]. Assume that for RM as well (as before) topicalization, focus, and *wh*-movement are triggered by [+F] features and thus require Spec landing sites, and therefore leftward movement.

Both the LCH and RM theories need to condition the actual movement in each case, and on both theories one must refer to something to condition (a) possible categorial distinctions and (b) the lack of restrictions on multiple movements. The LCH theory additionally must ensure the preposing of remnant XPs after preposing of heavy phrases to a [+$\mathfrak{R}$] site. The crux of the decision between theories is whether it is better to account for all these conditioning factors by referring to [+$\mathfrak{R}$], on the LCH, or by referring to something related to branching direction and C-Dir, that is, [+R], on the RM theory.

On the LCH, one can still use Weight theory (or some equivalent) to condition movements triggered by [+$\mathfrak{R}$]. This would account for the preference for moving CPs and PPs, since these are the heaviest constituents, and for the relative ease of multiple movements, since none of the constraints triggered by [+F] features apply. Thus it is possible to capture the link between (5.100b) and (5.100c) once [+$\mathfrak{R}$] is identified with prosodically related effects. (The link between (5.100b–c) and (5.100a) is stipulative, however; this is part of the basis for the first argument discussed in this section.)[38]

This much is doable in LCH theories. But there are two problems. First, how does Weight theory "know" which constituents to linearize? On these theories, they are widely spaced up and down the tree, with no obvious way to determine which set of constituents, ultimately to be postverbal, will be marked [+$\mathfrak{R}$] and thus considered as a group with respect to relative weight. Second, why should [+$\mathfrak{R}$] occur relatively low in clausal structure? On the LCH, this does not follow from anything, and it is unconnected to the AuxRange Effects

handled by (5.59)–(5.60) as part of Weight theory on the RM approach. There is nothing to explain, for example, why Heavy-Shifted items should not land higher up, perhaps in TP or CP (as seems to be the case in Japanese in (5.64), and therefore prefer clause-initial positions instead of clause-final positions. Simultaneously, the [+ℜ] approach cannot easily explain why CP- and PP-adjuncts, and heavy AdvPs, such as *because he got tired* or *more quickly than I expected*, do not normally occur in the AuxRange. As far as I can tell, the best it can do is to posit a feature like [+Heavy] on such items, which requires the intraposition of everything below them. In this way, (5.101d) and (5.102b) would be derived as shown.

(5.101) a. She eagerly ate everything we put in front of her.
b. She ate$_i$ eagerly t$_i$ everything we put in front of her.
c. She [everything we put in front of her]$_j$ ate$_i$ eagerly t$_i$ t$_j$.
[+ℜ]
d. She [ate$_i$ eagerly t$_i$ t$_l$]$_k$ [everything we put in front of her]$_j$ t$_k$.

(5.102) a. She [because she was happy] went dancing.
[+Heavy]
b. She [went dancing]$_k$ [because she was happy] t$_k$.

However, with this way of linking Heavy Shift in (5.101) and an AuxRange Effect in (5.102), [+Heavy] must trigger intraposition obligatorily. If so, with heavy Predicational AdvPs like *unfortunately for her* we incorrectly predict that postverbal position is possible (without comma intonation), in a derivation parallel to (5.102):

(5.103) a. She [unfortunately for her] went dancing.
[+Heavy]
b. *She [went dancing]$_k$ [unfortunately for her] t$_k$.

By contrast, on the RM theory, the rightward movement of heavy items and AuxRange Effects are directly linked. Weight theory puts heavier things to the right, in C-Dir, and forbids heavier things to the left, that is, in F-Dir. These two effects are linked conceptually and require no additional stipulations, unlike the LCH's analysis. This provides evidence for the RM approach.

5.6.2.3 Conditions on Extraction

The third argument for RM over LCH approaches to Heavy Shift is that only RM has a plausible account of the fact that rightward movement exhibits clause-boundedness and permits extractions from subjects and adjuncts. The

former is illustrated by (5.104)–(5.105) (examples from, or based on examples from, Rochemont 1992).[39]

(5.104) a. It was believed by everyone that Mary bought for her mother an ornate fourteenth-century gold ring.
b. What was it believed by everyone that Mary bought for her mother?
c. *It was believed that Mary bought for her mother by everyone an ornate fourteenth-century gold ring.

(5.105) a. Construction of a new bridge over the bay has just begun.
b. They announced to the reporters that construction has just begun of a new bridge over the bay.
c. *They announced that construction has just begun to the reporters of a new bridge over the bay.

(5.104) represents what Rochemont and Culicover (1990) term "NP-Shift," which comprises Heavy NP Shift (HNPS) and also Presentational *There*-Insertion (PTI; e.g., *There came a man with long hair*). (5.105) exemplifies one type of what they term "Extraposition," a phenomenon differing from NP-Shift in that the putatively extraposed phrase appears to have moved out of a larger phrase, such as a subject, as in (5.105) or an adverbial, as in (5.106).

(5.106) a. ?I said [that Doris ate [more slowly than her sister]] to Bill.
b. ?I said [that Doris ate [more slowly t_i] last night [than her sister]$_i$].
c. *I said [that Doris ate [more slowly t_i] to Bill] [than her sister]$_i$.

CED (Condition on Extraction Domain) violations – ungrammatical extractions from within subjects and adjuncts[40] – occur with leftward movement but not with rightward movement; (5.107a–b) illustrate that rightward movement permits these movements.

(5.107) a. [$_{DP}$ Construction t_i] has just begun [of a new bridge over the bay]$_i$.
b. Doris ate [$_{ADVP}$ more slowly t_i] last night [than anyone but her sister]$_i$.

(5.108) shows that leftward movement is barred in such cases.

(5.108) a. *What$_i$ has [$_{DP}$ construction of t_i] just begun?
b. *Who$_i$ did Doris eat [$_{ADVP}$ more slowly than t_i] last night?

(For some people (5.108a–b) are not completely unacceptable, but they are still worse than (5.107a–b).) The correlations are thus as in (5.109).

(5.109)

Phenomenon	Leftward Movement	Rightward Movement
a. Rightward Direction?	no	yes
b. CED violations occur?	no	yes
c. Clause-bounded?	no	yes

The RM theory predicts these correlations, given (5.110)–(5.111).

(5.110) Every maximal projection that fails to be directly selected by a category nondistinct from [+V] is a barrier for movement to Spec position.

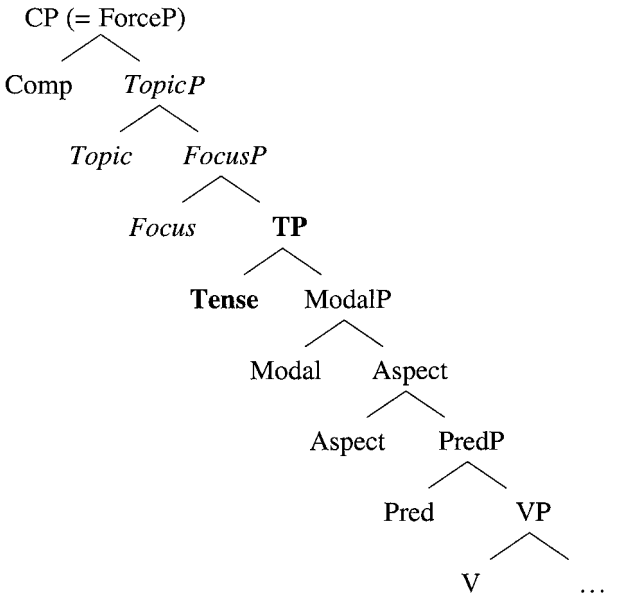
(5.111) Functional clausal extended projections are barriers for movement to [−F] positions.

(5.110) is essentially from Cinque (1990:44), restricted to movements to Spec (triggered by [+F]). This derives the usual effects of subject islands and adjunct islands for *wh*-movement, illustrated in (5.108a–b), respectively, because subjects are not directly selected and adjuncts are not complements; thus, by (5.110), they constitute barriers to leftward movement. There is nothing new in this but is merely one version of the accepted account of CED effects within the *Barriers* tradition.

(5.111) fits within the assumptions of Grewendorf and Sabel (1999), for whom adjunction is a one-time movement; that is, once an item adjoins it cannot move again ([−F] positions are those (adjoined) positions where [+F] is not checked against a head). (5.111) is more specific than mere clause-boundedness, as are other fine-grained proposals for the specific landing sites within a clause (e.g., Rochemont and Culicover 1990:chapter 4; cf. Pesetsky 1995:249). To evaluate (5.111) we must take an excursus to establish the identity of clausal extended projections.

Grimshaw (1991) suggested that for each major lexical projection there is an accompanying set of functional projections with which it forms a unit, an extended projection. In particular, in her view, Infl and Comp form an extended projection with V. I propose here that a version of extended projections adapted for a more articulated Infl and Comp, in the wake of Pollock (1989) and Rizzi (1997), is relevant for the distribution of both adjuncts and items influenced by weight. Examine (5.112).

(5.112)



I adopt a version of Rizzi's (1997) Left Periphery (which precise version is correct is irrelevant here), rendered in italics; this corresponds to what is usually known as CP, though it also subsumes positions that have frequently been taken to be adjunctions to IP. (This *CompRange* is discussed in more detail in chapter 8.) **TP** most crucially represents the projection whose Spec is the canonical position for subjects in Germanic and Romance languages (abstracting away from the V2 pattern for the former), and whose head is the canonical position for the finite V (in Romance) or auxiliary (in English). Though treated as one projection here, it might be expanded if the positions for subject and finite V must be separated by being in separate projections.[41] In the final group, among functional projections only PredP is always present; other projections are typically subtypes of AuxP[42] or NegP. The VP is the only lexical ([+Lex]) projection in the clause; it is made up of the verb's minimal projection in base structure, plus all associated shell VPs.

These three ranges are distinguished by means of two semantically based features:

(5.113) a. [±Disc] = Discourse-related, where [+Disc] heads trigger discourse-related interpretations like topic, focus, and illocutionary force. In the normal case, TP and above are [+Disc].

b. [±C] = Contentful, where only [+C] heads license nonhead items taken from the lexicon, with their own semantic interpretation. TP and below are normally [+C].

(5.114) illustrates how these features define ranges of projections in the clause, and (5.115) defines the extended projections, with [±Lex] added to indicate the usual distinction between functional and lexical clausal projections.

(5.114) [Comp Foc Top Tense Mod Asp Pred V]
└----------[+Disc]-- ┘└----------[−Disc]-- ┘
└-[±C]-┘└-----[−C]----┘└----------[+C]----------┘
└----------[−Lex]----------┘└-[+Lex]-┘

(5.115) Extended Projections:

Feature	Name	Highest XP
[−Disc]	Extended VP	AuxP (∈ {Mod, Asp, Voice}), NegP, PredP
[+C]	IP	TenseP
[+Disc]	Extended CP	CP (= Rizzi's ForceP)

(Note that one also can mostly define the AuxRange, relevant for Weight theory, as [+C, −Lex], i.e., the range between VP and the extended Comp).

There is abundant evidence for the existence of these features and ranges. Examine first the extended VP, for which there are at least two pieces of independent evidence. VP-fronting and VP-ellipsis, as illustrated in (5.116) and (5.117), respectively, are only possible if at least one auxiliary precedes the gap.

(5.116) a. Scott said that he would think of something, and think of something he indeed has ___.
b. Zelda claimed that she would have eaten a wombat, and eat a wombat she might have ___. (cf. *. . . *think of something he indeed* ___ and *. . . *eat a wombat she* ___.)

(5.117) a. Scott said that he would ___. (cf. *. . . *that he* ___.)
b. Zelda really might have ___.

Since V obligatorily moves to Pred, we can now characterize what moves or deletes as a [−Disc] projection (which, as is well-known, must include V and its arguments).

A second piece of evidence for [−Disc] comes from the different behavior of both adjuncts and topic(alization)s between finite and nonfinite clauses. Topicalizations do not occur easily in nonfinite clauses (even in languages like English where they are allowed in nonmatrix clauses):

(5.118) a. I hoped that that sort of problem, we would never see.
b. *I hoped that sort of problem, to see.

(5.119) *I planned for that sort of problem, Bill to see.

(5.120) *[That sort of problem, Bill solving] really boosted our opinion of him.

(5.118)–(5.120) show topicalization, first in a nonfinite complement clause, in (5.118a), then in a corresponding nonfinite complement, in (5.118b). (5.119)–(5.120) illustrate the impossibility of topicalization in nonfinite complements with *for* and gerunds, respectively. This pattern is repeated with adjuncts (I take *to* to be in Modal, head of a defective ModP):

(5.121) a. I hoped that {this year/occasionally} we would not see that sort of problem.
b. I hoped {this year/occasionally} not to see that sort of problem.

(5.122) *I planned for {this year/occasionally} Bill not to see that sort of problem.

(5.123) *[{This year/occasionally} Bill solving that problem] really boosted our opinion of him.

(5.121b) is grammatical because an adjunct (unlike a topicalized constituent) may be adjoined to T′ in the base, but in (5.122)–(5.123) the adjuncts are necessarily above Spec,TP, and their presence makes these sentences ungrammatical. These facts can be handled if we assume that [+Disc] heads require a discourse-related interpretation for items in Spec or adjoined to XP but that such readings are blocked in nonfinite clauses. Given the analysis in chapter 8, the feature [+Top] could not be checked in these projections, thus by Last Resort (Chomsky 1995b) nothing may adjoin or move to the edge of [+Disc] projections in such clauses. [−Disc] projections (i.e., the extended VP) do not require any special discourse-related interpretation and so permit adjuncts in both finite and nonfinite clauses.

Thus there seems to be good evidence for the extended VP. Now let us turn to evidence for the extended CP, defined by [+Disc]. We have already seen one bit of evidence in that nonfinite clauses do not permit [+Disc] interpretations. A second piece of evidence comes from the one of the AuxRange effects: many light expressions, especially nonprojecting AdvPs like *even*, *hardly*, or *not*, may only occur between subjects and verbs. They cannot adjoin to TP (or above this), as illustrated in (5.124)–(5.125) (in (5.124) *even* is all right if part of the subject DP, but not if adjoined to TP or in a higher Spec position).

(5.124) a. Fred even went off the diving board.
b. *Even [Fred went off the diving board].

(5.125) a. The little green aliens hardly came up to my knees.
b. *Hardly, the little green aliens came up to my knees.

Thus once again the extended Comp, made up of [+Disc] XPs, is active in grammar. A third piece of evidence for the extended Comp is that, as noted earlier for German, some languages make a distinction between this extended projection and those below it for directionality.

Finally, [+C, −Lex] defines the AuxRange (if CP/ForceP is excluded). Weight theory needs to make reference to this domain to account for the distribution of light and heavy items, the former sometimes only within the AuxRange, the latter often only outside it. In particular, though (5.60) requires heavy items to be in the C-Dir, this only applies within TP, since topicalized XPs, and sentence-initial adverbials, can be heavy. Thus the required effect for heaviness in Weight theory holds if it applies only in [+C].

Having established the existence of extended projections, we return to the question of bounding and the argument for rightward movement.[43] (5.111) forbids movement out of functional clausal extended projections, that is, CP, TP, and the extended VP. Moved complements therefore cannot right-adjoin above Tense, and items above Tense may move only within TP (this includes elements moved rightward out of subject position). In any case, adjunction is clause-bounded, because CP is always a barrier for rightward movement.

Accounting for the bounding restrictions on Heavy Shift has always been a problem, engendering proposals for the Right Roof Constraint (Ross 1967, Grosu 1973), Subjacency (Akmajian 1975, Baltin 1981, Chomsky 1981) and/or more specific, local conditions on rightward movement (Rochemont and Culicover 1990:135) (see Rochemont and Culicover 1997 and Müller 1995 for overall discussion). With (5.111) rightward extraction out of non-CP subjects and adjuncts is possible because DPs, PPs, APs, and AdvPs are not clausal extended projections. Thus the grammaticality of (5.107a–b), with movements of a heavy PP out of an argument DP or AdvP, is predicted. Moreover, since CP is always a barrier within this system, we derive the clause-boundedness of rightward movements as well, as illustrated in (5.104)–(5.105).[44] Rightward movement out of an object or adjunct cannot go beyond the extended VP, as (5.126) shows (from Baltin 1981; see also discussion in Rochemont and Culicover 1990:118 ff.).

(5.126) a. John saw a picture in the paper of a man eating hot dogs, and Mary did too.

b. *John saw a picture in the paper of a man eating hot dogs, and Mary did of a man drinking beer.

VP-ellipsis must include the dislocated phrase in its construal, as the ungrammaticality of (5.126b) shows, which is accounted for if it cannot move outside the extended VP. This is correctly predicted by (5.111).[45]

This system removes bounding as the major problem for treating extraposition as movement (Rochemont and Culicover 1997), permitting elimination of the Complement Principle (Culicover and Rochement 1990 and references there) and specialized constraints for rightward movement (e.g., the Rightward Movement Constraint of Rochemont and Culicover 1990:135). Likewise, it removes another motivation for an LCH account of extraposition in which the seemingly moved phrase is in fact in situ, with everything else raising leftward over it. This is illustrated in German in (5.127) (from Haider 1997:125).

(5.127) Er hat [die ganze Nacht 'e_i'] geschlafen, [die er im
he has the whole night slept which he in
Verlies zubrachte]$_i$.
the-dungeon spent
'He slept the whole night that he spent in the dungeon.'

Haider argues that (5.127) should not be analyzed as shown, because movement from 'e_i' to extraposed position would violate the CED, as *[die ganze Nacht 'e_i']* 'the whole night e' is an adjunct. With the approach to bounding with rightward movement proposed here, however, the lack of a CED violation is now seen as a normal property of rightward movement, and thus such cases need not be treated as base generation.

One might think that invoking extended projections to bound rightward movement would erroneously allow CED violations with leftward movement, as (5.128) illustrates.

(5.128) a. [An agent t_i] talked to me [from the FBI]$_i$.
b. *From where$_i$ did [an agent t_i] talk to you?
c. *Where$_i$ did [an agent from t_i] talk to you?

(5.128a) shows a case of PP-extraposition from a subject, and (5.128b–c) show that *wh*-extraction of the same phrase is impossible. If rightward movement were able to first adjoin *(from) where* to TP in an intermediate step (and not violate subjacency, since rightward movement can ignore DP boundaries), and then move to Spec, CP, there is no more a violation than there would be in *Why did she come?* However, we have assumed, following Grewendorf

and Sabel (1999), that once moved to an adjoined position, a phrase may not move again. (Alternatively, it would be possible to assume some version of the Principle of Unambiguous Binding (PUB) of Müller and Sternefeld [1993] and Müller [1995], by which a movement of one A' type precludes subsequent movement of a different type.[46] By this account, once movement is made to the right by extraposition in (5.128a), (5.125b–c) are not possible continuations.) Thus (5.128) does not constitute a problem for this relativized theory of bounding.

The argument for RM over the LCH can now be stated. The LCH has no good account of the sort of CED violation in (5.107a–b),[47] since the first [+ℜ] movement before intraposition would be just as much a CED violation as is *wh*-movement out of a nonargument. Presumably, to handle this, the LCH would have to make a distinction between movements to a high Spec in the articulated Comp, triggered by [+*wh*], [+Topic], etc. (leftward movement) and movement to a low Spec triggered by [+ℜ] or [+Heavy] (rightward movement) to capture the difference illustrated in (5.107)–(5.108). It would also have to find some way to link the different behavior of the two types in terms of CED islands with the fact that leftward movement can extract out of a clause, while rightward movement is bound by extended projections. It is not clear how these differences and connections can be motivated in a principled way.

By contrast, on the RM theory as sketched here, the difference is motivated, has a strong conceptual basis, and is able to connect differences with respect to CED islands and the extended projections in a natural way. Thus the RM approach seems superior to the LCH in these ways.[48]

5.6.3 A Note on Scrambling

Despite the usage of "rightward" and "RM," clearly what is important is that the relevant movements are PF-triggered adjunctions. Since SOV languages' C-Dir is not normally activated, the prediction of the theory here is that Heavy Shift is leftward in these languages. As seen in (5.64) (repeated here as (5.129)), this is indeed so; and (5.130) illustrates that this leftward adjunction allows extraction of a heavy element from an adjunct in Japanese, as predicted.

(5.129) a. Mary-ga kinoo John-ga kekkonsi-ta to it-ta.
Mary yesterday John married that said
'Mary said that John got married yesterday.'

b. Kinoo John-ga kekkonsi-ta to Mary-ga it-ta.
yesterday John married that Mary said
'Mary said that yesterday John got married.'

(5.130) a. Ano dansaa-wa kotosi [kyonen mita toki yori
that dancer-TOP this-year last-year watched time than
motto umaku] odotta.
more good danced
'That dancer danced [better than last year when we watched (her)] this year.'

b. [Kyonen mita toki yori]$_i$ ano dansaa-wa kotosi [t_i motto
last-year watched time than that dancer-TOP this-year more
umaku] odotta.
good danced
'That dancer danced [better] this year [than last year when we watched (her)].'

In (5.130) the standard-of-comparison phrase *kyonen mita toki yori* 'than last year when we watched (her)' has moved leftward out of the bracketed manner adverbial. This sort of phenomenon raises the question: is Heavy Shift the same thing as Scrambling in SOV languages?

It cannot be precisely the same thing, for at least two reasons. First, Scrambling can occur even when an argument is not particularly heavy, as (5.131) from Japanese shows (cf. (5.129)).

(5.131) Sono hon-o John-ni Mary-ga watasita (koto)
that book-ACC John-to Mary-NOM handed (fact)
'(the fact that) Mary handed that book to John' (Saito 1986:304)

Second, Scrambling can sometimes be long distance, moving a Scrambled item out of its clause of origin (Saito 1992:70; see also Müller and Sternefeld 1993 and Grewendorf and Sabel 1999), while Heavy Shift cannot, as we have seen:

(5.132) Sono hon-o [Hanako-ga [Taroo-ga katta] to
that book-ACC Hanako-NOM Taroo-NOM bought Comp
omotteiru] (koto)
think fact
'That book, Hanako thinks that Taro bought.'

Nevertheless, there are some intriguing similarities. First, Scrambling is like Heavy Shift in allowing multiple movements. It is usually assumed that (5.131), for example, is formed by movement of both the accusative and

dative arguments over the subject; we saw many examples of multiple rightward movements, such as (5.99b) (recast here as (5.133)).

(5.133) They work faster now on their projects than I would have expected after so little training.

Second, Scrambling is like Heavy Shift in permitting apparent CED violations, at least in some cases; (5.134) shows movement of a subject out of an adjunct clause in Korean (Lee 1992:6; cf. Saito and Fukui 1998:464).

(5.134) Chelswu-nun [nwu-ka [caki tongsayng-eykey mal-ul
Chelswu-TOP who-NOM self's sister-DAT speak
kel-ttaymata]] chamkyen-ul ha-ni.
to-whenever intervene-Q
'Chelswu intervenes whenever who speaks to his sister?'

Recent work (e.g., Saito and Fukui 1998, Grewendorf and Sabel 1999) has attempted to capture some of these facts, in part by treating clause-bounded Scrambling as adjunction. The issue is very complex, with widely divergent approaches, and is not directly relevant to our concerns here (see Webelhuth 1989, Mahajan 1990, Saito 1992, Müller and Sternefeld 1993, Saito and Fukui 1998, Grewendorf and Sabel 1999, and the references they cite). The theory proposed here, with the C- and F-complexes and Directionality Principles, may open another way to understanding Scrambling's mixed properties, if it is seen as a movement type that combines properties of purely leftward movement (to Spec positions triggered by [+F] features) and Weight theory-related adjunctions whose landing site reflects parameterization for C-Dir activation (i.e., yielding rightward movement in VO languages but leftward adjunction in OV languages). This would seem to allow explanations of the frequent but not universal clause-boundedness of Scrambling, the fact that it tolerates multiple movement, and its permitting extraction from scrambled phrases in some cases.[49]

5.6.4 Summary and Conclusion for the LCH

In this section I presented three arguments for the Rightward Movement theory of noncanonical postverbal orders in head-initial languages over the LCH approach, which requires two leftward movements corresponding to each single rightward movement. First, the LCH is more complex and stipulative, requiring an extra, obligatory movement as well as an obligatory linkage

between the two movements; further, there is no plausible motivation for the second movement. Second, to express the facts that apparent rightward movements can be categorially restricted and apply multiply, the LCH presumably must posit a trigger like [+ℜ], low in structure. This is stipulative and does not allow connecting the (mostly) prosodic motivation of the movement to AuxRange effects, which are prosodically related in a similar way. Finally, on the LCH there is no easy way to predict apparent CED violations and the clause-boundedness of movement; with RM constraints on movement can be derived, in an intuitive way, from the nature of (rightward) adjunction, as opposed to (leftward) movement to Spec.

Combined with the fact that the LCH cannot account for rightward base-adjunctions, these arguments lead us to reject this theory in favor of genuine rightward movement. There remain many interesting questions, including precisely why some head-final languages permit rightward movements while others do not and what the exact relationship is between Heavy Shift and Scrambling.

5.7 Summary and Conclusion

In this chapter I addressed three related topics. First, I argued that, in accordance with the Directionality Principles, there is no left-adjunction to VP in head-initial languages. This assumed a VP roughly along the lines proposed in Hale and Keyser 1993, with the lexical V raising to Pred, the head of PredP immediately dominating VP. All preverbal manner adverbs are therefore adjoined to PredP, and postverbal occurrences are adjoined to VP (or possibly higher if moved rightward from a VP-adjoined base position).

Second, I proposed a theory of Heavy Shift to adjoined positions, to the right in head-initial languages. These movements are governed by Weight theory, which along with the Directionality Principles, accounts for the fact that Heavy Shifts are rightward, allow multiple occurrences in one clause fairly easily, respond sensitively to prosodic factors (including those related to categorial differences), allow apparent CED violations, and are bounded by extended projections.

Third, I showed that the LCH theory, which forbids rightward movement, can do none of these things without stipulations and loss of generality. I conclude that rightward movement exists, that left-adjunction in head-initial languages' VP does not exist, and that Weight theory has a significant role to play in the grammar.

Let us conclude by returning to how the basic data presented at the beginning of this chapter are accounted for (see (5.135) (= 5.1)).

(5.135) a. Tim gave the money to Ray quickly on Sunday.
b. Grubby hands reached for the money greedily.
c. She was singing beautifully that day.

In (5.135) there is no movement of nonhead phrases. In (5.135a) *quickly* is adjoined to VP on the right, and *on Sunday* is adjoined above it on the right, to PredP (discussed more fully in chapter 6), while in (5.135b–c) *greedily* and *beautifully* (respectively) also adjoin to VP, and *that day* adjoins to PredP.

(5.136) a. Tim gave the money immediately to Ray.
b. Tim gave quickly to Ray all the money he had collected over the last year.
c. Grubby hands reached greedily for the money.
d. She was singing that day more beautifully than I had ever heard her.

By contrast, (5.136a–d) (= (5.2a–d)) are derived by movement from base structures similar to those in (5.135). In (5.136a) the selected PP *to Ray* moves rightward over *immediately* (which is adjoined to PredP, or possibly to a functional projection above this within the extended VP; see chapter 7). In (5.136b) both *to Ray* and the heavy DP direct object move rightward over *quickly*, which is adjoined to VP; they adjoin to PredP (or possibly higher but within the extended VP, once again). In (5.136c) the selected PP *for the money* likewise moves rightward over the manner adverb, and finally, in (5.136d) the heavy AdvP *more beautifully than I had ever heard her* moves rightward over *that day* (which is adjoined to PredP).

With these assumptions in place about the structure of VP and PredP, Weight theory, and a theory of rightward movement, we may now abstract away from noncanonical orders such as these and start to consider the base positions of adverbials of all stripes and how they are licensed there. This is the subject matter of the next three chapters.

6

Event-Internal Adjuncts

6.1 Introduction

6.1.1 Goals and Principles

In previous chapters I argued for a theory in which adjuncts are free to adjoin anywhere in principle but in fact are restricted by certain semantic and syntactic effects. Syntactically, adverbial distribution is constrained by Directionality Principles, Weight theory, bounding theory, and the requirements of certain functional heads (e.g., for the position of sentence negation or the realization of aspectual auxiliaries). Semantically, it is limited by the adjuncts' selectional properties, including scope requirements, in concert with the FEO Calculus. In this and the next two chapters, this approach is applied to a more fine-grained examination of the entire range of adverbial positions in a clause.

I start from the bottom, the "Low Range," the domain of event-internal modification, corresponding to PredP. The adjuncts we find here include manner, domain, and measure adverbs, participant PP's, and restitutive *again*.[1] The main goals are to demonstrate that the distribution of these adjuncts can be accounted for by means of the principles outlined in chapters 2–5 and to flesh out specific proposals for doing so. Recall, in particular, that the ultimate empirical goal is to do what phrase structure rules were designed to do: explicitly generate all the grammatical sentences with adjuncts in them and explicitly rule out the ungrammatical ones; but we must go beyond the stipulative and redundancy-ridden PS rules of early work on this range (e.g., Chomsky 1965, Keyser 1968, Ernst 1984).[2] Schematically, the distribution of event-internal adjuncts is shown in (6.1).[3]

(6.1) $[_{\text{PredP}} \left\{\begin{array}{l}\text{manner/measure}\\ \text{domain}\\ \text{PPP}\end{array}\right\} [_{\text{VP}} \text{V} \left\{\begin{array}{l}\text{manner/measure}\\ \text{domain}\\ \text{restitutive } \textit{again}\end{array}\right\}] \left\{\begin{array}{l}\text{domain}\\ \text{PPP}\end{array}\right\}]$

The Low Range in particular provides evidence for two claims. The first is that adjuncts are freely adjoined in principle; thus two adjuncts may appear in alternate orders wherever neither order violates the constraints on directionality, weight, or semantic interpretation. That either order can be found for pairs of (for example) manner adverbs and PPPs, or domain adverbs and restitutive *again*, bears this out.

The second claim is that, where syntax participates in placing adverbials hierarchically, it does so by means of two general types of restrictions. The first of these is that the grammar may place a general restriction on the range of projections in which a given semantic interpretation rule may apply, that is, a constraint on the mapping from syntactic projections to semantic representations. In particular, there is evidence for (6.2) ((6.2b) is derived independently later, leaving only (6.2a)).

(6.2) Constraint on Event-Internal Adverbial Interpretation:
In the domain of L-syntax,
a. only event-internal modification is possible, and
b. Event Identification may not apply.

L-syntax is that part of syntax where syntactic and lexical principles interact directly (Hale and Keyser 1993, Travis 2000; here, we identify it with VP). For example, we may treat the transitive verb *slide* as being an amalgam of CAUSE plus the unaccusative *slide*, which raises to Pred (for Hale and Keyser, this is a higher V). Principles like the Head Movement Constraint govern syntactic processes, yet lexical information, such as the existence of the causative part of transitive *slide*, may also be represented in syntax. To the extent that verbs represent basic events, it is natural that only event-internal modification can take place in this domain. (6.2a) requires the representation for an adjunct adjoining to the relevant projection to be event-internal, accounting for the occurrence of exclusively event-internal adjuncts in VP, shown in (6.1). This is what licenses these adverbials in VP: they receive their proper interpretation there. (6.2b) forbids such a representation to be constructed via Event Identification, preventing PPPs from adjoining to VP: they cannot receive their proper interpretation and therefore are not licensed there.

The second type of restriction for adverbial licensing is composed of the lexicosemantic requirements of individual adjuncts and of certain functional heads in the clause. The three that are crucial for determining the distributional pattern in (6.1) are shown in (6.3).

(6.3) a. Event-internal adjuncts take Internal events and yield Internal events.
b. Aux heads take an (External) event to yield an (External) event.

c. Adverbs may (exceptionally) be lexically marked for one of two possible rules for event-internal modification.

I use the terms *Internal event* and *External event* as convenient ways of distinguishing (respectively) event-internal readings and cases where an adverbial takes a "regular" event as its argument (as in the case of subject-oriented adverbs like *cleverly* or *willingly*, discussed in chapter 2). All of the adjuncts examined in this chapter are event-internal in some sense and thus modify an Internal event. There are (at least) three ways of modifying an Internal event:

(6.4) Types of Event-Internal Modification (Modification of Internal Events):
a. SpecEvents (i.e., events with the special comparison class specified by the Manner Rule): manner adverbials
b. modification of a core event or some other covert element within the basic event: measure and (indirectly) domain adverbials
c. modification of the basic event by an expression from a set of "internal" θ-roles: participant PPs

The *basic event* is the event characterized by the verb and its arguments; all event-internal modifications examined here are internal in one of the senses in (6.4) (which will be discussed in more detail as we proceed, as will the notion of *core event*). Modification of an External event involves all other cases of event modification where an adjunct takes as its argument either the basic event or an event built up from the basic event by the FEO Calculus.

Thus (6.3a) means that adjuncts like manner or measure adverbs, and the others in (6.4) are event-internal modifiers, and the representation resulting from their combination with an event permits further event-internal modification. (This is exactly parallel to the characterizations of predicational adverbs in chapter 2, where, for example, an evaluative adverb takes a fact and yields a fact.) (6.3a) is what allows event-internal modifiers to adjoin to PredP. That is, once the semantic representation of L-syntax (VP) is complete, (6.2a) is no longer in force, but by the FEO Calculus one of these adjuncts may still combine with an Internal event designated by VP, such as a SpecEvent, and yield another Internal event, designated by PredP. Other event-internal modifiers may adjoin after this, so that there may be several such adjuncts adjoined to PredP. By contrast, as stated in (6.2b), auxiliaries (e.g., modal or aspectual heads) do not modify events in an event-internal way but require instead the basic event or a "bigger" event made up of the basic event plus "layers" in the sense discussed in chapter 2. In this way (6.3b) puts an upper limit on event-internal modification: by the FEO Calculus, after the FEO has been raised to an External event, it may not revert to an Internal event. Since auxiliaries in

effect require this raising, event-internal modifiers cannot occur above these heads. Finally, restitutive *again* (and certain manner adverbs) may be specially marked as (6.3c) allows, in such a way as to restrict it to VP-adjoined positions.

(6.2)–(6.3) collectively make up the major principles specifically relevant for the licensing of event-internal adjuncts. The rest of this chapter is devoted to fleshing out the details, including proposed semantic representations for the different types of adjuncts in (6.1) and important assumptions about both syntactic structure and additional elements in semantic representations. To the extent that these principles and assumptions account for the facts summarized in (6.1) accurately and in a simple, restrictive way, we have evidence for this approach to adjunct licensing.

6.1.2 Overview

In section 6.2 I show how manner, measure, domain, and restitutive adverbs and PPPs can be considered as event-internal modifiers. In section 6.3 I make proposals for the relevant compositional rules that interpret (and thus license) event-internal adverbs. These include consideration of factors that allow an adverb to be preverbal or postverbal with the same interpretation as a general case, yet predicts unique positions where they are in fact found. Section 6.4 turns to the licensing of PPPs, giving evidence that they must adjoin to PredP, not VP, and providing an explanation for the necessity of this higher adjunction site. Finally, in section 6.5 I discuss why there is an upper structural limit on event-internal modification. I conclude with a short summary and restatement of the major theoretical conclusions.

6.2 Survey of Event-Internal Adjuncts in VP

6.2.1 Introduction

Event-internal adjuncts must be licensed in the lower clause, that is, in VP and its immediate functional projection(s); event-internal is (at least roughly) another way of saying verb-modifying, and the restriction of such modifiers to this domain reflects a very widespread and intuitive sense that the distribution of adjuncts is governed by a general, iconic locality constraint.[4] Thus if a verb denotes an event, and a modifier of a verb expresses some internal property of that event, then the modifier ought to occur internal to the syntactic domain of the verb, whatever the domain turns out to be. What is most important is how this syntax-semantics matching is to be captured.

It is difficult to provide a precise, inclusive definition of event-internal as outlined in (6.4), though there seems to be little disagreement that the adjuncts in question here are indeed event-internal in some intuitive sense. I briefly characterize how each of the classes conforms to this intuitive sense and outline the semantic treatment assumed for each.

6.2.2 Manner Adverbials

In chapter 2 I argued for a semantic analysis of manner adverbs in which a compositional rule applies to a predicational adverb (potentially underspecified for FEO type in its lexical entry) and imposes a narrow comparison class of events of the sort denoted by V. On this account the difference in (6.5a–b) is represented as (6.6), where the event object of RUDE differs mostly in having a comparison class of events (of any kind) in (6.6a), while the comparison class is events of leaving in (6.6b) (SpecEvents, indicated by the notational convenience of the asterisk on e).

(6.5) a. Rudely, she left.
b. She left rudely.

(6.6) a. $[_{E'}\ [_{E}$ L(e) & Agt (e,she)] & RUDE (e, she)]
b. $[_{E'}\ [_{E}$ L(e) & Agt (e,she)] & RUDE (e*, she)]

In the latter case, what differentiates events in the comparison class are properties that we call manners, such as (say) slamming the door, thumbing her nose, or not saying goodbye. Similarly, for the pure manner adverb in (6.7), the event of the bulb shining is plotted onto a scale of brightness, with the majority of the other bulb-shining events above it on the scale.

(6.7) The bulb shone dimly.

The compared events are thus differentiated by different degrees of brightness. The manner adverbial restricts the denotation to a subset of events of V-ing characterized by their property of (manifesting) rudeness, dimness, strangeness, or the like. This is event-internal modification in at least two ways: (a) it carves out a subset of events, and (b) the properties involved are in some sense intrinsic to events, in a way that (say) times are not.

The Manner Rule from chapter 2 is given again in (6.8).

(6.8) Manner Rule:
A predicational adverb within PredP, selecting an event [F(x, . . .) . . .] denoted by its sister, may yield

$$[_{E'}[_{E}\ F(e)\ \&\ \theta\ (e, x), \ldots] \ \&\ P_{ADJ}\ ([_{E}\ F(e)\ \&\ \theta\ (e, x), \ldots], x)],$$

where the designated relation in P_{ADJ} is [$_{REL}$ manifests], and (if P_{ADJ} maps FEOs to a scale) the comparison class for P_{ADJ} is all events of x F-ing.

(6.2a) allows simplifying (6.8) slightly. For a predicational adverb within VP (the domain of L-syntax), the constraint in (6.2a) effectively requires (6.8) to apply, since the adverb must represent event-internal modification in this position. When such an adverb is adjoined to PredP, (6.8) (being optional, as indicated by *may*) does not have to apply; thus if SpecEvent is converted to (an External) event as allowed by the FEO Calculus, then the adverb has its clausal meaning (unless it is a pure manner adverb, which lexically excludes clausal readings). (Recall that I reject the view that a given syntactic category must always correspond to the same semantic object). So (6.8) can be revised as in (6.9), removing direct reference to any syntactic category.

(6.9) Manner Rule (revised):
A predicational adverb may select an Event [F(x, . . .) . . .] denoted by its sister, yielding:

$$[_{E'}[_{E}\ F(e)\ \&\ \theta\ (e, x), \ldots] \ \&\ P_{ADJ}\ ([_{E}\ F(e)\ \&\ \theta\ (e, x), \ldots], x)],$$

where the designated relation in P_{ADJ} is [$_{REL}$ manifests], and (if P_{ADJ} maps FEOs to a scale) the comparison class for P_{ADJ} is all events of x F-ing.

(6.9) is a subcase of event-internal modification whose restriction to the lower part of the clause is stated in (6.2), so it need not be restated in (6.9). I return to this matter in section 6.5, where the upper limit on manner modification is discussed.

6.2.3 Domain Adverbials

Domain adverbs represent pragmatic domains (Ernst 1984) or "dimensions" (Bartsch 1987a, 1987b, Moltmann 1997) with respect to which a predicate is interpreted. As discussed by Ernst (1984), there are two readings, illustrated in (6.10)–(6.11).

(6.10) a. Some Asian countries have developed economically only recently.
b. These budget cuts will be painful politically.

(6.11) a. They classified all the samples morphologically.
b. The aliens expressed themselves telepathically.

(6.11a–b) illustrate what I call the *means-domain* reading, where the means by which the action is accomplished is characterized as belonging to a certain

domain. The actual means are of precisely the same sort that might be described by a manner adverb (cf., for example, the discussion of *craftily* in chapter 2, section 2, where the manners could equally well be taken as means). As such, they are event-internal in the same way. Note that domain adverbs with this reading do not occur outside the Low Range, just like manner adverbs:

(6.12) a. *They will morphologically have classified all the examples.
b. *The aliens telepathically would express themselves.

I take means-domain readings to be represented as in (6.13), parallel to the semantics of a means PP (such as *by means of a new process*), the only difference being that the actual means is covert and is described by means of the domain adverb. The means is represented by x in (6.13a), equivalent to (6.13b) in the linearized DRT notation used here (again suppressing the introduction of variables, for convenience).

(6.13) a. [E(e) & Agt (e,a) & ∃x [Means (e,x) & Telepathic (x)]]
b. [$_{E}$ E(e) & Agt (e,a) & Means (e,x) & Telepathic (x)]

Thus like both manners and participant PPs (including means PPs; see section 6.2.5 for more discussion of PPP semantics), they are represented event-internally by the sort of conjunction shown in (6.13).

The *pure domain* reading in (6.10) is somewhat different. Here, in each case the adverb functions to restrict the set of events (of developing or being painful) to the subset characterized as being in a particular domain. Thus, for example, the set of events in which budget cuts are painful is made up of (say) ones in which poll numbers go down, elections become more difficult, more hecklers show up at speeches. Such events of being-painful are in the political domain, as they involve polls, elections, and speeches. In the economic domain, however, the budget cuts might not be painful and in fact may be beneficial (e.g., interest rates go down or productivity increases). These latter events are clearly quite different from the corresponding events in the political domain; each domain carves out a different subset of events of being painful. In this sense pure domain modification is event-internal because it restricts a set of events to a subset that is clearly different from other subsets defined in terms of other domains.

Domain expressions' function of restricting a set of events was first mentioned (to my knowledge) by Bellert (1977) and was picked up again by Ernst (1984, 2000c) and Bartsch (1987b). Following Ernst (2000c), I take the representation of this pure domain reading as involving a contextual specification of domains, as shown in (6.14), where CR (d, c*) is a contextual restriction on conditions c*, in terms of the domain d.

(6.14) a. CR (d, c*) . . . [$_{E}$F(e) . . . & UNDER (e,c*)]
b. CR (DOM,c*) . . . [$_{E}$F(e) . . . & UNDER (e,c*)]
c. . . . [$_{E'}$ [$_{E}$F(e) . . . & UNDER (e,c*)] & CR (DOM,c*)]

c* is a variable for various conditions under which a sentence is interpreted, introduced in the usual DRT fashion (again, suppressed in this sort of representation) and that can be made explicit by a topic expression or certain adjuncts, including domain adverbials. CR (x, c*) can be present in any sentence, with x a specification of the conditions, and UNDER (e,c*) is part of the translation of every predicate, saying the event is to be understood under the conditions c* (as restricted by x).[5] (6.14a) is for sentences without domain adverbs or any other overt specification of conditions, where d represents the contextually determined domain. In (6.14b–c) CR (DOM,c*) is the translation of a domain adverbial: (6.14b) represents sentences with clause-initial ones, while (6.14c) represents sentences with domain adverbs in the Low Range. Since both are interpreted by means of UNDER (e,c*), it is predicted correctly, for example, that (6.15a–b) have the same truth conditions, as represented in (6.16a–b) (respectively), even though CR (PHYS,c*) is in two different hierarchical positions.[6]

(6.15) a. Physically, her health is improving.
b. Her health is improving physically.

(6.16) a. CR (PHYS,c*) . . . [$_{E}$I (e) & Th (e,h) & UNDER (e,c*)]
b. . . . [$_{E'}$ [$_{E}$I (e) & Th (e,h) & UNDER (e,c*)]
& CR (PHYS,c*)]

On this analysis, we can represent (6.10b) as (6.17).

(6.17) [$_{E'}$ [$_{E}$ PAINFUL (e) & Agt (e,b) & UNDER (e,c*)] &
CR (POLITICAL,c*)]

I take representations like this to embody event-internal modification in that the effect of UNDER (e,c*) is to identify a subset of events denoted by F(e); in (6.17), for example, her health's improvement is restricted to physical improvement, while she could be getting worse mentally. Notice that on this interpretation, sentence-initial occurrences of domain adverbs as in (6.15a) also are cases of event-internal modification. However, they need not be restricted to positions within VP; in these cases they act indirectly to restrict c* (which is then referred to within the basic event for the predicate) as "framing" adverbials. This shows that the framing function is compatible with event-internal modification and also that while only event-internal modification is

possible within the domain of L-syntax (6.2a), it is also possible for adverbs adjoined above VP under certain circumstances.

6.2.4 Measure Adverbs and *Again*

Measure adverbs and *again* on one of its readings (restitutive) are event-internal in a different way, at least in part. They modify a subpart of an aspectually decomposed predicate. First, examine the two readings of *again*:

(6.18) a. Sam closed the door again. (repetitive or restitutive reading)
b. Sam again closed the door. (repetitive reading only)

The repetitive reading says that there are two separate events of Sam causing the door to close, while the restitutive reading is that the door reverts to an earlier closed state, so that the repeated event is of the door being closed. Following Stechow (1996), we may take the two readings to result from one lexical entry with different scopes over a covert operator. For Stechow, this operator is BECOME, and the meaning of *again* is essentially that given in (6.19) (see Stechow 1996:95–96 for details).

(6.19) *again* = $\exists e'$ [$\|$MAX$\|$(P)(e') & $e' < e$], where P is a property of eventualities, MAX(P)(e') means that e' is a maximal P-event, and $<$ is the temporal precedence relation.

A predicate like *close* can be considered to be the combination of BECOME + CLOSED, with CLOSED denoting the end-state. I take aspectual decomposition to involve both CAUSE and BECOME; for verbs with an agent, as in (6.18), both of these elements are present, while for unaccusative verbs (such as *open* in *The door opened*) only BECOME is involved. On this analysis, the two readings shown in (6.18) may be represented as in (6.20) (with irrelevant details suppressed).

(6.20) a. [$_{E''}$ AGAIN [$_{E''}$ CAUSE (e'') & Agt (e'', Sam) & Th(e'', [$_{E'}$ BECOME (e') & Th(e', [$_{E}$ CLOSED (e) & Th(e,d)])]]] (repetitive reading)
b. [$_{E'''}$ CAUSE (e''') & Agt (e''', Sam) & Th(e''', [$_{E''}$ BECOME (e'') & Th(e'', [$_{E'}$ AGAIN [$_{E}$ CLOSED (e) & Th(e,d)])]]]
(restitutive reading)

Thus, (6.20a) represents (6.18a) to as meaning that there is a second event of Sam-causing-the-door-to-be-closed, while (6.20b)/(6.18b) indicates that Sam causes there to be a second state of the door being closed.

Measure adverbs like *partially*, *halfway*, or *completely* act like *again* on its restitutive reading modifying the core event (here, a state), which is the theme of BECOME. As discussed by Tenny (2000), the core state is the one that comes into being in inchoatives or is caused in causatives.[7] (6.21) (regardless of the position of *partially*) has the representation shown in (6.22), where PARTIAL says that the wainscoting is in a state characterized by being partway down a (telic) path whose end-point is defined by the predicate RESTORED.[8]

(6.21) The artisans have (partially) restored the waiscoting (partially).

(6.22) [$_{E''}$ CAUSE (e″) & Agt (e″,a) & Th(e″, [$_{E'}$ BECOME (e′) & Th(e′, [PARTIAL [$_{E}$ RESTORED (e) & Th(e,w)]])]]

The measure adverbial acts to map the event onto a point on a scale, parallel to manner adverbials, which map an event onto a scale of loudness, cleverness, or the like. Unlike the latter case, however, these are not events of F-ing (such as being closed or being restored) but rather are events of being on the way to the final state represented by F. Thus, just as for manner modification in (6.9), interpretation requires mapping events that are crucially restricted (specified) by F; instead of F defining a comparison class for the scale, it defines the scale itself.

On this view, measure readings and restitutive *again* should be considered event-internal by virtue of their modifying a core event, an aspectual subpart of the predicate denoted by the main verb in a sentence.

6.2.5 Participant PPs (PPPs)

Participant PPs include instrumental, comitative, benefactive, and eventive locative phrases.[9] They are event-internal in the same sense that adverbs with manner readings are: in modifying a verb V, they pick out a subset of events of V-ing that is defined by the additional property denoted by the PPP. In (6.23a), for example, the basic set of events is all the possible mazurka-performings by Sandy, and *with Sam* narrows this to those done with Sam. Similarly, *with the tongs* in (6.23b) narrows the set of cover-lifting events by Ruth, and in (6.23c) *on the deck of the ship* restricts the events to those that happened in the location indicated.

(6.23) a. Sandy performed a mazurka with Sam.
b. Ruth lifted the cover with the tongs.
c. Leonardo danced on the deck of the ship.

Following Maienborn's (1998) analysis of locatives, PPPs can be treated as expressions of the form shown in (6.24a), where the superscript on the variable indicates that x may be either an object (O) or an event (S, for situation, in her notation), and LOC gives the location of the referent of some DP. They combine with basic events according to Event Identification (Kratzer 1996), (see (6.24b)).

(6.24) a. $\lambda x^{O \cup S}$ [LOC (x, dp)]

b. $\lambda e\,[P(e, dp)] + [_E\, F(e)\ \&\ \theta 1(e,y), \ldots, \theta n\,(e,z)] \rightarrow [_E\, F(e)\ \&\ \theta 1(e,y), \ldots, \theta n\,(e,z)\ \&\ P(e,dp)]$ (Event Identification)

I take Event Identification as a subcase of a general process that also adds arguments to a predicate. Both specify expressions of the form θ1(e,x), where θ is drawn from a stock of core, "argumental" theta roles available within UG. The two cases differ in that for selected arguments of a predicate, the nature of θ is given by the predicate (and/or by the structure of L-syntax),[10] while for Event Identification the combined expression supplies this (e.g., LOC in (6.24a)).

On this account, PPPs are event-internal in the same way that arguments are, having "auxiliary" theta roles that can (and often do) serve as arguments of other predicates and that confer semi-argument status on the expression (see Ernst 1994a, 1997a). In the final semantic representation of a sentence, they end up as conjuncts taking the event variable as an argument, in the style of Parsons (1990), shown in (6.25), a simplified form of (6.23c).

(6.25) $[_E$ Dance(e) & Agt (e,Leonardo) & LOC (e,deck)]

Note that Event Identification does not introduce a new event variable and thus does not add a layer (in the sense discussed in earlier chapters).

6.2.6 Summary of Event-Internal Modification

We have looked at four types of event-internal modifiers. Manner modification is event-internal in the sense that some (covert) event associated with the event of V-ing (i.e., the event denoted by the verb) serves as a property to narrow the set of V-ing events. The resulting set is internal to the larger set of all events of V-ing. Measure adverbs (and restitutive *again*) are event-internal in that they modify not the event of V-ing but the latter's end-state, that is, a subpart of the basic event. Domain adverbs delimit the class of events of V-ing by carving out a subset of these events that are part of the given domain. Finally, participant PPs are event-internal just as arguments are, specifying the roles

of entities relatively central to the event. Though all are cases of event-internal modification, the differences among them will be important later on.

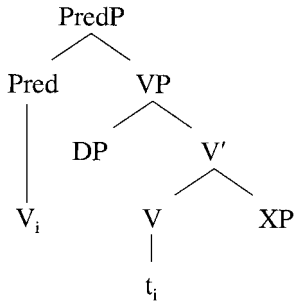
6.3 Purely Adverbial Event-Internal Adjuncts

6.3.1 Introduction

This section examines non-participant PP adjuncts. PPPs differ from the other types laid out in section 6.2 in being more argument-like; in English they are categorially different, of course (since the others are all adverbs), but it is probably more relevant that they are more "nominal" or referential, as they serve to add an extra entity, denoted by the DP within PP, as a participant in an event. Thus they are not purely adverbials but are instead semi-arguments, with certain properties of complements (see Ernst 1994a, 1996a). As seen in section 6.4, this is behind their inability to occur within VP. The other event-internal adverbials – measure, manner, domain, and restitutive (*again*) adverbs – are all "pure" adverbials and thus may occur adjoined to VP (postverbally in head-initial languages) as well as to PredP (in preverbal position). In this section I look at each one in turn, showing how the FEO Calculus, the Constraint on Event-Internal Adverbial Interpretation (see (6.2a)), and the adverbs' lexical requirements together predict their possible positions and interpretations.

Before starting on this survey, it is well to review the conclusions about the structure of PredP and VP reached in earlier chapters and to lay out several crucial assumptions about L-syntax. First, as schematized in (6.26), V always raises to Pred, and no left-adjunction is allowed to VP in head-initial languages; thus the main effect of this movement is to put the verb to the left of direct objects in Spec,VP.

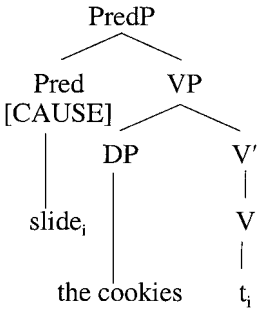
(6.26)



Subjects are licensed higher in structure, adjoined to Spec,PredP. XP represents a second internal argument, be it a locative PP for verbs like *put*, a clause

for verbs like *promise*, or a second object for ditransitives.[11] Following Hale and Keyser (1993) (for whom (6.26)'s Pred is V_1), V is taken here as the unaccusative form and Pred (typically) as the host for the abstract predicate CAUSE. Hale and Keyser propose that in a general structure like (6.26), but with VP possibly replaced by another type of XP, X may be a noncausative verb (such as *slide*, *fall*, or *occur*), a PP containing an NP (*on the shelf*), or an adjective (*thin*, *dark*) (among other possibilities). Thus for a transitive VP like *slide the cookies*, the structure is as in (6.27).[12]

(6.27)



For Hale and Keyser, structural relations specifically encode semantic relations, which to a large extent give the effect of θ-roles, so that there is no actual, syntactic θ-role assignment in the classic GB sense (Chomsky 1981). Thus, for example, the relation between Pred and VP in (6.27) is one of causation; when the unaccusative *slide* raises, the result is a transitive verb *slide*; the subject of the CAUSE predicate is an agent, and the subject of the unaccusative predicate *slide* is the theme, *the cookies*. I take the meanings required in this way of internal arguments to be represented syntactically by [+F] features checked in Spec positions (chapter 4).[13]

Crucially, (6.27) represents L-syntax, where lexical, event-internal aspects of a verb (or other predicate) are accessible to syntactic principles (Hale and Keyser 1993, Rapoport 1999, Travis 2000). Included in this is the accessibility of subparts of L-syntax to adverbial interpretation. As noted, event-internal adverbs adjoined to either VP or PredP may, in principle, either take wide scope over the predicate for the whole, basic event (cause-the-cookies-to-slide in (6.27)) or take narrow scope merely over the core event, represented by VP alone (the-cookies-slide). Observe (6.28).

(6.28) a. The apprentice (carefully) slid the cookies over (carefully).
b. The apprentice (smoothly) slid the cookies over (smoothly).

(6.29) Carol (completely) filled the boxes (completely).

In (6.28) the core event is that of the cookies-sliding, which is caused by the apprentice. In (6.29) the core event is the end-state of the boxes being filled. In the first case, the manner adverb *carefully* in (6.28a) takes wide scope regardless of its position, indicating that the apprentice was careful in the way she caused the cookies to slide over. A narrow scope interpretation over just the core event would have to mean that the cookies were careful in the way they slid, but this is impossible because agent-oriented adverbs like *carefully* require "controllability," and only the causer (the apprentice, not the cookies) can control an event.[14] In (6.28b), however, *smoothly* may take either wide or narrow scope, saying (respectively) either that the apprentice's action was smooth or that the cookies' slide was smooth. There appear to be preferences for one reading over the other (wide for preverbal position, narrow for postverbal), and context certainly may tip the scales toward one or the other, but both are possible.[15]

In (6.29) the measure adverb *completely* clearly takes narrow scope: Carol caused the boxes to become completely full. Whether a given adverb takes wide or narrow scope depends on its lexical properties, although this is not random (e.g., measure adverbs generally take narrow scope, and agent-oriented manner adverbs like *carefully* take wide scope). I do not investigate the minutiae of these lexical specifications, however. Our main interest here is that this effect belongs to the lexical part of L-syntax in the sense that syntactic position does not strictly determine scope, as is the case above this domain, but rather the Core State Accessibility rule in (6.30) applies to appropriately marked event-internal adverbs (i.e., measure or manner adverbs) adjoined to PredP.

(6.30) Core State Accessibility:

ADV [$_{E''}$ CAUSE (e″, [$_{E'}$ BECOME (e′) & Th (e′, [$_{E}$ F (e) . . .])])]
→ [$_{E'''}$ CAUSE (e‴, [$_{E''}$ BECOME (e″) & Th (e″, [$_{E'}$ ADV [$_{E}$ F (e) . . .]])])]

It is this rule that allows preverbal and postverbal occurrences of manner and measure adverbs to have the same meaning, since it permits preverbal adverbs (adjoined to PredP) to be interpreted as if they were adjoined to VP. It is important that this applies only within the Low Range, as a manifestation of lexical influence on syntax; in the domain of pure syntax, above PredP, more rigid mapping from syntax to semantics must obtain (and thus, the theory of syntax-semantics mapping remains restrictive in terms of its limited principles).

It is not necessary to formulate something like (6.31) with the reverse effect of (6.30) to account for cases like (6.28a) (where the manner adverb is postverbal and therefore can adjoin only to VP, not to PredP). Its effect follows already from the Scope Principle (Ernst 1991a).

(6.31) $[_{E'''}$ CAUSE (e‴, $[_{E''}$ BECOME (e″) & Th (e″, $[_{E'}$ ADV $[_{E}$ F (e) . . .]])])]
→ ADV $[_{E''}$ CAUSE (e″, $[_{E'}$ BECOME (e′) & Th (e′, $[_{E}$ F (e) . . .])])]

That is, since a VP-adjoined adverb like *carefully* c-commands the trace of the verbal chain ($Pred_i$, V_i), it automatically may have scope over the head of the chain if it allows wide scope lexically. If it is a measure adverb, it takes scope only over the core event straightforwardly, by its adjunction to VP. (The nonexistence of (6.31) proves to be important for certain types of manner adverbs and restitutive *again*, discussed in subsections 6.3.2–6.3.3). The next three subsections outline the syntax of manner adverbs, measure adverbs/*again*, and domain adverbs, showing how their lexical semantics and the compositional principles proposed here predict their possible positions in a clause.

6.3.2 Manner Adverbs

6.3.2.1 Basic Positions

As schematized in (6.1), predicational adverbs generally have manner readings within the Low Range. I have attributed this to the Manner Rule (6.9), which makes the adverb's event argument into a SpecEvent within this domain. When predicationals adjoin to VP, event-internal modification is the only option since the constraint in (6.2a) requires event-internal modification here. (Recall also that the Directionality Principles require right-adjunction for this class of adverbs when adjoined to VP.) Above VP they may still be licensed (although manner readings are not obligatory here), because the Manner Rule itself is not restricted to any particular syntactic projection; what upper limits it has are imposed by other elements in the sentence (see later in this section). Thus manner readings are also licensed for adverbs adjoined to PredP (to the left only).[16] This correctly predicts that manner adverbs may occur on either side of the verb in English and other VO languages, abstracting away from verb movements to positions above Pred.

We have established that preverbal manner adverbs may adjoin to PredP, given that (a) V is canonically in Pred, (b) manner readings are impossible for adverbs preceding an auxiliary, and (c) English and like languages have no empty functional heads between Pred and Voice (site of the lowest auxiliary,

the passive *be*). It may not be so obvious, however, that the postverbal occurrences are adjoined only to VP rather than to PredP; the evidence is less clear because of the relatively flexible ordering of postverbal adjuncts in SVO languages and the lack of definite structural signposts there (such as negation or auxiliary verbs in preverbal positions, which signal the presence of particular functional projections). Still, there are two indications that postverbal manner adverbs do adjoin to VP and no higher.

First is the ambiguity pattern (introduced in chapter 2), by which an immediately preverbal predicational adverb can have either a clausal or a manner reading, while a postverbal adverb may only have the latter.[17] Examples from English, French, and Chinese are given here:

(6.32) a. George was speaking to him politely. (manner only)
b. George was politely speaking to him. (ambiguous)

(6.33) a. Georges lui avait parlé poliment. (manner only)
George to-him had spoken politely
b. Georges lui avait poliment parlé. (ambiguous)

(6.34) a. Dahui de yicheng, Jinrong anpai de hen tuodang.
meeting of schedule Jinrong arrange DE very appropriate
'Jinrong arranged the meeting schedule appropriately.'
(manner only)
b. Jinrong hen tuodang de anpai-le dahui de yicheng.
Jinrong very appropriately DE arrange-PRF meeting of schedule
'Jinrong appropriately arranged the meeting schedule.'
(ambiguous)

As expected, when an adverb cannot have a manner reading, as for *probably* and *luckily* and their equivalents in French,[18] the (a) sentences in this pattern are ungrammatical, as in (6.35)–(6.36).

(6.35) a. *The committee has chosen her {probably/luckily}.
b. The committee has {probably/luckily} chosen her.

(6.36) a. *Le comité l'a choisie {probablement/heureusement}.
the committee her-has chosen probably/luckily
b. Le comité l'a {probablement/heureusement} choisie.
the committee her-has probably/luckily chosen

This pattern is predicted on the analysis in chapter 4. According to the Directionality Principles, predicational adverbs are always to the left of their

FEO argument in functional projections, because they act like semantic heads, with their complement linearized according to the universal rightward value for C-Dir. Within VP, however, the presence of [+Lex] on V always triggers the more normal, consistent, parameterized directionality for all nonheads in VP (to the left in OV languages, to the right for VO languages). Thus predicationals can only right-adjoin if they are within VP, where they obligatorily take SpecEvent arguments and have manner readings. Adverbs like *probably* and *luckily*, as in (6.35)–(6.36), must occur higher (and thus in preverbal position), since they are lexically barred from having manner readings. In preverbal position, predicationals either can take a SpecEvent argument or have a clausal reading after the FEO type is raised to (External) events (as it may freely do). This explains the ambiguity in (6.32)–(6.34). On this account, then, postverbal manner-reading predicationals must be adjoined to VP, not to PredP.

A second argument for this conclusion draws on diverse data showing that the lowest possible position for participant PPs is higher than a possible position for manner adverbs. I provide only a brief look at the evidence here, since it will be more useful in the discussion of PPPs in section 6.4. The most striking data is from Mandarin Chinese, which has basic SVO word order and allows either preverbal or postverbal manner modification. However, participant PPs are obligatorily preverbal, as are most other nonmanner adjuncts; this is exemplified in 6.37 (see Ernst 1999a for extensive discussion).

(6.37) Xiao Li {zuotian/ yexu/ gen tamen/zai jiali} chi-de hen hao
Xiao Li yesterday/ maybe/ with them / at home eat-DE very well
*{zuotian/ yexu/ gen tamen/zai jiali}.
yesterday/maybe/with them/ at home
'Xiao Li {probably} ate well {yesterday/with them/at home}.'

As argued in Ernst 1999, this pattern can be explained if Chinese is taken as a mixed, marked word order type, as has become the standard view in recent years (see Huang 1982, Li 1990, Tang 1990, Mulder and Sybesma 1992, Ernst 1998e and references there for discussion; cf. Takano 1998 for a somewhat different treatment). Specifically, Chinese acts like a normal VO language within VP but like an OV language in functional projections, with all preverbal adjuncts adjoined to PredP or above, and all postverbal adjuncts adjoining to VP only. PPPs adjoin fairly low in structure, yet are preverbal, and so must adjoin (at the lowest) to PredP. Thus manner adverbials like *de hen hao* 'very well' in (6.37), which are postverbal, must adjoin only to VP. (See section 6.4 for fuller discussion.)

6.3.2.2 Differences between the Two Positions

We have established that there are two positions for manner adverbials. Since they are different hierarchically, it is possible (though not necessary) that they differ semantically within the bounds of a fundamental manner reading. In this section I examine the difference between interpretations associated with the two positions.

The preverbal and postverbal positions for manner adverbs clearly have the same basic interpretation; in (6.38), for example, there is no truth-conditional difference.

(6.38) a. Al loudly proclaimed his innocence.
b. Al proclaimed his innocence loudly.

As noted by Ernst (1984:240), however, the preverbal position is normally taken as backgrounded information, while VP-final position is associated with foregrounding; this is borne out by the fact that only in the latter case is the adverb easily stressed:

(6.39) a. ??Al *loudly* proclaimed his innocence.
b. Al proclaimed his innocence *loudly*.

Similarly, (6.40a) describes a lawyer finishing his interview with a secretary, who has asked him what to put on the office door of her murdered boss. The narrative function of the first sentence is to show that the interview has ended, and *crisply* merely adds extra description. Compare this with the less felicitous (6.40b), to where unneeded emphasis is put on the manner of snapping the locks.

(6.40) a. The man from the Florida Bar shut his briefcase and crisply snapped the brass locks. "We recommend 'Death in the family.' Most clients won't press the issue." (Carl Hiaasen, *Strip Tease*, 231)
b. The man from the Florida Bar shut his briefcase and snapped the brass locks crisply. "We recommend 'Death in the family.' Most clients won't press the issue."

Similarly, the point of the familiar airline announcement in (6.41) is to ask passengers to stay seated, and the preverbal adverb adds relatively unimportant information:

(6.41) . . . if you would please remain comfortably seated, [. . .] (Continental Airlines, Austin, TX, Feb. 28, 1999)

(On this point see also Peterson 1997:283–84 and Shaer 2000.)

This is presumably connected to the well-known, sharper distinction found with verbs that appear to subcategorize for an adverbial, as in (6.42)–(6.43) (where in the latter *treat* has the meaning of 'behave towards,' not 'give therapy to').

(6.42) a. Bob was behaving admirably.
b. *Bob was admirably behaving.

(6.43) a. Peter was treating Bob badly.
b. *Peter was badly treating Bob.

By the analysis in chapter 4, these selected adverbs bear a [+S] feature and thus must be adjoined to the right of V, precluding their appearance in preverbal position. Some of the verbs that have been taken as subcategorizing in this way (such as *word* and *dress*) actually do not really do so (at least if obligatory occurrence is a reliable test). As pointed out by Dinsmore (1981), Ernst (1984), Goldberg and Ackerman (2000), and others, these verbs give the appearance of needing an adverb only because in most contexts they do not provide sufficient information by themselves; with a change in contextual presuppositions they are fine without modification ((6.44)–(6.45)).

(6.44) a. We've figured out the content of all the exam questions, but we haven't worded them yet.
b. 'Mandela Words a Poignant Farewell' (*New York Times* headline, Sept. 22, 1998 p. A13)

(6.45) The longtime natives of the island usually go nude, but Steve insists on dressing.

Preverbal position is not very good for these cases, but it is often better than for the instances of true subcategorization in (6.42)–(6.43):

(6.46) a. Bob worded the letter carefully.
b. ??Bob carefully worded the letter.

(6.47) a. Bruce dresses elegantly.
b. ??Bruce elegantly dresses.

Here the explanation is that preverbal position requires backgrounding, but the sentences would be completely impossible from a discourse point of view if so, because the verb makes no useful contribution without the adverb, which therefore must be foregrounded information and appear postverbally.[19]

There are two other cases of asymmetry with respect to the normal manner-adverb positions. First is that of obligatorily postverbal adverbs like *hard*, *well*, and *quick*, illustrated in (6.48).

(6.48) a. Alan plays the ball {hard/well/quick}.
b. *Alan {hard/well/quick} plays the ball.

Given Weight theory, such adverbs provide no evidence for a purely syntactic, feature-based licensing mechanism (see, e.g., Laenzlinger 1997 and Alexiadou 1998), since their distribution can be accounted for if they are intrinsically (lexically) marked [+Heavy]; this forces them to the right of the verb in VO languages. (It is possible that this might be derived by taking them as adjectives, since adjectives are automatically [+Heavy]; that most of these words can modify nouns (e.g., *a hard throw*) is evidence of this. However, this would not be straightforward in all cases, as for *well*, which cannot modify nouns with the appropriate meaning; thus I will leave this option aside.)[20]

A second, more complex case of asymmetry between preverbal and postverbal position involves adverbs like *poorly*, *horribly*, and *beautifully*, which, following Eckardt (1998), I call degree-of-perfection (DegPrf) adverbs:

(6.49) a. Joe (*poorly) built the house (poorly).
b. Mollie (*beautifully) played the violin (beautifully).
c. Al (*horribly) performed the pirouette (horribly).

As Bowers (1993) points out, this class of adverbs does not occur preverbally in sentences like (6.49a–c).[21] Bowers uses this fact to argue that these adverbs are lexically marked to adjoin only to V′, not PredP, and other writers have followed Bowers in assuming that these adverbs' restricted position follows from their being generally licensed by features in relation to lower heads (V) while adverbs that may be preverbal are licensed by higher heads. However, the claim that they must be postverbal does not hold for all sentences. With less strongly transitive predicates, including passives, DegPrf adverbs are much better in preverbal position:[22]

(6.50) a. Jane poorly understood what was required of her.
b. This idea (rather) poorly correlates with the facts.
c. She beautifully interprets these ideas in her new play.
d. Al horribly resented those remarks.

(6.51) a. The house had been (rather) poorly built by Joe.
b. The violin was beautifully played by Mollie.
c. The pirouette was horribly performed by Al.

This pattern suggests that the distribution of these adverbs is related not to syntactic feature licensing but to degrees of transitivity, a semantic property that may differ between verb classes or construction types. Hopper and Thompson (1980) propose that a predicate is more transitive to the extent that it has more (or greater salience) of the properties in (6.52).

(6.52) a. 2 or more participants
b. action
c. telicity
d. punctuality
e. volition
f. affirmation (nonnegation)
g. realis mode
h. agency
i. affected object
j. individuated object

The verbs in (6.49) can be seen to differ from those in (6.50) in being more transitive. For example, *build* has two participants, is an action verb with a volitional agent and an individuated, affected object, and a well-defined end-point (telic). *Perform* is somewhat less transitive, but it still has two participants, involves action and a volitional agent, and has an affected (created) object. By contrast, *understand*, *interpret*, and *resent* all are less agentive and volitional, and do not involve actions or affected objects (except perhaps for *interpret*); *correlate* is even less agentive and volitional, with no affected or individuated object. Furthermore, passives' main functions are to reduce the number of participants, to demote the agent (decreasing agentivity), and to make the sentence (more) stative (see the discussion in Givón 1990:566ff., for example). Like (6.50a–d) they also are lower in transitivity than the active sentences of (6.49), and they thus also allow DegPrf adverbs in preverbal position.

This conclusion is strengthened by the contrasts shown in (6.53)–(6.54), (6.55)–(6.56), and (6.57)–(6.58), where in each case the more transitive verb or construction is less acceptable with the adverb in preverbal position. In the first pair, *write* has a more affected object than *describe*:

(6.53) a. *They perfectly wrote the job description.
b. They wrote the job description perfectly.

(6.54) a. ?They perfectly described the job.
b. They described the job perfectly.

(6.55) a. (*)The test results badly scared them.
b. The test results scared them badly.

(6.56) a. The test results badly disappointed them.
b. The test results disappointed them badly.

(6.57) a. (?)She had perfectly concealed the weapons.
b. She had concealed the weapons perfectly.

(6.58) a. The weapons had been perfectly concealed.
b. The weapons had been concealed perfectly.

Speakers disagree in the strength of their dislike of (6.55a), but all agree that (6.56b) is better; here *scare* involves a more affected object and greater punctuality than *disappoint*. Finally, (6.57)–(6.58) contrast in the active/passive dimension, and speakers generally prefer the (b) sentence to (a) in (6.57) but the (a) sentence to (b) in (6.58).

The current theory allows expressing these contrasts by means of scope with respect to a semantic element in a particular syntactic position, given the assumption that there is some syntactic realization of transitivity in L-syntax. Although this is only a tentative proposal at this stage, suppose that DegPrf adverbs must take immediate scope over a "locus of transitivity." For causative/accomplishment verbs like *build* or transitive *explode* or *melt*, this locus is inside VP, with the causative element being in Pred. Thus a preverbal DegPrf adverb will take immediate scope over CAUSE rather than over the locus of transitivity on VP. Interpreting the immediate scope requirement as a prohibition on using the Core State Accessibility rule in (6.30), DegPrf adverbs are unable to get their proper narrow scope interpretation when adjoined to PredP with such verbs, predicting the ungrammaticality of (6.49) with preverbal adverbs. For activities like *play*, *perform*, *correlate*, and *resent*, the locus depends on the degree of transitivity. The first two have higher transitivity than the latter two, and as with *build* or *explode*, (postverbal) adjunction to VP is the only option because narrow scope over the locus of transitivity is impossible from a PredP-adjoined position. But when the locus of transitivity is on V, which has raised to Pred, PredP-adjunction is possible, yielding the grammaticality of (6.50a–c) and (6.51a–c).[23] (The adverb can also be postverbal in such cases, since the adverb c-commands the trace of V.)[24]

Despite the sketchy nature of this proposal, there seems to be good evidence that it is the degree of transitivity in conjunction with scope that determines acceptability, not a bare specification of different licensing heads.

6.3.3 Measure Adverbs and Restitutive *Again*

Measure adverbs and the closely related restitutive *again* are of interest because they often must take narrow scope over a core event. As proposed for manner adverbs, measure adverbs in preverbal position (adjoined to PredP) do this by means of Core State Accessibility (6.30); when postverbal, adjoined to VP, they do so directly. Restitutive *again* is like DegPrf adverbs in being lexically marked for narrow scope.

We start with measure adverbs, which include *halfway*, *partway*, *partially*, *completely*,[25] *partly*, *slightly*, *very much*, *thoroughly*, and *half*. The first two of these are obligatorily postverbal, *half* must be preverbal, and the others are allowed in both positions (although there is some individual variation on this point; cf. Tenny 2000:section 3.4):

(6.59) a. Zeke (*halfway) filled the bowl (halfway).
b. Angela (*partway) followed the presentation (partway).

(6.60) a. Lorraine (completely) understood Jim's instructions (completely).
b. Pavel (thoroughly) dominated the discussion (thoroughly).
c. We (only partly) understood his intentions (only partly).
d. Al (slightly) adjusted his suspenders (slightly).
e. Sarah (?very much) likes going there (very much).

(6.61) Tasha (half) filled the coffee urns (*half).

We can dismiss the case of the obligatory preverbal position of *half* as a morphological effect, since it seems this adverb either forms a compound with the verb root or cliticizes onto a following verb. Evidence comes from (6.62), where we can explain the ungrammaticality of (6.62b) as the result of *half* being unable to fulfill either of these options.

(6.62) a. Tasha completely and carefully filled the coffee urns.
b. *Tasha half and carefully filled the coffee urns.

We can also explain (6.59) in morphological (weight-theoretic) terms, as we did with *well* and *hard*, taking these adverbs to be heavy. This leaves the expected result that as far as (pure) syntax and semantics are concerned, measure adverbs may adjoin either to PredP or to VP.

Following the basic analysis of Tenny (2000), we take measure adverbs as modifying the core event (end-state) represented by VP, with V mapping onto the core state predicate in the semantic representation and the Theme of transitive verbs like *open* being the subject of this predicate. Thus for (6.63a), where *open* is decomposed as CAUSE (BECOME (BE-OPEN)), *partially* takes BE-OPEN in its immediate scope; when the adverb is preverbal, this holds by

means of (6.30). This is illustrated in (6.64), where (6.64a) is the first mapping of syntax to semantic representation, and (6.64b) is the output of (6.30).

(6.63) a. Carol (partially) opened the door (partially).
b. Annie (completely) finished her apple pie (completely).

(6.64) a. PARTIAL [$_{E''}$ CAUSE (e″) & Th(e″, [$_{E'}$ BECOME (e′) & Th(e′, [$_{E}$ BE-OPEN (e) & Th(e,door)])])]
b. [$_{E'''}$ CAUSE (e‴) & Th(e‴, [$_{E''}$ BECOME (e″) & Th(e″, [$_{E'}$ PARTIAL [$_{E}$ BE-OPEN (e) & Th(e,door)]])])]

As noted, when such adverbs are in postverbal position they are mapped directly onto representations like (6.64b), since VP represents the core event the-door-be-open in this case. In the representation for (6.63b), *completely* works similarly:

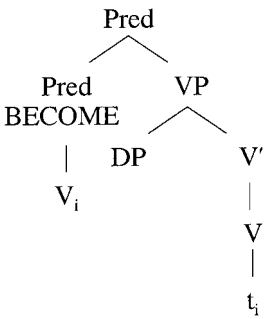
(6.65) a. COMPLETE [$_{E''}$ CAUSE (e″) & Th(e″, [$_{E'}$ BECOME (e′) & Th(e′, [$_{E}$ BE-FINISHED (e) & Th(e, apple pie)])])]
b. [$_{E'''}$ CAUSE (e‴) & Th(e‴, [$_{E''}$ BECOME (e″) & Th(e″, [$_{E'}$ COMPLETE [$_{E}$ BE-FINISHED (e) & Th(e, apple pie)]])])]

Note that it is possible for measure adverbs to modify end-states even when there is no causative component to the predicate, as in (6.66).

(6.66) The ice melted partway.

Here, though, the core event is still represented in VP, with V raising to a noncausative Pred having BECOME as its content for (6.67).

(6.67)



However, as Tenny points out, for verbs without end-state core events (as in (6.68)) or those with a core event but no measure or path (see (6.69)), measure adverbs are impossible, since their lexicosemantic requirements cannot be met (examples from Tenny's (42)–(43)).

(6.68) a. *Bob partly kicked the wall.
b. *Michael loves music partway.

(6.69) a. *David partly put the book on the table.
b. *Max set the bowl on the floor partway.

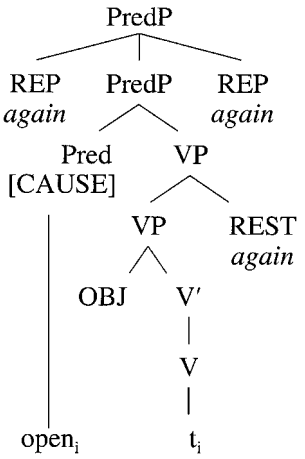
We have seen that we can account for the preverbal and postverbal positions of measure adverbs, including their differences, according to rules of composition, the adverbs' lexical requirements, and specifications of weight. Now we turn to *again*, which has one reading, the restitutive reading, which works like measure adverbs. Examine the pattern for English in (6.70) and for German in (6.71) (adapted from Stechow 1996:(1–1)).

(6.70) a. George opened the door again. (restitutive or repetitive)
b. George again opened the door. (repetitive only)

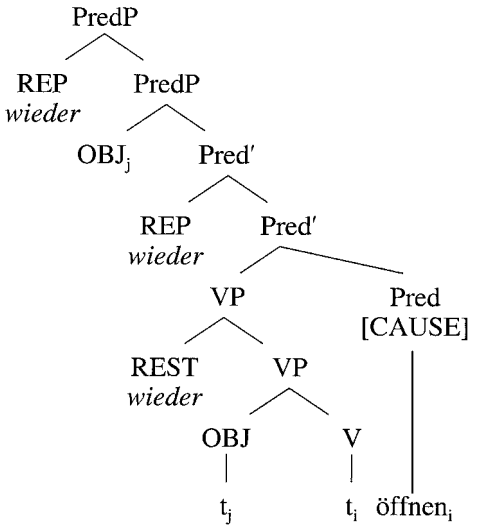
(6.71) a. Ali die Tür wieder öffnete. (restitutive or repetitive)
Ali the door again opened
b. Ali wieder die Tür öffnete. (repetitive only)
Ali again the door opened

The ambiguity in the (a) sentences is accounted for if the repetitive reading *again* takes scope over the whole (External) event, while on the restitutive reading it takes narrow scope only over the final end-state embedded under the covert BECOME or CAUSE. This follows if we posit the structures in (6.72) for English and in (6.73) for German, with German direct objects occurring in a higher position than they do in English[25] (see Stechow 1996, Laenzlinger

(6.72)



(6.73)



1997, and references there).[26] In current syntactic theory (Chomsky 1995b and others in its wake), the difference is a matter of German having strong Case features in Pred, requiring overt movement of the object to check its Case features, while English has weak features and therefore does not move the object to check Case until LF. (It does, however, require overt movement of the object to Spec,VP, as discussed in chapter 5.)

On the assumptions outlined here, the difference in readings follows straightforwardly. When *again/wieder* is adjoined to VP, it can take scope only over the end-state BE-OPEN, resulting in the restitutive reading. When it adjoins to PredP, it necessarily takes scope over CAUSE, which produces the repetitive reading. Since English permits right-adjunction of functional adverbs in functional projections, *again* may adjoin to PredP in postverbal position, as (6.72) shows. This is not possible in German, but under the Directionality Principles German permits left-adjunction to VP, so that after a direct object has raised out of VP, there are two adjunction sites for *wieder* between object and verb, corresponding to the two readings.

It is important that we treat restitutive *again* as a homonym of repetitive *again* rather than as an instance of a unified entry with two possible, freely choosable scopes. There are two reasons for this. First, if the latter were so, we might expect adverbs with similar semantics, such as *frequently*, to have the same two readings, but this is not what we find; for example, (6.74) cannot mean 'Robert caused the door to frequently be closed' (except as an implication of its real reading 'Robert frequently caused the door to close').

(6.74) Robert closed the door frequently.

Second, and perhaps more importantly, if *again* had a unitary meaning, we would expect preverbal occurrences to have a restitutive reading, just as measure adverbs can, since Core State Accessibility (6.30) permits PredP-adjoined adverbs to have narrow scope as if they were adjoined to VP. To avoid this for *again*, we must assume that restitutive *again* is specially marked, in a way parallel to DegPrf adverbs, such that it requires narrow scope and cannot trigger (6.30).[27] Thus there must be separate (if linked) entries for the two *again*s, with only the restitutive *again* occurring adjoined to VP.

To summarize, we have seen that measure adverbs generally take scope over a core event (end-state) represented in VP and not over the basic event made up of CAUSE plus a core event. Given (6.30) and the Scope Principle, we predict correctly that measure adverbs may occur on either side of V in VO languages, adjoined preverbally to PredP and postverbally to VP. Restitutive *again* behaves similarly but must take immediate scope over an end-state and therefore can only adjoin to VP (postverbally in English). This explains the (non)ambiguity patterns seen for both English and German.

6.3.4 Domain Adverbs

I turn now to a very different, nonpredicational sort of adverb. The semantic analysis of domain adverbs in section 6.2.3 allows for two readings, the means-domain reading in (6.75a) and the pure domain reading in (6.75b).

(6.75) a. The doctors decided to treat the tumor surgically.
b. The stakes have risen politically.

The first of these is interpreted according to the template in (6.76), where the ellipses indicate the representation of F's arguments and DOM is the appropriate adjective form of the adverb ((6.13b) is one specific manifestation of (6.76)).

(6.76) $[_E$ F(e) . . . & Means (e,x) & DOM (x)]

As with manner adverbs, means-domain adverbs may occur either preverbally or postverbally (and as shown in section 6.2.3, they are barred from positions before auxiliaries):

(6.77) a. How do I, as a privileged American, mentally and emotionally negotiate the different moral waters of this developing nation? (*Philadephia Inquirer*, May 25, 1999, p. 44)

b. [T]hree ranking bishops physically removed Henry IV from his throne and thereby deposed him. (*Wilson Quarterly*, Spring 1997, p. 67)
c. In this film, straight arrow FBI agent Travolta surgically trades faces with arch enemy and terrorist Cage. (*USA Today*, June 27, 1997, p. 01)

(6.78) a. How do I negotiate these moral waters mentally and emotionally?
b. The bishops removed Henry IV from his throne physically.
c. Travolta trades faces surgically with his arch enemy Cage.

Since domain adverbs are not predicational (not being gradable; see Ernst 2000b), they do not invoke comparison classes and cannot be interpreted by the Manner Rule (6.9). As shown, however, when means-domain adverbs are adjoined to PredP they take an (Internal) event as their argument.[28] The same interpretation is always possible when they adjoin to VP, by means of the Scope Principle as discussed in section 6.3.1.

Pure domain adverbs also may occur either preverbally (as in (6.79)) or postverbally (in (6.80)), although they are also possible in preauxiliary positions ((6.81), based on (6.79)).

(6.79) a. Legally, they have been required to file papers.
b. By opening the pipeline, they will symbolically cut an old umbilical cord that has bound [the Caucasus] to Russia. (*New York Times*, Apr. 13, 1999, p. A14)
c. It physically becomes more difficult. (*New York Times*, July 7, 1997, p. B1)

(6.80) a. Everyone knew that Terri came from a family that had been targeted politically. (*Inquirer Magazine*, June 27, 1999, p. 12)
b. GM was seen as trying to hurt VW financially. (*NPR radio*, Jan. 10, 1997, 9:17 AM)
c. He's paid a high price physically for biking to work. (*USA Today*, Aug. 1, 1997, p. 1)

(6.81) a. They (legally) have (legally) been (legally) required (legally) to file papers.
b. They (symbolically) could (symbolically) have (symbolically) been cutting an old umbilical cord (symbolically).
c. It (physically) becomes more difficult (physically).

This wider distribution is also predicted by the analysis in section 6.2.3, by which the pure domain adverb represents a restriction CR on a contextual variable c*, which in turn restricts the range of events for the basic event variable via the covert predicate UNDER (e,c*) in VP. Thus according to the template in (6.14), (6.81b) would have the representations in (6.82), where (6.82a) represents a higher attachment point for *symbolically*, above VP, and (6.82b) is for VP-adjunction.

(6.82) a. CR (SYMBOLIC,c*) . . . $[_{E}$F(e) . . . & UNDER(e,c*)]
b. . . . $[_{E'}[_{E}$F(e) . . . & UNDER(e,c*)]
& CR (SYMBOLIC,c*)]

Crucially, interpretation is not changed, since no matter where the adverb is adjoined it can properly restrict c*. This explains why an apparently event-internal adverb can occur outside VP: what is crucial to the event-internal construal is the position of UNDER (e,c*), which is present in all sentences to capture contextually determined domain interpretation and is in the expected position for event-internal modification. Domain adverbs simply represent overt specifications of domain, which restrict c* unproblematically, regardless of their position.

French and Italian domain adverbs appear to work similarly to English, although the existence of general (main) verb raising in these languages cuts down on the immediately preverbal positions available to them:

(6.83) a. Queste strutture non dicono (grammaticalmente) qualcosa
these structures not say grammatically anything
(grammaticalmente). (Italian)
grammatically
'These structures don't mean anything grammatically.'
b. Grammaticalmente, queste strutture non dicono qualcosa.

(6.84) a. Cette faction ne sera pas assez unie pour agir
this faction NEG will-be not enough united to act
(politiquement) de concert (politiquement). (French)
politically in concert politically
'This faction will not be united enough to act in concert politically.'
b. Politiquement, cette faction ne sera pas assez unie pour agir de concert.

Other languages do not express domain notions with adverbs and thus, it seems, allow much less positional freedom; for example, Chinese:

(6.85) (Cong jingji shang de jiaodu), zheige wenti (✓) hui (*)
from economic on of angle this problem will
gei women hen duo mafan (*).
give us very much trouble
'Economically, this problem will give us a lot of trouble.'

While English domain adverbs are possible in principle in all the parenthesized positions in (6.85), only the first two are actually possible for Chinese. It seems reasonable to attribute this to the fact that Chinese domain expressions are PPs corresponding to the English 'from a N point of view,' where the noun N denotes a domain, and therefore probably should be represented by semantics appropriate for a framing adverbial, which must be fairly high in a semantic representation. If so, the difference in positions is accounted for.

6.3.5 Predictions for Orderings of Two Event-Internal Adjuncts

6.3.5.1 Predictions

Two adverbs in the same sentence ought to occur in either of the two possible orders, as long as neither one violates any semantic condition. This section shows that this prediction is borne out for manner, measure, and domain adverbs and restitutive *again*, with a brief additional discussion of adjunct secondary predicates (depictives).

6.3.5.2 Manner Adverbs

First, examine manner adverbs. (6.86)–(6.88) (from Ernst, 2000c) show that they permute freely with domain adverbs, as expected, because regardless of the actual adjunction site for the latter, the crucial element UNDER (e,c*) will be in VP, within the scope of the manner adverb.

(6.86) a. Mia has improved defensively rapidly.
b. Mia has improved rapidly defensively.

(6.87) a. Emerging democracies evolve politically rather slowly.
b. Emerging democracies evolve rather slowly politically.

(6.88) a. You can represent this graphically quite clearly.
b. You can represent this quite clearly graphically.

The same sorts of facts hold in French and Italian:

(6.89) a. I bravi giocatore devono piazzarsi rapidamente
the good players must place-themselves rapidly
difensivamente. (Italian)
defensively
b. I bravi giocatore devono piazzarsi difensivamente
the good players must place-themselves defensively
rapidamente.
rapidly

(6.90) a. La Madagascar s' est graduellement séparée physiquement
the Madagscar SE is gradually separated physically
de l'Afrique. (French)
from the-Africa
'Madagascar gradually separated physically from Africa.'
b. La Madagascar s' est physiquement séparée
the Madagscar SE is physically separated
graduellement de l'Afrique.
gradually from the-Africa
'Madagascar physically separated gradually from Africa.'

It is not the case that both orders are always be possible for a given set of words, just as in English, since various semantic and pragmatic factors impinge; but both orders are possible in principle.

Manner adverbs may even be doubled, although this possibility has often been denied. As usual, it is necessary to find the proper context in which the "inner" adverb closer to the verb (denoting a predicate P) defines a subset of events of P-ing that can be contrasted (in a pragmatically normal way) with another such subset. The "outer" manner adverb with wider scope maps this subset onto its scale in a normal way. Observe (6.91a–b).

(6.91) a. They play quietly well, but get rambunctious when we have more lively games.
b. She runs slowly correctly, but loses her form when she speeds up.

If (6.91a) involves a group of easily excitable small children, it can describe a situation where they are well-behaved as long as they play quiet games, but they become more rowdy with livelier ones. Thus *well* maps events of playing quietly onto a scale of well(-behaved)ness, compared to other events of playing. For (6.91b), imagine a runner who is learning correct track and

field technique. *Correctly* maps events of running slowly onto a scale of correctness for running events.[29]

Manner adverbs also permute fairly freely with measure adverbs and *again*; for the former, as with manner-manner combinations, a properly contrastive context is necessary, with the first adverb being stressed:

(6.92) a. She filled the vat smoothly partway.
b. She filled the vat partway smoothly.

(6.93) a. Tasha closed the door gently again.
b. Tasha closed the door again gently.

There is more to be said here, however, since acceptable cases like (6.92) seem relatively rare, and there is surely a need to sharpen the interpretation rules to capture the detailed facts. Yet, there is at least evidence at hand that the scope-based account of adverb distribution is correct. Observe that while the two orders in (6.93) are both acceptable, only (6.93b) allows the restitutive reading for *again* (so it is ambiguous), while *again* in (6.93a) is obligatorily repetitive. This follows from restitutive *again* necessarily having immediate scope over the end-state BE-CLOSED. In (6.93a) once *gently* modifies the basic event CAUSE (BECOME (BE-CLOSED)), *again* may only take scope over this unit and therefore must have the repetitive reading; but for (6.93b) repetitive *again* can take its proper scope and does not prevent *gently* from taking scope over the basic event via the Scope Principle.

Free ordering in principle is reinforced by manner adverbs' alternative orders with adjunct secondary predicates (depictives), acceptable at least marginally, again with contrastive stress (in (6.95), imagine visitors to a strange civilization where certain dishes are served either raw, in which case they are unappetizing, or cooked, when they are tasty):

(6.94) a. Al sits quietly clothed, but is often agitated when he has to be nude.
b. Al sits clothed quietly, but is often agitated when he has to be nude.

(6.95) a. We chewed the food quickly raw, but savored it the times it was cooked.
b. We chewed the food raw quickly, but savored it the times it was cooked.

I will assume the standard view that depictives like *clothed* and *raw* are not strictly adverbials, taking FEO arguments, but are adjuncts with an essentially adjectival function, being predicates taking the subject or object as their

argument (see Williams 1980, Winkler 1997, Rapoport 1999, and references there). As such, their interpretation should be independent of the adverbs examined here, and they should allow both orders, as is the case.

6.3.5.3 Domain Adverbs

We have already seen examples of alternative orders for domain and manner adverbs. (6.96)–(6.98) show the same for pairs of domain and measure adverbs, *again*, and depictives.

(6.96) a. After his recovery, Tim decided to branch out socially a bit.
b. After his recovery, Tim decided to branch out a bit socially.

(6.97) a. His apology for choking the coach opened the door for him again professionally.
b. His apology for choking the coach opened the door for him professionally again.

(6.98) a. They develop quite young intellectually.
b. They develop intellectually quite young.

Once again, these patterns are predicted because the adjunction site of a pure domain adverb does not affect its scope, unlike most if not all other adverbials. Significantly, the restitutive reading of *again* is possible for both versions of (6.97) (in a context where an obstreperous professional athlete, once banned from the game for choking his coach, is allowed to come back, i.e., returned to the original state of being accepted as a professional). This contrasts with (6.93a), where *again* only can be repetitive. The difference in interpretation between manner and domain adverbs predicts this: the former must take scope over the CAUSE element in Pred, while domain adverbs only need to have scope over UNDER (e,c*), which is within the core event modified by restitutive *again*.

6.3.5.4 Measure Adverbs

Measure adverbs' interaction with manner and domain adverbs has already been documented, so we are left with their alternative orders with respect to depictives and *again*:

(6.99) a. They ran the race halfway nude.
b. They ran the race nude halfway.

(6.100) a. They dominated the discussion thoroughly again.
b. *They dominated the discussion again thoroughly.

(6.99) is like (6.94); given contrastive stress, either order is possible. Only one order is possible for the measure-*again* pair in (6.100). This is predicted on the semantically based account. (6.100a) straightforwardly describes a repetition of an event of thoroughly dominating, but (6.100b) is anomalous because *thoroughly* must operate on a scale represented by a core end-state, which is impossible here since an event of dominating-the-discussion-again is not scalar (as it involves two separate subevents).

6.3.5.5 Conclusion for Alternative Orders of Event-Internal Adverbs

We have seen that alternative orders of event-internal adverbs are generally possible, as long as the pragmatic conditions are right and no semantic anomalies are induced (as in (6.100b), for example. This provides support for the theory advanced here, by which adverbs adjoin freely as far as purely syntactic principles are concerned, being constrained mainly by the well-formedness of the individual case's semantic representation and by general principles for constructing semantic representations.

It needs to be stressed here that the semantic and pragmatic requirements may be heavy. Observe (6.101)–(6.102), for example.

(6.101) a. She inserted it partway skillfully.
b. *She inserted it skillfully partway.

(6.102) a. They were breathing heavily halfway, but got better as they got the hang of it.
b. *They were breathing halfway heavily, but got better as they got the hang of it.

Unlike the manner-measure pair in (6.92), only one of the two orders in (6.101)–(6.102) is acceptable. We can account for (6.101) on the grounds that the rightmost adverb must take wide scope over the one to its left, and since what is being judged as skillful is the partial (not complete) insertion, only this scope relationship makes sense. A similar explanation accounts for (6.102a–b), but in reverse: (6.102a) describes heavy breathing that lasts halfway (e.g., through a race), again assuming wide scope for the second adverb; (6.102b) would have to involve an event of breathing-halfway, presumably contrasted with not breathing after the midpoint of the race. This is not only extremely odd pragmatically, but there is no acceptable interpretation of a heavy breathing-halfway as opposed to a light/relaxed breathing-halfway. Thus (6.102b) is uninterpretable.

Of course, to fully support the analysis proposed here, all such cases must be accounted for with this sort of explanation. I submit that the range of examples given here shows that it is correct to attribute this type of contrast (e.g., (6.92) vs. (6.101)–(6.102)) to semantic and pragmatic factors, and not to syntactic ones, and leave (hierarchical) adverbial distribution mostly unaffected by syntax.

6.3.6 Summary and Conclusion: Event-Internal Adverbs

In this section I reviewed the syntax and semantics of event-internal adverbs. I assumed that there are mechanisms allowing preverbal, PredP-adjoined adverbs to take narrower scope than their position would suggest, that is, over just the core event. Likewise, adverbs adjoined to VP may in general take wide scope, over the whole basic event, creating in effect a domain where a given manner or measure adverb has the same reading regardless of its position. (This is not generally the case above PredP but holds in VP because this is the special, not purely syntactic, domain of L-syntax.)

Restitutive *again* seems to be specially marked for narrow scope and cannot take its proper interpretation when adjoined to PredP; thus it must be postverbal in English. DegPrf adverbs are distributed similarly, since they are sensitive to a locus of transitivity and also are specially marked for narrow scope. When transitivity is represented within VP, these adverbs must occur postverbally; when it is not, as in passives and low-transitivity verbs, they may be preverbal.

Finally, pure domain adverbs have a very different semantic representation: they are not predicates on events but instead serve to bind the c* variable in the covert specification of conditions UNDER (e,c*). Since the latter is within VP, very low in structure, domain adverbs are free in principle to occur anywhere in a sentence, as they can c-command and thus bind c* from any position.

While *again* and DegPrf adverbs require certain stipulations, for the most part the adverbs examined here work in a straightforward and general way as they interact with the semantic representation of predicates in the Low Range (PredP). Their distribution can be predicted largely from independently needed semantic mechanisms.

6.4 Participant PPs

6.4.1 Introduction

In this section I examine the distribution of participant PPs (PPPs), such as locatives, instrumentals, and benefactives, and show that even though they

are event-internal, they do not adjoin to VP but rather to PredP. Evidence comes from their (free) ordering with manner adverbs when the latter also adjoin to this projection. I suggest that their higher attachment point relative to other event-internal modifiers comes ultimately from their having some argument properties, which has the effect of barring application of the relevant compositional rule within VP.

PPPs combine with basic events via Event Identification in (6.103) (based on (6.24b)), where the first expression represents the PPP, and dp represents the DP argument of the preposition.

(6.103) $\lambda e\ [P(e,\ dp)] + [_E\ F(e)\ \&\ \theta 1(e,y), \ldots,\ \theta n\ (e,z)] \rightarrow [_E\ F(e)\ \&\ \theta 1(e,y), \ldots, \theta n\ (e,z)\ \&\ P(e,dp)]$ (Event Identification)

A PPP takes the event variable e as its argument, without introducing a new event variable, and is arrayed as an additional conjunct in the basic event. This accounts for PPPs' ability to permute freely, as discussed in chapter 3: since they do not have scope properties in the way that predicational adverbs do, nothing goes wrong when there is more than one in a given sentence, regardless of the order of combination.[30]

My goals in this section are (a) to demonstrate that PPPs do not adjoin to VP but rather must adjoin to PredP or higher and (b) to propose an explanation for this fact. There are three arguments, two from English (section 6.4.2) and one from Chinese (section 6.4.3).

6.4.2 Two Pieces of Evidence from English for PPP Attachment Sites

First, PPPs are less felicitous before manner adverbs than after them, as (6.104)–(6.106) illustrate (the manner AdvP's are long, to equalize their weight with respect to the PPPs).

(6.104) a. She was working very slowly with that drill.
b. ?She was working with that drill very slowly.

(6.105) a. The dancers performed intensely for the dance-master.
b. ?The dancers performed for the dance-master intensely.

(6.106) a. Sarah delivers messages efficiently for the office.
b. ?Sarah delivers messages for the office efficiently.

Given the view of rightward movement discussed in chapter 5, the (a)–(b) contrasts are predicted if the PPPs must move over the manner adverbs, which

are adjoined to VP. However, this is fairly weak evidence since the contrast in acceptability is slight and many other subtle factors are undoubtedly involved.

Second, manner adverbs may precede particles and subcategorized PPs fairly easily, while PPPs do not. Examine (6.107)–(6.112).[31]

(6.107) a. ?She moved it quite slowly away.
b. *She moved it with a spoon away.

(6.108) a. ?George was twirling elegantly around (on stage).
b. *George was twirling with her around (on stage).

(6.109) a. The police said they did not sit idly by. (NPR, May 8, 1998)
b. *The police said they did not sit in their cars by.

(6.110) a. ?We gave the money quietly to several charities.
b. ?*We gave the money with a check to several charities.

(6.111) a. She signed the bill boldly into law.
b. ??She signed the bill with a gold pen into law.

(6.112) a. His speech brought new ideas insistently to mind.
b. *His speech brought new ideas in New York to mind.

In (6.107)–(6.109) the relevant phrases are a manner adverb (in the (a) sentences) and a PPP (in the (b) sentences), before a particle: the adverb is far better than the PPP when it precedes the particle. Similarly, in (6.110)–(6.111) the (b) sentences with PPPs are worse than the (a) sentences with manner adverbs. Again, these facts can be accounted for if we assume that manner adverbs are licensed closer to V than to PPPs: movement of either P or the subcategorized PP is farther in the latter case than with manner adverbs, making for a more marked (and thus less acceptable) surface order. (As expected, the (b) versions of (6.110)–(6.112) are slightly better than those in (6.107)–(6.109), since the heavier full PP is more easily movable than the lighter particle.)

6.4.3 Chinese Word Order

A third piece of evidence, from Chinese word order, also supports the obligatory attachment of PPPs to PredP. To construct the argument, we must first establish how the order of adjuncts in Chinese is to be analyzed.

As noted in the last section, Chinese word order is odd because, even though Chinese is a basically head-initial language with an unmarked SVO word order, it severely restricts the number of postverbal phrases allowed in a given clause. For present purposes, we may take it as allowing any combination of internal arguments in their normal postverbal positions; though there are certain restrictions involving definiteness/specificity and other factors (see Huang 1982 and Li 1990), this does not affect the validity of positing normal SVO language base positions for arguments.

However, Chinese differs more radically with respect to postverbal adjuncts, of which there are only four relevant types.[32] These are illustrated in (6.113)–(6.114).[33]

(6.113) a. Zhu Hong huida de hen congming.
Zhu Hong answer DE very intelligent
'Zhu Hong answered intelligently.'
b. Shoumen ti qiu ti de hen lei.
goalie kick ball kick DE very tired
'The goalie played so much he got tired.'

(6.114) a. Shoumen ti-le {san ci/ yige zhongtou} qiu.
goalie kick-PRF three time/one hour ball
'The goalie kicked the ball {three times/for an hour}.'
b. Shoumen ti-le ta {san ci/ yige zhongtou}.
goalie kick-PRF him three time/one hour
'The goalie kicked him {three times/for an hour}.'

(6.113) shows two types of *de*-XPs, phrases made up of the marker *de* followed by either an AP (the manner expression in (6.113a); cf. the discussion in chapter 5) or an IP whose subject is often PRO (for the resultative in (6.113b)).[34] (6.114) illustrates duration and frequency (D/F) expressions, which occur either right before direct objects (as in (a)) or after a complement (as in (b)). No other type of adjunct occurs postverbally in Chinese, as (6.115) illustrates for temporal and modal adverbials.

(6.115) Lao Zhu mingtian haoxiang hui chang Jingju (*mingtian)
Lao Zhu tomorrow apparently will sing Peking-Opera tomorrow
(*haoxiang).
apparently
'Lao Zhu will apparently sing Peking Opera tomorrow.'

How can a cross-linguistic account of word order accommodate these facts? I argue in Ernst 1999a, in press that the problem should be approached by allowing a marked option for adjunct linearization by the Directionality Principles ((6.116a–b) (= (4.40)). Adapting these formulations to the current framework, Chinese then takes the marked option in (6.116c).

(6.116) Directionality Principles:
a. [+F] items are licensed only in F-Dir; otherwise
b. Languages are parameterized for whether C-Dir is active or inactive:
If C-Dir is inactive, then all XPs are [−R];
If C-Dir is active, then for any [−F] YP in XP, if X° or YP bears a C-complex feature, then YP is [+R].
c. A language may (exceptionally) have C-Dir active only in lexical projections.

As discussed in chapter 5, this means that for adjuncts Chinese effectively acts like a VO language within VP, but like an OV language above VP in functional projections.

I leave aside detailed examination of D/F expressions here, since they present a number of problems that would take us too far afield; various analyses in the literature are compatible with (6.116) and current assumptions (e.g., that of Soh [1998], adopted in its essentials in Ernst [1999a], in which they are in the Spec position of an extra shell VP). Regardless of the analysis adopted, they may co-occur with complements. The *de*-XPs in (6.113a–b) are quite different because they absolutely may not do so (as shown in chapter 5). This is predicted if *de* has the morphological property of requiring cliticization to the verb stem at PF, under adjacency. If the two types of *de*-XPs necessarily occur right-adjoined to VP, then all complements, as well as D/F phrases, occur between *de* and the verb. Therefore, they block cliticization of *de*, and any such sentence is ungrammatical. Only sentences where all complements or D/F expressions are absent, are empty categories like pro, or have moved away from postverbal positions allow the manner/resultative expressions with *de*.

These facts follow from the exceptional status of Chinese with respect to Directionality Principles as in (6.116c): only adjuncts that may occur in VP, the lowest, lexical projections, may be postverbal. Thus manner *de*-XPs, such as that in (6.113a), are allowed postverbally since they are allowed in VP. Similarly, the resultative in (6.113b) can be postverbal because it is in VP.

(Moreover, it must be postverbal, like many if not all resultatives in SVO languages, because it is similar to restitutive *again* in obligatorily modifying the final end-state of the aspectually decomposed predicate.)[35]

It is not a problem that the other types of VP-internal adverbials are not found postverbally in Chinese, as might be expected. Their obligatory preverbal position is illustrated in (6.117), (6.118), and (6.119), with a restitutive *you* 'again', the measure adverb *wanquan* 'completely', and a domain expression, respectively.

(6.117) a. Jingcha you guan-shang-le men. (repetitive reading only)
police again shut-up-PRF door
'The policeman again shut the door.'
b. *Jingcha guan-shang-le men you.
police shut-up-PRF door again
'The policeman shut the door again.'

(6.118) a. Zhangsan wanquan shibai-le.
Zhangsan completely fail-PRF
'Zhangsan failed completely.'
b. *Zhangsan shibai-le wanquan.
Zhangsan fail-PRF completely
'Zhangsan failed completely.'

(6.119) a. Cong zhengzhi-shang de jiaodu, qingkuang yiding bian-le.
from political-on of angle situation definitely change-PRF
'The situation definitely has changed politically.'
b. *Qingkuang yiding bian-le cong zhengzhi-shang de jiaodu.
situation definitely change-PRF from political-on of angle
'The situation definitely has changed politically.'

These facts are explained in the first two cases by the strong tendency for Chinese adverbs to be Lite (as argued for in Ernst 1999a); all of these event-internal adverbs are preverbal for this weight-theoretic reason. For domain expressions Chinese does not have a simple adverb equivalent to *politically* or *economically*, but instead can only use a longer phrase glossing as 'from an X point of view' or the equivalent (X being a domain-denoting expression), illustrated in (6.119). With this phrasing, they always have a framing function and are therefore restricted to higher positions than their European counterparts. Given the leftwardness of all Chinese adverbials above VP, domain expressions must therefore be preverbal.

To summarize the positions of Chinese adverbials: only *de*-XPs (manner and resultative phrases) and D/F expressions may be postverbal. All of these are event-internal and so can adjoin to VP; thus their rightward adjunction is predicted. Most other event-internal modifiers, as in (6.117)–(6.118), are necessarily preverbal for weight-theoretic reasons.

Now we are ready to examine PPPs. If Chinese acts like a VO language within VP and if PPPs could adjoin to VP, we would expect them to occur to the right of the verb, but they do not. As (6.120)–(6.121) demonstrate, PPPs in Chinese are obligatorily preverbal:[36]

(6.120) a. Lao Wang {zai jiali/ gen Lao Li} chang yi shou ge.
Lao Wang at home with Lao Li sing a CL song
'Lao Wang sings a song {at home/with Lao Li}.'
b. *Lao Wang chang (yi shou ge) {zai jiali/ gen Lao Li}.
Lao Wang sing a CL song at home/with Lao Li

(6.121) a. Tamen {ti gongren/yong gouzi/wei laoban} ti-le huo.
they for worker with hook for boss lift-PRF freight
'They lifted the freight {for the worker/with a hook/for the boss}.'
b. *Tamen ti-le huo {ti gongren/yong gouzi/wei laoban}.
they lift-PRF freight for worker use hook for boss

This follows straightforwardly if PPPs adjoin only to PredP, not to VP.

As predicted, if PPPs regularly adjoin to PredP in preverbal position in Chinese, they should permute freely with manner adverbials, and with each other; this is borne out in (6.122) and (6.123), respectively.

(6.122) a. Lao Li (hen yongli de) yong langtou (hen yongli de)
Lao Li very strong DE with hammer very strong DE
qiao-kai xiangzi.
knock-open crate
'Lao Li knocked the crate open with a hammer forcefully.'
b. Zhangsan (hen guimi de) gen jige pengyou
Zhangsan very surreptitious DE with a-few friend
(hen guimi de) mai-le shouqiang.
very surreptitious DE buy-PRF handgun
'Zhangsan surreptitiously bought a handgun with a few friends.'

c. Lisi (hen youlimao de) zai chufang li (hen youlimao de)
Lisi very polite DE at kitchen in very polite DE
ting ta jieshi.
listen him explain
'Lisi listened to him explain politely in the kitchen.'

(6.123) a. Zhangsan (gen ta meimei) zai keting li (gen ta
Zhangsan with her/his little-sister in living-room in with his
meimei) tan gangqin.
little sister play piano
'Zhangsan is playing piano with his sister in the living room.'

b. Tamen (yong diannao) gen mishu (yong diannao)
they with computer with secretary with computer
yanjiu pianyi de jipiao.
research cheap of plane ticket
'They are checking out cheap plane tickets with the secretary on the computer.'

All this material is consistent with the conclusions of Frey and Pittner (1998) for German; they posit a base position for manner adverbials below that for PPPs, and therefore to the right (since German has basic SOV order). If *langsam* 'slowly' can adjoin to VP in German and PPP's adjoin only to PredP, then (6.124) results.

(6.124) . . .weil Otto mit einem Schraubenzieher die Tür langsam öffnete.
because Otto with a screwdriver the door slowly opened
'. . . because Otto opened the door slowly with a screwdriver'

6.4.4 Licensing of PPPs in PredP

The facts reviewed here show that PPPs do not adjoin to VP.[37] How can the theory of adjunct licensing predict this? I noted that PPPs are event-internal adjuncts; by the constraint on event-internal interpretation in (6.2a) (repeated here as (6.125a)) they ought to be possible in VP, but are not. Suppose that this is the result of blocking the application of Event Identification within VP, as embodied in (6.2b), repeated as (6.125b).

(6.125) Constraint on Event-Internal Adverbial Interpretation:
In the domain of L-syntax,
a. only event-internal modification is possible, and
b. Event Identification may not apply.

The big question is: why should (6.125b) hold? I suggested in Ernst 1994a, 1996a that PPPs are semiarguments, that is, adjuncts with certain argument properties, such as (a) being most likely to be occasionally selected by verbs as arguments, (b) being most likely to engage in applicative constructions, creating an extra argument for a verb (for Baker [1988], allowing P to incorporate into V), and (c) not blocking the formation of A-not-A questions in Chinese (as opposed to "core" adverbials like modal or manner expressions, which do block A-not-A question formation).[38] Suppose that we take arguments of a main predicate and these semiargument PPPs together as "argumentals," defined as expressions representing one of a set of core theta roles for events, all mapped onto an event-semantics representation as conjuncts of the form θ (e,x) in the basic event representation (where θ is the name of the role). On the Hale/Keyser-type view I have adopted, internal arguments of V are interpreted according to semantic roles determined (at least largely) by the V heads of L-syntax, and that are realized syntactically as features requiring argument XPs to be in Spec positions within that domain. We may formalize the role of these features as in (6.126).

(6.126) Within L-syntax, internal argumental theta roles are licensed by [+F] features.

(6.126) would require any PPP in VP not to adjoin but to occupy a Spec position, and this would either make it impossible for some argument of V to be in that position or would require the PPP to take on an argument theta role incompatible with its own; in either case an ill-formed semantic representation would result. Thus given (6.126), the effect of (6.125b) is predicted without artificially restricting Event Identification to PredP.

6.4.5 Summary

In this section I provided arguments to show that PPPs, though event-internal, do not adjoin to VP. They adjoin instead to PredP, and there they are freely ordered with respect to manner adverbs and other PPPs as expected since there are no crucial semantic interactions among them. I suggested also that Event Identification, the rule responsible for the interpretation of PPPs, is barred from applying within VP because the latter is the domain of selected arguments. PPPs represent the same general type of phrase, but selected arguments take precedence, forcing PPPs to wait until all of L-syntax is complete.

6.5 The Ceiling of the Low Range

6.5.1 Introduction

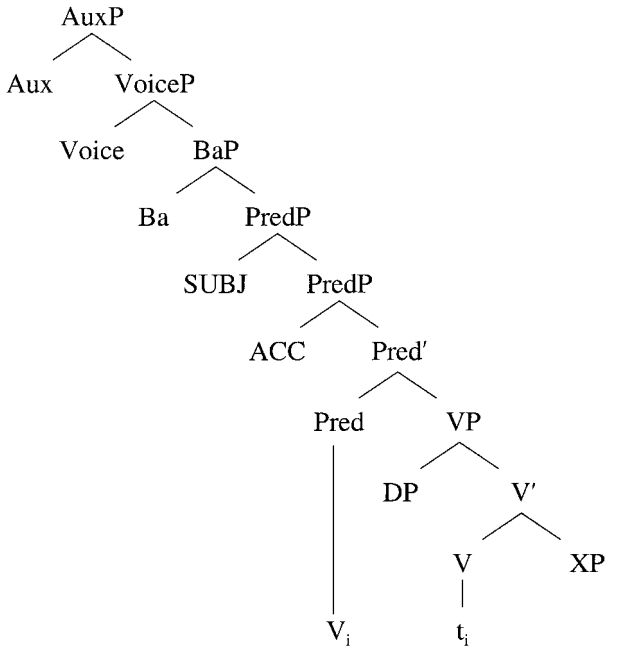
We have reviewed the interpretation and distribution of five types of event-internal adverbials: manner adverbs, measure adverbs, restitutive *again*, domain adverbs, and participant PPs. As far as event-internal semantics is concerned, all are eligible to appear within VP, the domain of L-syntax. Manner adverbs are event-internal by virtue of taking a SpecEvent as their FEO object, so that the actual event referred to is only considered within the class of relevant events designated by the verb; they take their normal scope straightforwardly when adjoined to PredP and take the same scope when adjoined to VP by virtue of the Scope Principle. Measure adverbs are event-internal because they modify a core event, which is internal to the basic event referred to by the verb. They do this normally when adjoined to VP, and via Core State Accessibility when adjoined to PredP. Restitutive *again* is able to take immediate scope over the core event when adjoined to VP because it is lexically marked to do so. Pure domain adverbs are always interpreted with respect to the inherently event-internal covert element UNDER (e,c*) that is within VP. However, PPPs are barred from the VP because they may only be interpreted by means of Event Identification, which cannot apply to nonarguments within VP.

I have also proposed that adverbials adjoined to PredP may be event-internal. PPPs must adjoin there rather than VP, as noted in section 6.4; pure domain adverbs can adjoin anywhere, including PredP; but restitutive *again* cannot adjoin to PredP because it is lexically restricted to core events. Manner and measure adverbs may adjoin to PredP in addition to VP because PredP may represent a SpecEvent. This latter point follows from what we have already posited in the FEO Calculus: once a semantic representation is complete for L-syntax, where it *must* use SpecEvents for predicationals, the FEO may either be preserved or raised – freely, as far as nonlexical factors are concerned. Thus manner and measure adverbs' ability to adjoin to either VP or PredP is an automatic consequence.

Now I must account for the fact that event-internal adverbials cannot adjoin above a certain point; in other words, there is a ceiling on the Low Range. In this section I discuss how this ceiling is best represented and what its exact location is. I argue that Aux heads semantically require a full (External) event, not an Internal event; the prohibition on returning to lower FEO types ensures that no event-internal modifier can occur above this point. My proposal is

shown schematically in (6.127), with BaP (for the Chinese *ba*-construction) absent in English.[39]

(6.127)



In (6.127), DP indicates the canonical position of objects in English, French, Chinese, and ACC marks the position for Chinese objects in the *ba*-construction. I take subjects (SUBJ) as being adjoined to PredP, but little about adjunct distribution hinges on this choice. (Overt subjects always move to Spec,TP in the languages we are immediately concerned with here.)

6.5.2 Aux Heads as a Natural Ceiling

Event-internal modifiers cannot precede auxiliary verbs in English and Chinese (and given standard assumptions about V-to-Infl raising, the same holds in French and Italian as well):

(6.128) a. *Bill {loudly/thoroughly/in the salon} was dominating the discussion.
b. *Bill {loudly/thoroughly/in the salon} might/will dominate the discussion.

(6.129) a. *Zhangsan {hen shoulian de/ti wo} hui ba fangjian
Zhangsan very skillfully DE/for me will BA room
shoushi-hao-de.
pick-up-well DE
'Zhangsan will pick up the room {skillfully/for me}.

b. *Zhangsan {hen shoulian de/ti wo} dei ba fangjian
Zhangsan very skillfully DE/for me must BA room
shoushi-hao-de.
pick-up-well DE
'Zhangsan must pick up the room {skillfully/for me}.

These facts would follow if all compositional rules applying at or above these auxiliaries operate either on times, propositions, or External events, but not on Internal events. If so, then no event-internal modifiers could occur above this point. Maienborn (1998) proposes a version of this idea for PPPs, assuming that they take events (undifferentiated for External or Internal types) and that Tense and the other Aux heads require either times or propositions as their arguments. However, we saw in chapter 2 that negation must be allowed to take (External) events, and the analysis of tense and aspect coming in chapter 7 requires that these categories also to this. Thus we must say that the relevant distinction is between External and Internal events. Once an element requires the former, given that the FEO Calculus disallows returning to a lower type, event-internal modification is no longer possible. Note that I assume that Voice^0 (the seat of the passive auxiliary *be* and its equivalents) selects for External events as Tense and Aspect do, although this is perhaps less intuitively obvious than for the latter two categories. Although raising from SpecEvent to event is still free in principle, in effect it must apply just below Voice at the latest.

6.5.3 Evidence for Aux Heads as the Ceiling

If this analysis holds, the predictions are (a) that event-internal adverbials ought to be able to occur as high as the lowest functional head requiring an External event as its argument, but (b) that adverbs that take External events should be able to occur below this point (as long as they are not below an event-internal adverb). Observe how this works in (6.130)–(6.131), schematically, according to the FEO Calculus (using PROG as an auxiliary element that requires an External event, and AGT-OR to stand for an agent-oriented adverb with a clausal reading).

(6.130) a. [$_{\text{EVENT}}$ PROG [$_{\text{EVENT}}$ [$_{\text{SPEC-EVENT}}$ MANNER [$_{\text{SPEC-EVENT}}$ V]]]]
b. [$_{\text{SPEC-EVENT}}$ MANNER [$_{\text{SPEC-EVENT}}$ [$_{\text{EVENT}}$ PROG [$_{\text{EVENT}}$ [$_{\text{SPEC-EVENT}}$ V]]]]]

(6.131) a. [$_{\text{EVENT}}$ PROG [$_{\text{EVENT}}$ AGT-OR [$_{\text{EVENT}}$ [$_{\text{SPEC-EVENT}}$ MANNER [$_{\text{SPEC-EVENT}}$ V]]]]]
b. [$_{\text{EVENT}}$ PROG [$_{\text{EVENT}}$ [$_{\text{SPEC-EVENT}}$ MANNER [$_{\text{SPEC-EVENT}}$ [$_{\text{EVENT}}$ AGT-OR [$_{\text{EVENT}}$ [$_{\text{SPEC-EVENT}}$ V]]]]]]]

In (6.130a), the manner adverb takes a SpecEvent and yields another one; this is freely raised to (External) event, which PROG can then legitimately take as its object. (6.130b) is an ill-formed representation (underlying (6.128a) with *loudly*, for example), since once the FEO has raised to (External) event to satisfy PROG, it cannot be relowered to SpecEvent. Similarly, (6.131a) is well-formed with AGT-OR before MANNER (as in *She cleverly grabbed it tightly*), but the reverse order in (6.131b) is ill-formed just as (6.130b) is, as a case of illegitimate lowering of the FEO (thus explaining **She tightly cleverly grabbed it*).

In addition to the sentences just reviewed, three pieces of evidence bear out these predictions. First, event-taking clausal adverbials, such as frequency or subject-oriented adverbs, ought to be able to occur between Voice and Pred in English (even if Voice is fairly low in the clause), since SpecEvent can be converted to events above Pred but below Voice. As noted in chapter 3, this is borne out, although for independent reasons such sentences require a particular presuppositional structure; examples are provided in (6.132)–(6.133) (see chapter 7 for further discussion).

(6.132) a. They must be willingly yielding to Bill's demands, for him to be so satisfied about it.
b. Dan could have tactfully withdrawn his offer, but if I know him he didn't.

(6.133) a. They have been frequently returning to the house empty-handed.
b. They must have occasionally postponed their own work to do hers.

The second and third pieces of evidence depend on facts about the clausal structure of Chinese, in particular, where two functional heads are concerned, the passive marker *bei* and the marker of preposed objects, *ba*. These

constructions show that we cannot simply identify the ceiling on event-internal modification with PredP. First I briefly review the facts about these two constructions.

Bei always precedes *ba* ((6.134) = (52) in Li and Thompson 1981:505).

(6.134) Wo bei ta ba wode daziji dapo-le.
I PASS s/he BA my typewriter break-PRF
'What happened to me was that my typewriter was broken by her/him.'

Bei has been analyzed in a number of ways, but I assume that it is the representation of the functional head Voice, which in Chinese is not a verbal auxiliary (unlike in the familiar European languages). An overt "deep subject" may or may not appear with it:

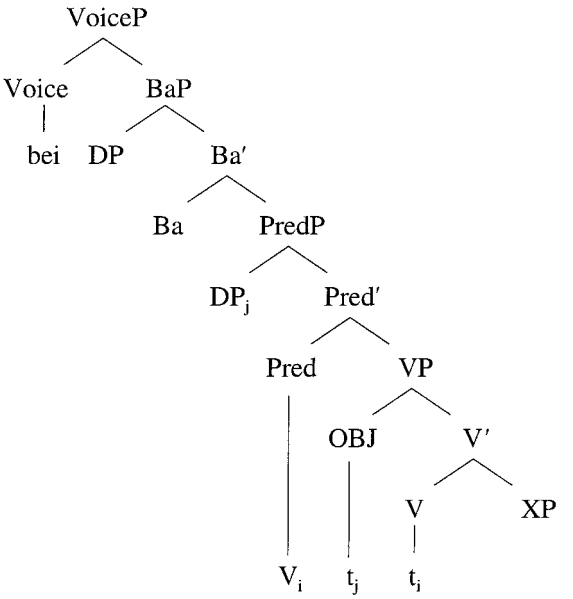
(6.135) Zhangsan bei (Lisi) da-le.
Zhangsan PASS Lisi hit-PRF
'Zhangsan was hit (by Lisi).'

(Although the Chinese passive may not work exactly as in English – see Huang 1997a for one recent analysis – variation in details of the analysis would not affect the argument here.) The *ba*-construction is one of the most discussed phenomena in Chinese syntax.[40] (6.136b) shows the basic word order change it represents, with a direct object (normally postverbal, as in (6.136a)) in preverbal position marked by the morpheme *ba*.

(6.136) a. Xiaolan na-zou-le wode beibao.
Xiaolan pick-up-go-PRF my packpack
'Xiaolan went off with my backpack.'
b. Xiaolan ba wode beibao na-zou-le.
Xiaolan BA my backpack pick-up-go-PRF
'Xiaolan went off with my backpack.'

There are essentially two types of structural analyses for the *ba*-construction in the literature. The first, typified by Huang 1982, Li 1990, Tang 1990, and Ernst 2000c, treats *ba* as either a preposition or a Case marker (i.e., not projecting its own syntactic category), so that *ba* + DP makes up a constituent. I adopt here the second analysis, exemplified by Zou 1995, Rhys 1996, Takahashi 1996, Gu 1998, and Sybesma 1999, in which *ba* is a functional head of a BaP, with the direct object in the Spec of its complement. I take its object to have moved to Spec,PredP in order to get Case. The structure I assume is thus as shown in (6.137).[41]

(6.137)



For *ba/bei* sentences with adverbials, the predictions of the approach proposed here are that (a) event-taking clausal adverbials like *changchang* 'frequently' or subject-oriented ones such as *ganxinqingyuande* 'willingly' ought to be acceptable in positions as low as adjunction to Pred′, below the *ba*-DP in Spec,PredP; and (b) event-internal manner and PPP adjuncts should be possible to the left of *ba* (since this head has no semantic contribution to make, or at least none relevant to adverbial interpretation), as high as Voice (*bei*) but no higher. These predictions are confirmed. First, (6.138)–(6.139) show clausal event-taking adverbs to the right of *ba* or *bei*, with functional adverbs in the first set, and a subject-oriented adverbial in the second.[42]

(6.138) a. Women (yijing) ba dianshiji (yijing) bai-hao-le.
we already BA television already set-well-PRF
'We already set the television in place.'
b. Wo (zai) bei ta (zai) ma yi-dun.
I again PASS her/him again scold one time
'I was again scolded by her/him once.'

(6.139) Wo (ganxinqingyuan de) ba nei-ben shu (ganxinqingyuan de)
I willing DE BA that-CL book willing DE
mai-le.
sell-PRF
'I willingly sold that book.'

Second, (6.140)–(6.141) show cases where a manner adverbial and a PPP are grammatical preceding *ba* but not preceding *bei* or an auxiliary verb.

(6.140) a. Lisi (qingqing de) ba zhuozi (qingqing de) qiao-le yixia.
Lisi light DE BA table light DE knock-PRF once
'Lisi lightly knocked once on the table.'
b. Langtou (*jinjin de) bei Zhangsan (jinjin de) wo-zhu-le.
hammer tight DE PASS Zhansan tight DE grip-hold-PRF
'The hammer was gripped tightly by Zhangsan.'
c. *Lisi qingqing de hui ba zhuozi qiao yixia.
Lisi light DE will BA table knock once
'Lisi will knock lightly once on the table.'

(6.141) a. Lisi (ti wo) ba fangjian (ti wo) shoushi-hao-le.
Lisi for me BA room for me pick-up-PRF
'Lisi picked up the room for me.'
b. Fangjian (*ti wo) bei shoushi-hao-le.
room for me PASS pick-up-PRF
'The room was picked up for me.'
c. Lisi (*ti wo) hui ba fangjian shoushi-hao-le.
Lisi for me will BA room pick-up-PRF
'Lisi will pick up the room for me.'

All this is as predicted, given the structure in (6.137). Clausal event-taking adverbials may adjoin as low as to PredP, since nothing forces an event-internal interpretation there, and the FEO Calculus allows event to be the FEO object at this point (in the absence of other adverbials), predicting the grammaticality of (6.138a) and (6.139a). Since *bei* is higher than *ba* and also makes no semantic contribution that could interfere with composition, (6.138b) and (6.139b) are also fine. In (6.140)–(6.141), event-internal modification is possible to the right of *bei* because it is only at the Voice node that SpecEvents no longer are available as FEOs. Above this point, though, to the left of *bei* or an auxiliary, these adverbials are ruled out.[43]

It is important to note that, even though clausal predicational adverbs may adjoin below *ba* and manner adverbials may adjoin above it, this analysis does not make the wrong prediction that the order Manner > Clausal is possible, as in (6.142).

(6.142) *Lisi qingqing de ba zhuozi yijing qiao-le yixia.
Lisi light DE BA table already knock-PRF once
'Lisi lightly already knocked on the table once.'

Just as was discussed with (6.131b), *yijing* 'already' requires an External event as its FEO argument and yields another External event; thus *qingqing de* 'lightly' cannot take a SpecEvent, as required, and the sentence is ruled out. In general, any such order is excluded when the lower adverbial takes a clausal FEO, so that no higher element may take a SpecEvent. Cases like (6.142) are therefore ruled out independently of the specific adjunction sites of the adverbials.

6.5.4 Summary and Conclusion for Delimiting the Low Range

In this section I suggested that the Low Range has Voice as its upper bound, because this node selects an (External) event FEO, and therefore the FEO Calculus must have been raised to event by this point (if not before), which precludes event-internal modification at any higher point. Besides predicting the ungrammaticality of manner, measure, domain, and PPP adjuncts before the passive marker, this also correctly predicts that clausal adjuncts may sometimes occur below the passive marker (unlike approaches that would make Voice an absolute dividing line between the domains of event-external and event-internal modification). This was shown to hold in both English and Chinese. The location of the ceiling on event-internal modification at Voice was also supported by Chinese sentences with both *ba* and the passive *bei*, in which event-internal modifiers were able to occur on either side of *ba* but had to obligatorily follow *bei*. Taken together, these facts show that we should not formulate a theory in which particular projections are directly specified as hosts for particular types of modification; rather, the interaction of compositional rules, constraints on those rules (such as (6.2) and properties of the FEO Calculus), and selectional requirements of individual adjuncts and functional heads like Voice combine to create the same effect, derivatively.

I conclude by mentioning three theoretical implications of the approach outlined here. First, the pattern shown by (6.142) and others like it shows that the ordering of multiple adverbials does not exhibit the "transitivity" property assumed by Cinque (1999). Transitivity holds that, for any adjuncts A, B, and C and linear precedence $>$, if A $>$ B, and B $>$ C, then A $>$ C. However, we have found cases where an event-internal adverbial A can precede some functional head B (*ba*), and a clausal adjunct (C) like *haoxiang* 'apparently' or *yijing* 'already' can follow B, yet A may not precede C, and in fact must follow it. Numerous other examples can be constructed from the orders shown in chapter 3. Thus the same arguments for the scope-based approach to adjunct licensing over feature-based theories, centered on higher adverbs in earlier chapters, hold for lower adjuncts as well. The principles proposed here allow

for the nontransitive cases easily, while they remain a problem for approaches that assume a rigid order of adjuncts licensed in a one-to-one fashion by functional heads.

Second, the system outlined here correctly predicts that the ranges of adverbials from different "zones" may sometimes overlap (as in the transitivity example in the previous paragraph). This provides evidence that zones like the Low Range are not delineated by specific mention of particular maximal projections but rather as an effect of the FEO Calculus and the selectional requirements of various adjuncts and functional heads in the clause.

Third, the existence of sentences like (6.138)–(6.141) – with adverbials between the *bei*-DP and *ba*, and between the *ba*-DP and V – shows that adjuncts may adjoin to the X′ level of a projection, despite the opposite claim in much of the current literature. (This issue is taken up again in chapter 8.)

6.6 Summary and Conclusions for Event-Internal Modification

6.6.1 Summary

My main aim in this chapter was to propose and justify an analysis of the distribution of event-internal adjuncts in the Low Range in the semantically based approach outlined in earlier chapters. First, in section 6.2 I showed how all of the adjuncts in question (manner, measure, and domain adverbs, restitutive *again*, and participant PPs) can all be considered event-internal modifiers. The next two sections provided a detailed analysis of the four types of adverbs, which adjoin either preverbally to PredP or postverbally to VP, and of PPPs, which I showed adjoin only to PredP (on either side of the verb).

Section 6.3 provided semantic representations for manner and measure adverbs based on the basic predicational semantics of chapter 2, allowing for either of the two possible positions to take scope, in principle, over either the basic event or the core event. Lexical properties determine which scope is actually taken, with measure adverbs taking the narrower option (scope over the core state) while different sorts of manner adverbs take wide or narrow scope. Certain cases where only one of the two positions is possible, as for *well* and *perfectly*, were explained by weight-theoretic considerations (for the former) or as an effect of the adverb requiring narrow scope over a covert element representing a predicate's locus of transitivity. *Again* on its restitutive reading works like a measure adverb with a narrow scope requirement. All of these adverbs may adjoin to VP because they may be properly interpreted there (by (6.2a)); they also may adjoin to PredP because the FEO Calculus

allows a basic event to be extended and kept as an Internal event up to the lowest Aux node.

By contrast, pure domain adverbs work rather differently, supplying a restriction on the variable c*, which determines the conditions under which a predicate is interpreted. Since the covert predicate UNDER that accomplishes this is low in structure and since the domain adverb need only c-command it, the adverb can adjoin anywhere in a sentence, including the Low Range. As predicted by the scope-based approach, these various adverbs may often occur in alternate orders, where no semantic clash is induced. This provides evidence for the overall framework.

PPPs are event-internal but have a rather different semantic representation from the adverbs, because they are argument-like adjuncts, representing what have sometimes been called "adjunct theta roles" (e.g., by Speas [1990]). I presented evidence that they do not adjoin to VP, but only to PredP. I suggested that this fact derives from their status as argumentals: inside VP, as argumentals they would have to occupy Spec positions, but this would inevitably make for an ill-formed semantic representation.

Finally, in section 6.5 I suggested that there is no need to stipulate some syntactic upper limit to the Low Range where event-internal modification is possible. Rather, the ceiling is established by the lowest of any string of Aux heads in a given sentence, which require an External event as their FEO argument. As a result, by the FEO Calculus no event-internal modifier, requiring an Internal event, can be interpreted (and thus licensed) above such a head. Evidence from Chinese showed that establishing the ceiling in this way is superior to designating some particular projection for this purpose.

6.6.2 Conclusion

To conclude, I have shown that with the proper semantic representation for the various types of event-internal adjuncts (especially including their selection for particular compositional rules) and with a small number of principles for the syntax-semantics mapping (including the FEO Calculus), the distribution of event-internal modifiers can be predicted without recourse to extra syntactic stipulations. The facts accounted for are listed in (6.143).

(6.143) a. the possibility of preverbal and postverbal positions for most of the adverbs in question;
b. the essential semantic equivalence of adverbs in these two positions;
c. the restriction of certain adverbs to one or the other of the positions;

d. the more restricted distribution of PPPs in comparison to event-internal adverbs;
e. the wider distribution of pure domain adverbs with respect to the others;
f. the possibility for alternate orders of pairs of these event-internal adjuncts;
g. the location of the ceiling on the Low Range;
h. the ability of Chinese (but not English) event-internal modifiers to adjoin above PredP while also allowing clausal modifiers to adjoin to PredP, in principle.

To the extent that the principles proposed here account successfully for this broad range of phenomena, and in a relatively simple and non-stipulative way, it constitutes evidence for the approach to adjunct licensing proposed here.

7

Adjunct Licensing in the AuxRange

7.1 Introduction

The AuxRange, the area between subjects and main verbs in VO languages, has traditionally attracted the most attention in research on adverbs, undoubtedly because it is the only place many common adverbs (and negation) may occur in the familiar European languages, because it is where ambiguities show up most clearly, and because it is only here that obvious interactions between adverbs and auxiliary verbs take place. Thus the early writers on adverbs in the generative syntactic tradition made it a major focus (e.g., Keyser 1968, Jackendoff 1972, Ernst 1984), and those who were interested in the behavior of auxiliaries and/or negation have also had to assume or propose some analysis of these elements (Baker 1971, 1981, Emonds 1976, Sag 1980). More recently, adverbs have become a common diagnostic (a) for head movement, the central theoretical issue in the AuxRange in current Principles and Parameters (P&P) theory (Platzack 1986, Pollock 1989, and many others), and (b) for various proposals for alternative subject positions (Bobaljik and Jonas 1996 and many others). Thus it has become increasingly important for there to be a coherent theory of adverb licensing.

The goal of this chapter is to establish that the principles developed in earlier chapters can account for a wide range of data in the AuxRange. In particular, this approach holds that the main syntactic constraints on free-adjunction are the Directionality Principles and, to a lesser extent, Weight theory.[1] The major roles in determining the distribution of a given adjunct are played by the semantic mechanisms of lexical requirements of individual adverbial items and the compositional rules that they interact with. These compositional rules follow the FEO Calculus, as constrained by fixed syntactic positions for such items as auxiliary verbs, negation, passive markers, and the like. It is also important that several tokens of a single type of adjunct may occur in one sentence, as long as no semantic clashes are produced.

Data are drawn mostly from English, French, and Chinese, although there will be brief glances at other languages, such as Italian and Korean. The similarities and contrasts in English and French in adverb/auxiliary order are already quite well-known and in essence constitute the first proving ground for any theory of the AuxRange. The data on Chinese present the apparently unique feature discussed in chapter 6: it acts like a VO language in terms of its complements, yet in functional categories it places its adjuncts linearly as if it were an OV language. Thus the weight-theoretic and directionality restrictions that keep heavier adjuncts out of the AuxRange in French and English are inoperable, and we can more easily determine the hierarchical position of various adjuncts with respect to auxiliaries and (other) functional heads – it is thus far easier to see the pure effect of scope-based licensing principles.

It is worth repeating that the semantic analyses offered herein undoubtedly omit many details and nuances that are important to the semantics. My goal, however, is to construct a syntactic theory, so the focus must be on those aspects of semantics that help condition syntactic behavior. This is all the more necessary because I am attempting a fairly wide coverage of many different adjunct subtypes, with less depth possible within each. The ultimate, complete version of the theory must certainly flesh out the formal semantics; here we must be content with a demonstration that this type of semantic analysis permits an empirically adequate and theoretically satisfying syntactic theory.

The chapter is organized as follows. Section 7.2 outlines a number of necessary assumptions and background analyses. In section 7.3 I review chapter 3's analysis of predicational adverbs in the AuxRange and, in section 7.4, I give the corresponding analysis for functional adverbials, with subsections on time-related adjuncts, frequency and focusing adverbs, and other types. I provide evidence to support these analyses in section 7.5 by examining sentences with two adjuncts and by showing how grammaticality and relative order follow from the licensing principles proposed in earlier chapters. In section 7.6 I consider the effect of head raising on linear order and scope interpretation and, in section 7.7, give a summary of the main results.

7.2 Preliminaries

7.2.1 The Issues

An adequate theory of adverbial distribution should be able to answer satisfactorily at least the three questions in (7.1) relating to linear order in the AuxRange.

(7.1) a. What are the permissible positions for an adverbial with respect to verbal, aspectual, modal, and other clausal heads?
b. What are the permissible positions for an adverbial with respect to any other adverbial (including negation if it is not a clausal head)?
c. How can we account for linear orders that do not straightforwardly reflect scope relations?

To do this, it is necessary to establish certain theoretical assumptions, which is the business of this section: first syntactic matters (section 7.2.2) and then semantic ones (section 7.2.3).

7.2.2 Syntax

7.2.2.1 Clause Structure

I assume the sequence of heads in (7.2) for the languages we work with in this chapter, although not all categories are always realized in a given language or in all sentences.[2]

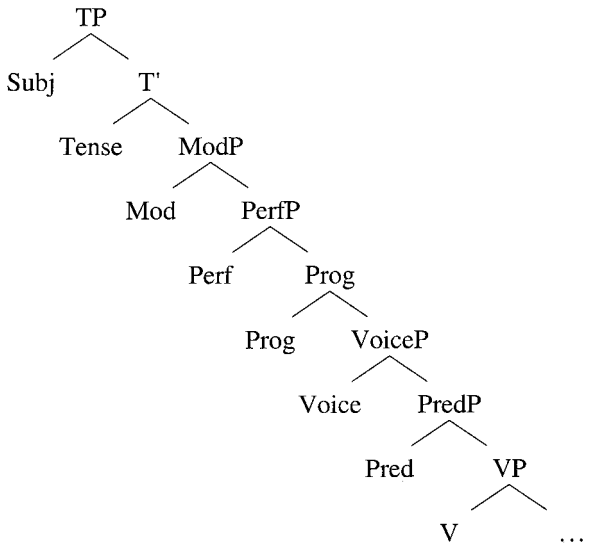
(7.2) Tense – Neg – Aux* – Voice – BA – Pred – V

As discussed in Ernst 1992b, 1995b, I take English and Chinese sentential negation to involve *not*/*bu* in the highest Spec,AuxP. However, the Romance languages and many others have a NegP. In particular, I follow Belletti (1990), Zanuttini (1990), and others in assuming that French NegP (complement of TP) is headed by *ne*, but the real negative morpheme *pas* is in Spec,NegP; when V raises through Neg, *ne* cliticizes to it on its way to Tense, producing the final order *ne-V pas*. Italian, on the other hand, puts Neg (*non*) before Tense in the standard dialect (and many regional ones).

I take modals, *have*, and *be* in English to be auxiliary Vs, each heading an AuxP. Voice is a subcase of Aux in English (the passive *be* in English), but other languages may treat it differently, such as an inflectional affix (Keenan 1985). BA stands for the Chinese marker of preverbal objects, *ba*. Much has been written on this morpheme (see the references given in chapter 6); for the moment, it may be taken as marking the rough equivalent of short-raised specific objects in the Germanic languages (see Diesing 1997 and references therein). Finally, as discussed in earlier chapters, all main verbs move into the node Pred, making it the canonical position for V and accounting for the lack of (nonparenthetical) adjuncts between a verb and its direct object in the basic structure of VO languages.

Aux* indicates that there may be several auxiliary verbs in sequence whose identity and constraints on combination may differ across languages. English maximally allows one modal and two aspectual auxiliaries (aside from passive *be*), one for the perfective *have* and one for the progressive *be*; its maximal sequence is shown in (7.3) (where PerfP and ProgP are subtypes of AspP).[3]

(7.3)

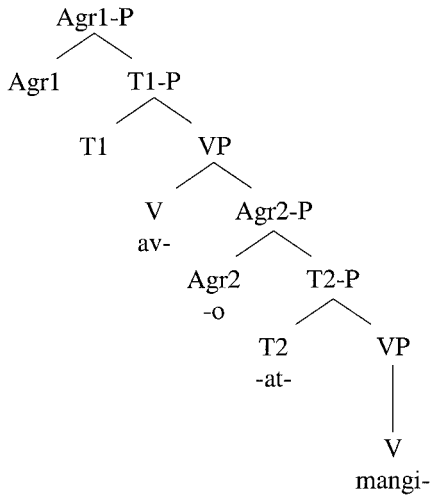


Other languages may differ and may have other functional heads that are not auxiliary verbs. Chinese does not allow Mod and Perf to co-occur, for example. The Romance languages classify modals with main verbs, while the sequence of aspectual and passive auxiliaries is roughly as in English (though the distinction between auxiliary and lexical verb is less clear). As noted, I take Romance languages as having a NegP, unlike English and Chinese.

Many current versions of the Split Infl Hypothesis posit either various Agr nodes or separate nodes for each inflectional affix in the AuxRange, or both. To take just one illustrative example: Giorgi and Pianesi (1997:43) propose (7.5) (their (6-7); irrelevant details omitted) for (7.4); the main verb stem raises successively to Agr2, while the root *av-* 'have' raises to Agr1, similarly gathering its own affixes (not shown) on the way, to become *ebbi* after morphological adjustments.

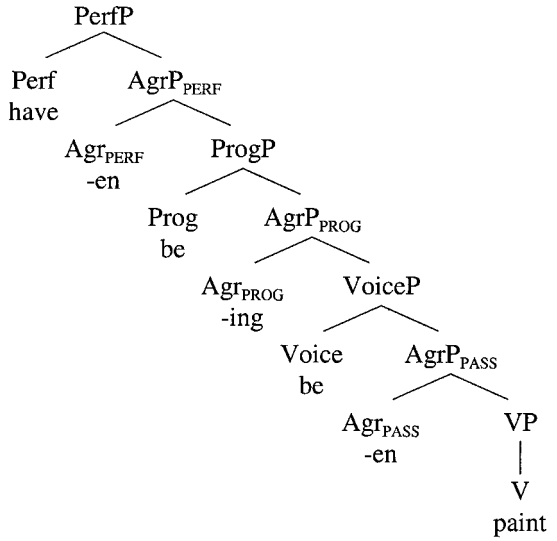
(7.4) Ebbi mangiato.
I had eaten.

(7.5)



The same could be done for English, adding functional heads and their projections for the affixes *-en*, *-ing*, and *-en* after Perf, Prog, and Pass, respectively, and have each verb raise into these nodes (see (7.6) for the surface sequence *(to) have been being painted*); again, if one assumes Affix Checking at LF for English (Chomsky 1991), each affix actually comes out of the lexicon already attached to V, and in (7.6) the Agr heads represent sites where the indicated affix is checked.

(7.6)



Agr nodes have essentially been used for three theoretical purposes. First, they mediate the relation between some argument DP and the corresponding agreement affix on V: the affix heads AgrP, and the DP (such as a subject) is in its Spec (e.g., AgrP-S), with V moving to Agr via head movement and combining with the affix. Second, they provide an extra landing site to explain a higher position of an auxiliary with respect to an adverb (as first proposed in Pollock 1989). Third, positing AgrPs permits a uniform theory of Spec-head agreement, in which only one feature may be checked on a given node (assuming that ϕ-feature like person, number, and gender are "bundled" and count as one feature for this purpose). That is, whenever several features are represented on some verb (or other head), it will raise through successive, higher heads to check each of them; thus, if a verb has both tense and agreement morphology, they can be checked separately.

However, as Iatridou (1990) pointed out, the apparent need for an extra landing site provides no evidence for the categorial identity of the node; there is little if any loss to the theory in saying that an agreement relation can be mediated in TP, ModP, and so on, and (as many have pointed out) there is a great advantage to the theory to exclude any node like Agr with no semantic content – especially in a framework like Minimalism (Chomsky 1995b), with its notion of Full Interpretation (FI) requiring only meaningful elements at LF. Just as importantly, in many cases there is no real evidence for an extra head position, since the argument for it depends on the false assumption that there is a unique base position for adverbs. Finally, if there is a coherent, restrictive theory checking multiple features on one node (and deriving the correct order of affixes), then Agr is not needed to preserve the one-to-one approach to affix/feature checking.[4] Adopting a theory allowing multiple features on one node allows for a more restrictive theory of word order: it drastically reduces the number of base positions and landing sites where adverbs and arguments may appear. As noted in chapter 3, the use of many functional heads that end up empty at S-Structure/Spell-Out leads to a much less constrained theory.

Thus, the evidence for Agr nodes is weak, and rejecting them can lead to a more restrictive theory with respect to both FI and word order. Though there are clearly still many outstanding questions about these issues, I do indeed reject Agr nodes and moreover adopt the view that all affixes on a given verb (at least in the familiar western European languages) are associated with one node, whether V moves into this node to join with them or an inflected V out of the lexicon raises to it to check features. It should be noted at the outset

that, if the theory exemplified by (7.6) is to be adopted, the main proposals for scope-based licensing can be maintained (though in a slightly different form); taking the more conservative position, though, makes for a more interesting, restrictive hypothesis about adverbial syntax.

7.2.2.2 Head Movement

Given that there are relatively few functional heads, there is less room for head movement as well. Still, the evidence for limited head movement is fairly strong: the contrasts between auxiliary and main finite verbs in English and French with respect to negation are accounted for neatly by positing movement of V to Tense across negation for V > Neg order.[5] I assume that in finite clauses all types of English auxiliaries raise to Tense, over negation (including modals; see Ernst 1991a, 1998a); all French verbs, auxiliary or lexical, do the same. (7.7) illustrates these movements (in (7.7b) the lower trace is that of V, and t' is in Neg, through which V moves, picking up *ne* on its way to Tense).

(7.7) a. Mary may$_i$ not t_i drink beer.
b. Marie ne-boit$_i$ pas t'_i t_i de bière
Marie not-drinks Neg some beer
'Marie doesn't drink beer.'

There is somewhat more question about a possible second, lower landing site for "short movement." Pollock (1989) argued that besides the landing site for V above Neg, the contrasts in (7.8)–(7.9) justify another one below Neg.

(7.8) a. ne pas lire rapidement cette page
Neg not read rapidly this page
b. *ne lire pas rapidement cette page
Neg read not rapidly this page

(7.9) a. *to not read rapidly this page
b. *to read not rapidly this page

In French infinitives, main verbs do not raise past negation, as (7.8a) illustrates, but on the assumption that *rapidement* 'rapidly' has a preverbal base position, (7.8a) shows that V does raise some short distance. By assuming that English main verbs do not raise at all, we account for the contrast between (7.8a) and (7.9a). Short movement is also one way to account for (7.10)–(7.11).

(7.10) Il avait (heureusement) apporté (heureusement) les documents
he had fortunately brought fortunately the documents
nécessaires.
necessary
'He had fortunately brought the necessary documents.'

(7.11) He had (fortunately) brought (*fortunately) the necessary documents.

French permits a speaker-oriented adverbial after a nonfinite main verb, while English does not. Again, if French optionally allows short movement of infinitives, then these sentences can be explained by saying that *apporté* may hop over the adverb in (7.10), but its English counterpart *brought* may not. It turns out that there is indeed a role for short movement in a full account of the AuxRange, but it does not, as Pollock claimed, support the existence of a second functional node Agr as an alternative landing site for V (discussed in section 7.6).

7.2.2.3 The Scope Principle

There is one final syntactic issue that is to play an important role in this chapter: the effect of head movement on scope interpretation. As shown in Ernst 1991a, an auxiliary raised to Tense may take narrow scope with respect to the negation or adverb in (7.12)–(7.13).

(7.12) a. Lorraine cannot see the stage.
b. Sarah must obviously have considered it worthwhile.

(7.13) a. Bob has probably played that jig many times on his accordion.
b. Ted is not worrying about the next performance.

The interpretation of (7.12a) is that Lorraine is not able to see the stage, with negation taking wide scope, and (7.12b) says that it is obvious that it must be so that Sarah considered it worthwhile, with *obviously* taking wide scope. (With some modals the scope relationship is reversed; lexical requirements determine which of two readings is possible.) In (7.13) the issue is less clear, but if we assume that the aspectual auxiliaries represent perfective and progressive aspects, respectively, then *probably* and *not* again take wide scope over the preceding auxiliary: it is probable that Bob has played; it is not so that Ted is in the state of worrying.

These facts follow from the Scope Principle (originally proposed in Aoun and Li 1989 and revised in Ernst 1991a and Aoun and Li 1993), by which the

trace of a chain may (under some circumstances) mark a scope position for the moved item; that is, it may be within the scope of the element over which it moves (see (7.14)).

(7.14) Scope Principle:
An operator A has scope over an operator B in case A c-commands a member of the chain containing B.

There is good evidence for this sort of treatment of the "reversed" scope readings, including the fact that it avoids having to posit raising rules for negation and adverbs that are complex and stipulative (see Ernst 1991a, 1998a). A further piece of evidence comes from Chinese, where there is no evidence of verb raising.

(7.15) a. Ailing bu hui shuo Ewen.
Ailing not can speak Russian
'Ailing cannot speak Russian.'
b. Ailing hui bu shuo Ewen.
Ailing can not speak Russian
'Ailing is able to not speak Russian.'
c. Xiaolan (xianran) dei (*xianran) hui-jia.
Xiaolan obviously must obviously go-home
'Xiaolan obviously must go home.'

In (7.15a) the negator *bu* precedes the modal *hui* 'be able to', so linear order (reflecting c-command) straightforwardly determines scope. In (7.15b) negation follows *hui*, and the sentence can only have the very marked meaning indicated by the English gloss, again with scope represented directly. In (7.15c) *xianran* 'obviously' may only precede the modal. This follows if such adverbs necessarily take this sort of modal in their scope – and, crucially, if the adverb does not raise at LF (just as in 7.15b, where negation must not raise); likewise, the contrast between (7.12b) and (7.15c) follows if we assume that English modals raise while Chinese modals do not: only in the former case may the adverb take wide scope.

The same conclusion may be drawn from focusing adverbs like *even* with sentential scope, as illustrated in (7.16).

(7.16) So many weird things have happened this year. Harvard has even won a football game!

As discussed by Anderson (1972), in such examples *even* can be seen to have scope over the whole sentence because it maps the whole situation of

Harvard winning a football game onto the scale of expectations it invokes. Both the auxiliary *has* and the subject (from VP-internal subject position) have moved from positions below *even*, leaving traces, so that by the Scope Principle *even* may have the widest scope (see Ernst 1998a for further discussion). Thus, when a modal or aspectual auxiliary moves, we expect the possibility that it takes narrow scope with respect to items it moves over. As noted in section 7.6, this provides evidence that, aside from movement of the finite verb to Tense, there is only very limited head movement in the AuxRange.

7.2.3 Semantics

7.2.3.1 Tense

Chapter 2 introduced the FEO Calculus, by which events and propositions are built up in the representation of a sentence, with adverbials and other elements able to select the type of their argument and with possible changes of subtypes within these major FEOs. Tense is treated as requiring event arguments.

I adopt here a version of the system originating in Reichenbach 1947 and developed extensively since (see Hornstein 1990, Smith 1991, Klein 1994, Ogihara 1996, Thompson 1999, and references cited therein),[6] in which tenses are distinguished by different relations among three points: Speech-time (S), Reference-time (R) and Event-time (E). In most cases, S is the actual time at which the sentence is uttered (or 'now', often noted as n). For the simple tenses of present, past, and future R and E are the same. For perfect "tenses" they are separated. These six tenses are shown schematically in (7.17),[7] where $<$ indicates temporal precedence and a comma indicates simultaneity.

(7.17) Schematic Tense Representations (Hornstein 1990):

Present:	S,R,E
Past:	E,R $<$ S
Future:	S $<$ R,E
Present Perfect:	E $<$ S,R
Past Perfect:	E $<$ S $<$ R
Future Perfect:	S $<$ E $<$ R

However, I take the perfects to be introduced by a perfective operator PERF that combines with tenses to create the temporal relations in (7.17). Thus Tense is a relation between an event and a time interval, as shown in (7.18).

(7.18) Formal Tense Representation (roughly following Kamp and Reyle [1993]):
   a. Present: $t = n$ & $e \subseteq t$ (if the following event is a state: $t = n$ & $s\ O\ t$)
   b. Past: $t < n$ & $e \subseteq t$ (if the following event is a state: $t < n$ & $s\ O\ t$)

As is standard in event-based frameworks, I use e, e′, e″, etc. as variables for dynamic events; s, s′, s″, etc., for states; and t, t′, t″, etc., for time intervals; but, strictly speaking, in the representations to be used here, when e or s is related to t by inclusion ($\subseteq$), overlap (O),[8] or precedence ($<$) relations, e or s must be construed as the time interval of the event/state in question. The event mapped onto the time interval by [$e \subseteq t$] or [$s\ O\ t$] is always the one represented by the constituent immediately c-commanded by Tense (minimally, PredP, or some higher functional projection just below Tense), that is, the sister/complement of Tense, given binary branching.

I follow Kamp and Reyle (1993), Michaelis (1998), Swart (1998), and others in taking the usual reading of perfect tenses to involve the location of a stative event(uality) at reference-time (thus, S,R in (7.17) for the present perfect), this being the consequent state starting when the basic event ends, so that the latter "abuts" this consequent state. This is represented as in (7.19), where the event e represented by the complement of Tense abuts s ($e \supset\!\subset s$).

(7.19) Perfect: $e \supset\!\subset s$

This state s is then related to reference-time by Tense. The relationship of perfective to Tense is not nearly as straightforward as the picture in (7.17)–(7.18) suggests (Kamp and Reyle 1993, Michaelis 1998, among others), but simple cases suffice for the illustrative discussions of adverbial modification.[9]

Locating temporal expressions like *now*, *yesterday*, or *next week* will be taken as relations of the form [$t = X$ & $e \subseteq t$] indicating that event e takes place within or at the time interval t, identified by the expression X (again, [$s\ O\ t$] substitutes for [$e \subseteq t$] for states; cf. Kamp and Reyle 1993:514). I also assume a general constraint that for any such expression A c-commanding another one B, where A locates an event at t_1 and B at locates its event at t_2, then $t_2 \subseteq t_1$[10] – that is, the times must be "nested." This is important because it allows nonperfective sentences where $R = E$ to have two different time adverbials, as long as the interval of the lower one is included in the interval of the higher one.[11]

Thus Tense takes events and yields events, just as Aspect does. In the absence of PERF, reference-time and event-time are the same, so multiple

time adjuncts must be nested. In sentences with PERF, there is no special mention of the fact that R and E are different; rather, PERF ([e $\supset\subset$ s]) always forces the temporal location of e to precede that of s, so that the relation 'E < R' in (7.17) always holds.

7.2.3.2 Aspect and Event-Building

Aspect shift (Smith 1995, Swart 1998) is the change of an event from one eventuality description (state, process, quantized event [q-event]) to another. The basic eventuality description for an activity embedded in a sentence like (7.20a), represented as (7.20b), is converted to a state for the perfective (7.21a–b).

(7.20) a. Mary met the president.
b. [t < n & e ⊆ t [$_{\text{EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]

(7.21) a. Mary has met the president.
b. [t = n & s O t [$_{\text{STATE}}$ e $\supset\subset$ s [$_{\text{EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]]

Similarly, q-events can be converted to states for the progressive:

(7.22) a. Mary was meeting the president.
b. [t < n & s O t [$_{\text{STATE}}$ PROG [$_{\text{EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]]

Following Swart 1998:354–55, I take PROG as an operator taking dynamic events and yielding states.[12]

The linearized notation introduced in chapter 2 replaces the boxes used in standard DRT with brackets. I assume that all event and time variables are introduced as needed, existentially quantified as in the universe (shown on the upper line) of DRT representations. For the DRT notations e: (or s:) followed by a box encompassing an eventuality description, I write [$_{\text{EVENT}}$ . . .] (or [$_{\text{STATE}}$ . . .]), where the ellipsis contains statements about the event (state) in question; this is equivalent to 'the event e (state s) such that F(e), G(e), . . .' (where 'such that F(e), G(e), . . .' is a string of statements of the event's properties). The labels on brackets will often be abbreviated as E or S, and these labels correspond to the variables as used in higher statements. For example, in (7.21b) the variable s in Tense ([t = n & s O t]) is the entire state represented by the following bracketed expression; and [e $\supset\subset$ s] acts to convert the following event [$_{\text{EVENT}}$ M(e) & Agt(e,m) & Th(e,p)] into [$_{\text{STATE}}$ e $\supset\subset$ s [$_{\text{EVENT}}$ M(e) & Agt(e,m) & Th(e,p)]]. The way in which such eventuality descriptions are built up in layers is crucial to the account of AuxRange syntax, just as it is for predicational adverbs.

Various adverbials, including the cases of negation and duration adverbials considered in chapter 2, also act as aspectual-shift operators. Event-predicate negation may be taken as a modifier on an eventuality description P yielding a state, such that no event of type P holds in that state (Swart 1998:20). Duration adverbials like *for an hour* similarly can convert an action into a state. Also, context may license an aspectual shift that has no overt morphological or syntactic correlate; this may be represented by coercion operators. Adopting Swart's notation, these operators include those in (7.23), where e is a q-event, s is a state, h is a homogenous event (a state or process), and d is a dynamic event (q-event or process); and C_{xy} converts an event of type x into one of type y.

(7.23) a. C_{eh} (e.g., She played the sonata for an hour.)
b. C_{he} (e.g., The program ran in four minutes.)
c. C_{sd} (e.g., Karen is liking this play.)

The first and second of these are particularly useful for the interaction of certain functional adverbs with the rest of a sentence, as illustrated in (7.24)–(7.25) (suppressing unnecessary detail).

(7.24) a. For a week she stopped studying at midnight.
b. [DUR [PAST [C_{eh} [stop studying at midnight]]]]

In (7.24) imagine a student who normally studies into the early morning hours, but in an effort to get more rest before a big weekend, she decides that for the week before she will stop and go to bed early each night. This stopping is an event, one per night; when iterated in this way – an iterative operator ITER being one possible instantiation of C_{eh} – there is a state made up of repeated events, and it is this state that lasts for a week. Similarly, in (7.25b) *suddenly*, represented by SUDDEN, requires an action as its argument. C_{he} converts the following state into an (inchoative) action (the coming into existence of the state denoted in the innermost brackets).

(7.25) a. Suddenly there was a Klingon destroyer in front of us.
b. [PAST [SUDDEN [C_{he} [there be a Klingon destroyer in front of us]]]]

It is also important that covert aspectual operators, often frequency operators, can apply freely in context for cases like (7.26) (see also Vlach 1993:252 and Lenci and Bertinetto 2000:248ff).

(7.26) Robert came home early that year.

(7.26) need not describe just one arrival for that year; it may also describe a series of arrivals (perhaps one each day, coming home from school or work) that took place earlier in the day than was normal in previous years. In essence, the covert operator creates another set of events, each of which can be characterized as early and the whole constituting one event that took place last year. We will see in particular that many claims about the purported rigid order of adverbs have not taken such contexts (and these covert operators) into account. Once they are acknowledged, the distribution of adverbs in the AuxRange can be seen to be much freer than has often been claimed.

7.2.3.3 Propositions and Events

Chapters 2 and 3 presented an analysis of the semantics of predicational adverbs, in which they selected FEO objects with particular properties, most crucially their FEO type, events or propositions, and an account of how this enables us to predict the basic syntax of these adverbs, especially their ordering relative to each other, to negation, and to various auxiliaries. I briefly review these results in section 7.3.

7.3 The Syntax of Predicational Adverbs: Review

In this section I provide a brief review of how the distribution of predicational adverbs is determined by the FEO Calculus, clause structure, and the selectional properties of individual adverbs. (7.27) gives a condensed classification of this group of adverbs.

(7.27) a. speaker-oriented: speech-act (*frankly*), evaluative (*oddly*), modal (*maybe*), evidential (*obviously*)
b. subject-oriented: agent-oriented (*wisely*), mental-attitude (*intentionally*)
c. exocomparative (*similarly*)
d. pure manner (*loudly*)

Of the first group in (7.27a), all but speech-act adverbs take one FEO argument, a proposition; in some cases (especially factive evaluatives) this proposition must be assumed to be true and thus a fact. Subject-oriented adverbs take (controllable) events as their FEO argument and use the subject as a second argument. Exocomparatives take either events or propositions. Manner modification was analyzed as a matter of taking an event argument but with a

specified comparison class, thus a SpecEvent, and all the types in (7.27a–c) potentially have manner readings when low in the clause, and the pure manner subclass has only this reading, not a clausal one. Finally, speech-act adverbs are essentially a special kind of manner modifier, taking a covert operator **Express*.

The FEO Calculus allows freely converting a SpecEvent to an event and an event to a proposition; otherwise, the nonargument semantic structure of a clause is built up by adding adverbials and other elements according to their lexical specifications: combining with some event or proposition, and creating some other event or proposition by adding a "layer" of modification. Examine first how this works with speaker-oriented adverbials:

(7.28) a. Briefly, Ernestine has possibly been holding out for too much money.
b. *Possibly, Ernestine has briefly been holding out for too much money.

Speech-act adverbs like *briefly* in (7.28) must precede all other predicationals because the special predicate **Express* requires that the proposition denoted by the rest of the sentence be within its c-command domain, and since *briefly* must c-command **Express*, it can only precede the other adverb (*possibly*). Evaluatives, shown in (7.29)–(7.30), take facts to yield facts.

(7.29) *Someone probably will unfortunately be asked to stay behind to clean up.

(7.30) *Mark stupidly had oddly been betting on lame horses to win.

This rules out their appearance after both modal and subject-oriented adverbs because the former must take a nonfact proposition as its object, and the latter must take an event. Since they are prevented from doing so, such combinations are ungrammatical. For similar reasons, evaluatives cannot follow negation or the base positions of aspectual auxiliaries, as (7.31)–(7.32) illustrate.

(7.31) *Jim did not fortunately remove his shoes.

(7.32) *Jim will have significantly been fired.

In the first case, a contradiction is created when a speaker simultaneously asserts and denies a fact. In (7.32) *significantly* has no way to take its required propositional argument without forcing the event-taking *have* to do the same.

This explanation applies to modal adverbs as well:

(7.33) *Jim did not {probably/possibly} remove his shoes.

(7.34) *Jules might have maybe seen Jeanne.

(7.35) *The audience willingly maybe all fell asleep. (cf. (7.30))

Evidentials are slightly different from evaluative and modal adverbs, since they take facts but yield events. This permits them to be within the scope of negation (as well as taking wide scope), since negation may be an event operator:

(7.36) They haven't clearly finished all their work yet.

Finally, all of these speaker-oriented adverbs may take adverbs from other classes in their scope and thus precede them in a sentence:

(7.37) {Fortunately/Probably/Obviously}, Jim {politely/deftly/likewise} removed his shoes.

The previous examples focused on the proposition-taking adverbs of (7.27a). The behavior of the subject-oriented group is therefore already partially explained: they require events as their FEO argument and thus may not precede a speaker-oriented adverb. (The one permitted case, with a subject-oriented adverb taking an evidential in its scope, is ruled out on independent grounds.) However, since they take events, they can occur on either side of negation (7.38) or of an exocomparative adverb (7.39).

(7.38) a. They have willingly not gone out of their way to say nasty things.
b. They haven't willingly gone out of their way to say nasty things.

(7.39) a. Similarly, they have willingly helped at the soup kitchen.
b. Willingly, they have similarly helped at the soup kitchen.

They also may follow aspectual auxiliaries, given the right context, as in (7.40).

(7.40) She has been wisely insisting on total control of her films.

Of course, they must precede manner adverbs, since the latter require SpecEvent arguments, but clausal subject-oriented adverbs take (regular) events into events; thus subsequently adding a manner adverb is impossible:

(7.41) a. Sharon cleverly was (only) loosely holding on to the ropes.
b. *Sharon was (only) loosely cleverly holding onto the ropes.

Manner adverbs are restricted to PredP by the requirement that all event-internal modification take place below Voice. This predicts that they are always below negation and all auxiliary verbs, since the latter all necessarily precede PredP, as in (7.42).

(7.42) a. Tasha {was/wasn't} loudly playing her clarinet.
b. *Tasha loudly {was/wasn't} playing her clarinet.

We have reviewed the major predictions of the licensing principles that respond only to hierarchical position, according to semantic composition; they successfully predict the ordering facts embodied in (7.43).

(7.43) a. speech-act > evaluative > epistemic > (negation >) subject-oriented > (negation >) manner
b. evidentials: above subject-oriented, unordered with respect to negation
c. exocomparatives: anywhere to the left of manner

Further, given raising of the finite auxiliary to Tense in English (and Romance, among other language groups) and the fact that a second auxiliary verb takes an event as its argument, (7.44) also holds (some exceptions are noted in section 7.6).

(7.44) a. clausal predicationals: before or after the finite auxiliary
b. speaker-oriented > 2nd Aux

Finally, I proposed in chapter 4 that clausal predicationals are always linearized as if they were clausal heads, so that their FEO argument counts as a complement and, given the universal rightward C-Dir, must follow the adverb. This results in all nonmanner predicationals being preverbal in base structure for all languages.

7.4 Functional Adverbs

7.4.1 Review of Major Principles

Perhaps the largest part of discussions on AuxRange adverbs in the literature deals with functional adverbs: adverbs of time like *now* or *recently*, aspect

(such as *still* and *already*), negation (*not*), frequency (*occasionally*, *sometimes*), and so on. In this section we examine their semantic interpretation and identify the mapping from their syntactic position to semantic representation. As required by the theory of scope-based licensing, an adjunct is licensed only if it is in a position to receive its correct interpretation, where its selectional properties are respected and where its presence does not cause a problem with other parts of the sentence's representation (or with Weight theory).

Aside from the linearization effects of the Directionality Principles and Weight theory, the distribution of different classes of functional adverbs in the AuxRange depends on the factors in (7.45), and only these.

(7.45) a. adjunct classes' selectional properties
b. FEO Calculus
c. fixed point(s) of application for some compositional rules
d. clause structure and limited head movements

According to (7.45a), adjunct classes differ in the degree of restraint they impose on the elements they combine with. Focusing adverbs like *even*, *merely*, or *just* require little if anything in terms of content, since their function is only to impose a focus-presupposition structure on some part of that content. At the other extreme, aspectual adverbs must combine with an event of the correct aspectual type and be in the correct temporal relation to some other event. This distinction means that focusing adverbs have a freer distribution than aspectuals, with other subclasses falling in the middle in terms of degree of semantic restriction and degree of syntactic freedom.

As for (7.45b), the discussion in chapter 2 (drawing on work in the tradition of Davidson 1967, Parsons 1990, Smith 1995, Swart 1998, and many others) has established the validity of a semantic system based on events and propositions, with layering of FEO structures as modification is built up. Often the rules of this system operate independently of syntax at any point where the appropriate semantic conditions are met. As noted in (7.45c), however, some semantic rules may only apply at particular points (or must apply at a given point, though they optionally apply elsewhere as well). The most important cases for our purposes are the fixing of all event-internal modification processes within the projections of PredP, and aspectual and modal auxiliaries, which of course require the appropriate compositional rules when Asp or Mod combines with its complement. One way to look at adverb-licensing systems like that of Cinque (1999) is that they require a syntactic locus of this sort for every adverb subclass with a distinct distribution, with the point where the

appropriate semantic rule applies being fixed by the empty functional head bearing that adverb's label. The goal of the theory advocated here, of course, is to minimize these syntactic stipulations.[13]

Finally there are relevant syntactic facts about clause structure, noted as (7.45d): for example, English modals are auxiliaries (as opposed to main verbs, as in Romance) and take the projection of the perfective auxiliary as their complements, if the latter appears (unlike Chinese, where the two are mutually exclusive); negation may be an adverb or a functional head in different languages and may be located variously with respect to other projections (Zanuttini 1990). Also, I assume limited overt head movements, which move verbs above adjuncts and thus, via the Scope Principle, create the possibility for either scope relationship between the verbal element and the adjunct.

In this section I examine the subclasses of functional adjuncts in (7.46) (except for negation). As always, this list obscures the need for cross-classification; for example, frequency adverbs have both temporal and quantificational characteristics, and *never* is both aspectual and negative:

(7.46) a. negation (*not*, *never*)
b. focusing/clausal-degree (*even*, *only*, *merely*, *almost*, *nearly*, *just*, *mainly*, *also*)
c. time-related
location-time (*now*, *once*, *at noon*, *on Friday*, *tomorrow*, *last year*)
duration (*long*, *for a week*, *briefly*, *the whole day*)
aspectual (*still*, *already*, *soon*, *(n)ever*, *yet*)
(frequency)
d. quantificational:
frequency (*occasionally*, *twice*, *sometimes*, *always*, *five times*)
habitual (*generally*, *usually*, *habitually*)
additive (*again*)
e. purpose, causal, conditional, concessive, etc. (*to win the game*, *if she goes*, *unless they object*, *out of love*, *thus*)

I examine the licensing conditions for adjuncts of the subclasses in (7.46), with emphasis on the time-related and quantificational groups.[14] The main goal is to elaborate on the lexicosemantic properties of functional adverbials and to use this to show how the system embodying (7.45a–d) predicts (a) their (syntactically) free occurrence and ordering with respect to auxiliaries, restricted only where there is a semantic clash, (b) the relatively greater freedom for adjuncts with less restrictive requirements and less freedom for

those with more restrictions, and (c) the possibility for multiple occurrences of one type of adverbial (again, limited to cases with no semantic anomalies).

7.4.2 Time-Related Adjuncts

7.4.2.1 Overview

As always, similarities and differences in the syntactic distribution of adverbial classes should fall out, as much as possible, from their semantic properties. Temporal adjuncts group together in having similar distributions, which may be chalked up to the way they relate to time intervals in the tense system. First, they all involve reference to time intervals (t). Second, they obey the same rules of mapping to time intervals, allowing mapping to either reference-time or event-time, creating layered events, and so on. Third, multiple occurrences in one clause, either within or across subclasses, are nested.

However, there are differences among the subclasses, of course. For example, location-time adjuncts cannot occur as low in structure as do frequency or duration adjuncts, which is taken as due to their locating an event as a whole in time without making any reference to the event's internal structure (as is so for duration and frequency adjuncts). Aspectual adverbs (at least *still/already*) tend to occur only in the upper part of the general temporal-adjunct range. This may be attributed to their more complex requirements on time, so that a lower position normally ends up yielding an ill-formed semantic representation. Schematically, and roughly, these three subclasses have the distributions indicated in (7.47), where Asp, Voice, and V are heads in the AuxRange, and the top of the range is the left edge of TP (with some exceptions and caveats to be discussed as we proceed).

(7.47) aspectual: _____ Asp
loc-time: _____ Voice
frequency: _____ V

7.4.2.2 Loc-Time Adverbials

We start with loc(ation)-time adverbials as the clearest cases of mapping to reference-times, focusing on their semantics and on sentences with multiple occurrences. Each loc-time adverbial has a lexical semantic representation of the form in (7.48).[15]

(7.48) Semantic template for a loc-time adjunct A: [t = X & e ⊆ t], where X is the time denoted by the adjunct and e is represented by the sister of A.

Tense has the representations in (7.18), repeated here as (7.49a–b) (speech-time is represented standardly as n for 'now', its most common realization, in this discussion).

(7.49) Formal Tense Representation:
a. Present: t = n & e ⊆ t (if the following event is a state: t = n & s O t)
b. Past: t < n & e ⊆ t (if the following event is a state: t < n & s O t)

I take Tense as adding the conditions in (7.49) to an event but not yielding a different event (i.e., no new event variable is introduced, as is the case with time-related adverbials). Recall also that multiple occurrences of loc-time adjuncts must be nested, with any c-commanding phrase temporally including any c-commanded phrase.

Consider (7.50), with the representations in (7.51) (for (7.50a)) and (7.52) (for (7.50b)). In the simple past reference-time and event-time are not distinct; thus two separate loc-time adverbials are nested:

(7.50) a. Last year the boys came back in March.
b. Last year, in March the boys came back on a Tuesday.

(7.51) a. [$_{TP}$ last year [$_{TP}$ Tense [$_{PredP}$ in March [$_{PredP}$ the boys come back]]]]
b. [t = last year & e ⊆ t & t < n & e ⊆ t [$_{E}$ t′ = March & e′ ⊆ t′ [$_{E'}$ C(e′) & Agt(e′,b)]]]

The syntactic input for (7.50a) is shown in (7.51a) (with the nonquantificational subject DP *the boys* shown as the copy left in its base position, where it is interpreted). *In March* takes e′ in (7.50) as its argument (corresponding to its sister node, the lower PredP, to which it is adjoined), and Tense takes e as its argument, corresponding to its sister node, the higher PredP. The corresponding semantic representation is shown in (7.51b), which builds an event description from the representation of the basic event e′ (an event of the boys coming back), creating e, an event of the boys coming back in March; this event e occurred before now (thus, t < n), and the loc-time expression [t = last year & e ⊆ t] locates that event e within the period of last year. (The redundant occurrence of [e ⊆ t] can be harmlessly deleted.) Remember that

in the normal case each event variable in temporal specifications is identified by the bracketed constituent following the expression in question, which is its sister in syntactic structure. Since Tense does not introduce a new event variable, an adjunct adjoining to the TP or Tense′ node is combined with the semantic representation of the latter but takes as its argument the same event variable that Tense does.

(7.52) represents the "stacked" loc-time adjuncts in (7.50b), its syntactic input to LF in (7.52a) and the semantic representation in (7.52b) (the linear order has been changed to show hierarchical relationships more clearly).

(7.52) a. $[_{TP}$ Last year $[_{TP}$ in March $[_{TP}$ Tense $[_{PredP}$ on a Tuesday $[_{PredP}$ the boys came back]]]]]

b. $[t = \text{last year} \;\&\; e \subseteq t\; [_{E}\; t' = \text{March} \;\&\; e' \subseteq t' \;\&\; t' < n \;\&\; e' \subseteq t'\; [_{E'}\; t'' = \text{Tuesday} \;\&\; e'' \subseteq t''\; [_{E''}\; C(e'') \;\&\; \text{Agt}(e'',b)]]]]$

Loc-time adverbials are treated as event operators, building events out of events by adding a temporal specification. The nested interpretation of times follows from the fact that the time interval represented by a given event includes any interval denoted by tense or the time adverbials that form layers. Thus in (7.51) $e' \subseteq t'$, $t' \subseteq e$, and $e \subseteq t$, so also $t' \subseteq t$.

The ambiguity in (7.53) is handled naturally on this account.

(7.53) The boys had left at 5 o'clock.

At 5 o'clock can be taken as referring to reference-time, as in *as of 5 o'clock* (cf. *At 5 o'clock, they had already left at 3*), or event-time (the time of their leaving was 5 o'clock). Following Kamp and Reyle [1993:593ff.], we may take *had* in (7.53) as introducing a reference-time separate from event-time.[16] For (7.53) without the time adjunct (*The boys had left*) we have (7.54b), with (7.54a) giving the corresponding syntactic elements (although *had* raises to Tense in overt syntax, it is interpreted in its base position) (cf. Kamp & Reyle 1993:605).

(7.54) a. $[_{TP}$ TENSE $[_{PerfP}$ had $[_{PredP}$ the boys leave]]]

b. $[t < n \;\&\; e \subseteq t\; [_{E}\; t' < t \;\&\; e' < t'\; [_{E'}\; L(e') \;\&\; \text{Agt}\,(e',b)]]]$

Assuming that a loc-time PP like *at 5 o'clock* may adjoin either above or below *had* (in this case, to PerfP or to PredP, respectively), the two representations of (7.53) are as in (7.55), where reference-time has been labeled t_R for convenience.

(7.55) a. [t < n & e ⊆ t [$_{E}$ t′ = 5 & e′ ⊆ t′ [$_{E'}$ t''_{R} < t′ & e″ < t″ [$_{E''}$ L(e″) & Agt (e″,b)]]]]

b. [t < n & e ⊆ t [$_{E}$ t'_{R} < t & e′ < t′ [$_{E'}$ t″ = 5 & e″ ⊆ t″ [$_{E''}$ L(e″) & Agt (e″,b)]]]]

In (7.55a) the event e′, an event of the boys having left, is located at t′, which is 5 o'clock (and this event e is in the past with respect to now). In (7.55b), by contrast, e′ is an event of the boys leaving at 5 o'clock, and e′ is located before the reference interval t'_{R}.

It is implied in some analyses in the literature that there is only one syntactic slot per reference-time or event-time for a loc-time expression. Accordingly, when there seem to be more than one in a sentence, one is forced to say that they have started out as one expression, and part of this expression has moved out, becoming the second one. Chinese provides evidence that this is not so; rather there may genuinely be separate, multiple loc-time adverbials within the domains of either reference-time or event-time.[17] This means that an adequate theory of adjunct distribution must allow for the simultaneous licensing of several expressions of the same adjunct type at many distinct positions of a clause. Observe (7.56).

(7.56) a. Mingnian, women hui zai san-yue de shihou xingqi-er shang ke.
next-year we will at March of time Tuesday go-to class
'Next year we will go to class on Tuesdays in March.'

b. Mingnian, women zai san-yue de shihou hui xingqi-er shang ke.
next-year we at March of time will Tuesday go-to class
'Next year in March we will go to class on Tuesdays.'

In (7.56a) the middle loc-time expression *zai san-yue de shihou* 'in March' is below the temporal modal *hui*, while in (7.56b) it is above. In the former case the sequence *zai san-yue de shihou xingqi-er* cannot be a constituent, since if it were *xingqi-er* 'Tuesday' would be its nominal head (as Chinese NPs are head-final) and the PP *zai san-yue de shihou* 'in March' a modifier. While *san yue* '(in) March' can be this sort of modifier, as in (7.57a), *zai san-yue de shihou* cannot be: the string in (7.57b) can be interpreted only as 'In March the first Tuesday is my birthday' and not as given in the gloss corresponding to the bracketing shown.

(7.57) a. [San-yue touyige xingqi-er] shi wode shengri.
March first Tuesday be my birthday
'The first Tuesday in March is my birthday.'

b. *[Zai san-yue de shihou touyige xingqi-er] shi wode shengri.
at March of time first Tuesday be my birthday
'[The first Tuesday in March] is my birthday.'

Similarly, in (7.58a) it is clear that *jinnian* 'this year' and *zai touyige yue* 'in the first month' do not form a constituent, and in (7.58b) they both follow the temporal modal *yao* (recall that *ba* is a functional head marking a direct object in the next lower Spec position).

(7.58) a. Women jinnian yao ba suoyoude shiqing zai touyige yue
we this-year will BA every matter at first month
wancheng.
finish
'This year we will finish everything in the first month.'
b. Women yao zai jinnian ba suoyoude shiqing zai touyige yue
we will at this-year BA every matter at first month
wancheng.
finish
'This year we will finish everything in the first month.'
c. Women jinnian yao zai touyige yue ba suoyoude shiqing
we this-year will at first month BA every matter
wancheng.
finish
'This year we will finish everything in the first month.'

Neither is it plausible to suggest that *zai jinnian* has raised (lifted across *yao* in (7.58c)) out of a putative combined constituent headed by *zai touyige yue* in which it is a modifier. Not only is this putative original constituent not a possible PP, but this movement would be exceptional in Chinese: preposing to the position between subject and modal is possible only in the presence of an "emphatic marker" like *ye* (see Ernst and Wang 1995). We find no *ye* in (7.58a), and when *ye* does occur as in (7.59), it is interpreted not as an emphatic marker but in its base meaning of 'also'.

(7.59) Women jinnian ye yao ba suoyoude shiqing zai touyige yue
we this-year also will BA every matter at first month
wancheng.
finish
'This year we will also finish everything in the first month.'

The only remaining conclusion is that these apparently separate loc-time expressions are indeed separate constituents and may map onto separately represented (though nested) time intervals.

We turn now to loc-time adverbials with aspectual auxiliaries. We need not discuss their occurrence before or after finite auxiliaries (such as *have* or *be* in (7.60)), since the latter raises to Tense but can be interpreted in its base position by virtue of the Scope Principle. Thus the adverbs are free to adjoin either to Tense′ or to AspP (= PerfP or ProgP) and take scope over the auxiliary element in either case.

(7.60) a. Tasha (now) has (now) made up her mind.
b. Mollie (previously) was (previously) practicing the wrong solo.

As for sequences of two auxiliaries, *have* following Modals does not represent the perfective but instead indicates past time (Hornstein 1990:35ff.), although it is not always clear whether the latter or modality should take wide scope (see Michaelis 1998:208ff.; I ignore the question of which relative scope is the right one for a given sentence, since it seems to have little bearing on adverbial syntax).[18] Representations for (7.61a–b) are shown in (7.62).[19]

(7.61) a. Last year, in March the boys might (indeed) have been coming back on that Tuesday you thought you saw them.
b. Last year, in March the boys might have been coming back on that Tuesday.

(7.62) $[t = \text{last year} \;\&\; e \subseteq t\ [_{E}\ t' = \text{March} \;\&\; e' \subseteq t' \;\&\; t' < n \;\&\; e' \subseteq t'\ [_{E'} \Diamond\ [_{E''}\ \text{PROG}\ [_{E'''}\ t'' = \text{Tuesday} \;\&\; e'''' \subseteq t''\ [_{E''''}\ C(e'''') \;\&\; \text{Agt}(e'''',b)]]]]]]]$

(7.63) shows a covert iterative operator, which (following Swart [1998]) is a subcase of the coercion operator C_{eh}, converting dynamic events into states made up of iterated events. Here, the time adjunct *on that Tuesday* is within the scope of this operator; each of the iterated events took place on a Tuesday:

(7.63) Last year the boys might have been coming back on Tuesdays.

(7.64) a. $[t = \text{last year} \;\&\; e \subseteq t \;\&\; t < n \;\&\; e \subseteq t\ [_{E} \Diamond\ [_{E'}\ \text{PROG}$
b. LAST-YEAR TENSE MIGHT BE

$$[_{E''}\ \text{ITER}\ [_{E'''}\ t''_E = \text{Tuesday}\ \&\ e'''' \subseteq t''\ [_{E''''}\ C(e'''')\ \&\ \text{Agt}(e'''',b)]]]]]]$$
ON-TUESDAYS the-boys-come-back

The import of this example for syntax is that, given the mapping assumed here, the interpretation of (7.63) requires adjunction of the time adjunct to PredP (corresponding to $[_{E''''}\ C(e'''')\ \&\ \text{Agt}(e'''',b)]$ in 7.64b). Thus, again, many positions are possible for these adjuncts, at least as low as PredP, and several of them may co-occur in a clause.

We turn now to the question of loc-time adverbials' distribution outside VP. The scope-based system predicts that syntax per se places no limits specific to loc-time adverbials on where they may occur. Of course, the final statement of any adverbial's distribution is influenced by Weight theory, and thus the heavier loc-time expressions (DP, PP, CP) are usually barred from the AuxRange. There do seem to be further limitations unaffected by such principles, which we must attribute to semantic mechanisms, or by principles for syntax-semantics mapping.

First, consider the fact that loc-time expressions must occur above manner and measure adverbs. This is true in English but obscured by weight considerations in preverbal position and possibilities for reordering in postverbal position. Again, Chinese provides a clear test. (7.65) shows, for example, that the loc-time expression must precede the manner adverbial and therefore is above it hierarchically.

(7.65) a. Zhangsan zuotian renzhende xie-le ji-feng xin.
Zhangsan yesterday diligently write-PRF a-few-CL letter
'Zhangsan diligently wrote some letters yesterday.'
b. *Zhangsan renzhende zuotian xie-le ji-feng xin.

The same conclusion has been reached for German (Frey and Pittner 1998 and references cited there), Japanese (Fujita 1994), and other languages. Some proposals have attributed this to pure syntax, in what amounts to a stipulation that manner adverbs must adjoin to VP and temporal adjuncts must adjoin above VP. In the scope-based system, the ungrammaticality of (7.65b) could be made to follow from manner interpretation's requiring a SpecEvent, while temporal modifiers require events. If so, once a loc-time adjunct has been interpreted, yielding another (time-specified) event, no adjunct may take a SpecEvent as its argument. This is part of the general mechanism that normally forbids returning to a lower FEO type after a higher type has been composed.

However, there is evidence that something more is at work than a clash induced by the co-occurence of the two adverbials. As discussed, Chinese allows manner adverbials in postverbal position but excludes loc-time phrases there. This follows if loc-time expressions cannot adjoin to VP, because Chinese requires all adverbials above VP to be preverbal.[20]

(7.66) a. Zhangsan zuotian ba xin xie-de hen qingchu.
Zhangsan yesterday BA letter write-DE very clear
'Yesterday Zhangsan wrote the letter clearly.'
b. *Zhangsan ba xin xie-de hen qingchu zuotian.
Zhangsan BA letter write-DE very clear yesterday

If the ordering restriction placing loc-time above measure and manner adverbs were purely a matter of the latter being uninterpretable when loc-time adjuncts are lower, then (7.66b) ought to be as good as (7.66a), since there is no reference to any particular syntactic projection above VP or to direction with respect to a head. Therefore, it seems that something always excludes loc-time expressions from VP, regardless of the presence of other adverbials. Note that the same is not true of duration and frequency adverbials, although they work semantically in roughly the same way as do loc-time adjuncts, by relating events, times, and quantities. Again this can be seen most clearly in Chinese, where the duration/frequency (D/F) expression may be postverbal, showing that it may be within VP.[21]

(7.67) Gangqin, Jinrong tan-le {sange zhongtou/liang-ci}.
piano Jinrong play-PRF three hour / two time
'The piano, Jinrong played {for three hours/twice}.'

This difference is due to D/F expressions possibly being event-internal modifiers. Duration is clearly event-internal in that it measures the internal timespan of an event; frequency adverbials represent event-internal modification if we adopt the view that they are quantifiers over the parts of a time interval or an event (e.g., as Moltmann 1991, 1997). In other words, we can account for the differences here if we take loc-time adjuncts as necessarily operating on External events, while D/F (and manner) adjuncts are event-internal. Thus the possibility of both D/F and manner modifiers occurring in VP, but loc-time modifiers necessarily being above VP, follows because only event-internal modification is possible within VP. All other types of adjuncts must adjoin outside VP. (7.66)–(7.67) are therefore accounted for by (a) the restriction forcing event-internal modification within VP, (b) the characterization of

duration, frequency, and manner adverbials as event-internal, but not loc-time adverbials; and (c) the fact that Chinese disallows right-adjunction above VP.

Above VP, both event-internal and event-external modification are permitted, as shown by the possibility of preverbal manner adverbs (adjoined to PredP). So although loc-time expressions are barred from VP, it is still possible for them to co-occur with manner adverbials adjoined to the same PredP; yet if so, the manner adverbials must still be lower. There is evidence that the semantic restriction just described, and not something purely syntactic, is responsible for this. Once more Chinese provides crucial evidence. As (7.68)–(7.70) show, each of manner, loc-time, and PPP modifiers may occur on either side of *ba* and its object.[22]

(7.68) a. Lisi qingqing de ba zhuozi qiao-le yixia.
Lisi light DE BA table knock-PRF once
'Lisi lightly knocked once on the table.'
b. Lisi ba zhuozi qingqing de qiao-le yixia.
Lisi BA table light DE knock-PRF once
'Lisi lightly knocked once on the table.'

(7.69) a. Lisi yong yumaoqiu pai ba zhuozi qiao-le yixia.
Lisi with badminton racket BA table knock-PRF once
'Lisi knocked once on the table with a badminton racket.'
b. Lisi ba zhuozi yong yumaoqiu pai qiao-le yixia.
Lisi BA table with badminton racket knock-PRF once
'Lisi knocked once on the table with a badminton racket.'

(7.70) a. Ta zuotian ba fangzi mai-diao le.
s/he yesterday BA house sell-off-PRF
'S/he sold the house yesterday.'
b. Ta ba fangzi zuotian mai-diao le.
s/he BA house yesterday sell-off-PRF
'S/he sold the house yesterday.'

Recall that *ba* is a functional head located fairly low in the clause (between Voice and Pred), which marks preposed specific direct objects located in the Spec position just below. If the restriction placing loc-time adverbials above manner were purely a matter of syntax, the prediction would be that (7.68a) and (7.70b) should not both be grammatical; under this scenario, loc-time would be licensed in PredP, and a manner adjunct would be licensed adjoined

to BaP, so this order ought to be possible. However, all of (7.68)–(7.70) are grammatical. Therefore, there are no relevant syntactic constraints above Pred. Since *ba* has no semantic contribution to make that could interact with adverbial modification (though it could be considered to contribute specificity to its object), any order of the elements in (7.68)–(7.70) is possible with respect to *ba*, but when loc-time and manner co-occur, only one order is semantically well-formed due to the selectional properties of the latter.

We have suggested that loc-time adverbials may be generated anywhere above VP, with no unique base position. This is at odds with one common analysis in which they must be generated within VP shells, as proposed (for example) by Giorgi and Pianesi (1997:107) and Laenzlinger (1997:8). This view is driven largely by the Larsonian/Kaynean assumption that Barss/Lasnik effects show postverbal time expressions to be lower than a verb's objects (see Stroik 1990, 1996 for an extensive discussion of this issue). As shown in earlier chapters, however, the evidence from word order, scope, and constituency, along with the existence of relatively simple alternative solutions for Barss/Lasnik effects, leads us to reject this analysis.

There is another reason to reject the view that all loc-time adjuncts originate low in structure: if this is the only base position, higher positions must be the result of movement. Now, this is not especially problematic for sentence-initial position with comma intonation, as in (7.71); as has often been noted, this position permits temporal adjuncts related to either a high, wide-scope temporal interval (including reference-time in compound tenses) or a low, narrow-scope interval (such as event-time).[23]

(7.71) a. At noon, Fred had gotten on the train.
b. Fred had gotten on the train at noon.

In (7.71) noon can be the reference point from which one considers Fred's getting on the train in the morning (though this reading is disfavored), or it can be the time at which Fred got on the train. If we assume that the narrow-scope reading results from preposing to initial position and that wide-scope readings come from either base-generation or movement from a relatively high base position, then the ambiguity is accounted for.

There are also ambiguities in final position, as in (7.72): given the appropriate focus-presupposition structure and the appropriate prosody, with no stress and low intonation, postverbal position in (7.72b) can correlate with reference-time.[24]

(7.72) a. At noon, Fred didn't get on the train.
b. Fred didn't get on the train at noon.

Such cases are easy to account for, since nothing prevents right-adjunction of loc-time adjuncts to TP;[25] as discussed in chapter 4, the VP-shell approach with disallowed right-adjunction cannot handle this fact easily.

However, an approach that posits that all loc-time adjuncts originate in VP, with other positions resulting from movement, cannot handle cases where loc-time adjuncts occur above VP (or PredP) yet are not in sentence-initial position, such as (7.73), or (7.58) or (7.70) in Chinese (or the equivalent sentences in German or Japanese).

(7.73) The committee {at this time/now/presently} has already gone over the reports.

The adjuncts here clearly map to reference-time only – but the movement analysis, required if loc-time adjuncts can only have base positions within lower projections, would predict ambiguity where none exists (since the adjunct ought to be able to move from a base position where it maps onto event-time). In addition, a movement analysis of (7.73) would have to explain why initial position allows many types of adjuncts as well as arguments to be preposed, while the postsubject positions do not, as (7.74)–(7.76) show.

(7.74) Paul now will have a snack.

(7.75) a. A snack, Paul will (certainly) have.
b. {Now/With his Dad}, Paul will have a snack.

(7.76) a. *Paul a snack will have.
b. *Paul with his Dad will have a snack.

The analysis adopted here, where only sentence-initial, dislocated position is derived by movement (see chapter 8 for elaboration), accounts correctly for these data.

The conclusion is therefore that loc-time adverbials have possible base positions outside VP (both the real, low VP and the extended VP complement of Tense). Note, finally, that (as is widely recognized), some sentences with loc-time adjuncts are ruled out simply due to semantic incompatibilities, such as between adjuncts and tense in (7.77a) or between the two adverbials in (7.77b).

(7.77) a. *Robert will leave yesterday.
b. *Wendy left an hour ago last year.

Otherwise, multiple occurrences of loc-time adjuncts, with different base positions, are correctly predicted to be possible in the system proposed here.

Thus, the evidence supports an approach in which loc-time adjuncts are free in principle to adjoin anywhere above VP, with semantic compatibility (along with Directionality Principles and Weight theory) determining their actual possible positions in a given sentence.

7.4.2.3 Duration Adverbials

Following the lead of Kamp and Reyle (1993) and Swart (1998), duration adverbials are treated as having the semantic representation in (7.78a), where mt is a measure of time, P is the individual lexical content giving a property of the time interval, and *h* is a homogenous event.

(7.78) a. [P(mt) & Dur(h) $\geq$ mt]
b. [a week (mt) & Dur(h) $\geq$ mt]

(7.78b) says that the event denoted by the adjunct's sister (i.e., the projection to which it is adjoined) has a duration equal to or greater than the amount of time mt (a week). The modified event must be homogenous (a state or process), since duration adverbials cannot combine with telic expressions (*Ted slept for a week*, but **Ted wrote the report for a week*, on its normal interpretation).

Examine (7.79).

(7.79) a. For three weeks they dug the pit.
b. They dug the pit for an hour.
c. For a whole year Bob would play piano (only) on Wednesdays.

(7.79a–c) have the representations in (7.80a–c), respectively.[26]

(7.80) a. [3 weeks(mt) & Dur(h) $\geq$ mt & t $<$ n & h $\subseteq$ t [$_{H}$ D(h) . . .]]
b. [t $<$ n & e $\subseteq$ t [$_{E}$ an hour(mt) & Dur(h) $\geq$ mt [$_{H}$ D(h) . . .]]]
c. [1 year(mt) & Dur(h) $\geq$ mt & t $<$ n & h $\subseteq$ t [$_{H}$ ITER [$_{E}$ t′ = Wednesday & h′ $\subseteq$ t′ [$_{H'}$ D(h′) . . .]]]]

(7.80a–b) illustrate how a duration adverbial may take either wide or narrow scope with respect to Tense. In (7.80c) the covert quantifier glossed as ITER converts the event denoted by *play the piano on Wednesdays* into a homogenous event made up of iterated events of playing the piano on Wednesday. (7.81) provides examples where this operator allows the two scope options in (7.80a–b) to co-occur in one sentence, as formalized in (7.82) for (7.81a).

(7.81) a. For a year Bob swam for an hour (during each practice).
b. During the whole night we (only) could see the moon for about ten minutes.

(7.82) [1 year(mt) & Dur(h) ≥ mt & t < n & h ⊆ t [$_{H}$ ITER [$_{E}$ an hour(mt) & Dur(h′) ≥ mt [$_{H'}$ S(h′) . . .]]]]

Duration adverbials should be able to occur anywhere as long as there are no problems with the semantic representation, and we saw that they can occur at the lowest levels of basic events. (7.83a–b), acceptable in a formal register, show some of the expected freedom of occurrence, and though (7.83c) is not perfectly acceptable to all speakers (judgments vary), this lowered acceptability can be attributed to a weight-theoretic effect that heavy items get worse as they are found lower in the AuxRange.

(7.83) a. The team for several weeks had been working very creatively. (OK as formal)
b. The team had for several weeks been working very creatively. (OK as formal)
c. ??The team had been for several weeks working very creatively.

Although one might think that the effect in (7.83c) is more purely syntactic, there is some evidence that a weight-theoretic solution is on the right track. First, the ellipsis pattern in (7.84), where the gap is interpreted as 'working very creatively for several weeks', indicates that the duration phrase is indeed c-commanded by *be(en)* and therefore that a hierarchical structure with the PP between *be(en)* and the main verb is grammatical.

(7.84) They insisted that they'd been working very creatively for several weeks, and in fact they have been ___!

Second, the pattern is better in (7.85) with the lighter duration adverb *briefly* (compare (7.83c) with (7.85c)); compare 7.86 with *long*, which seems to be intermediate in weight and is a bit worse to the right of *be* (compare (c) of (7.84)–(7.86)).

(7.85) a. She briefly had been thinking of teaching chess.
b. She had briefly been thinking of teaching chess.
c. She had been briefly thinking of teaching chess.

(7.86) a. She long had been thinking of teaching chess.
b. She had long been thinking of teaching chess.
c. ?She had been long thinking of teaching chess.

We conclude that duration expressions indeed may occur anywhere in the AuxRange as far as (non-PF-related) syntax and semantics are concerned. Finally, the well-known ambiguity in (7.87) illustrates the possibility of right-adjunction for duration adverbials fairly high in clausal structure.

(7.87) Ann has not been in Seattle for three weeks.

On one reading, (7.87) means that for a three-week period Ann was not in Seattle, so that *for three weeks* has scope over negation (DUR > NEG) and is right-adjoined to TP. On the other reading, (7.87) says that it is not so that Ann has (ever) been in Seattle for a three-week period (NEG > DUR) (see Mittwoch 1988 and Vlach 1993 for discussion); in this case the duration PP is adjoined to ProgP headed by *been*. (For both readings, other adjunction sites may be possible, with the same interpretation.) The possibility of two readings, with two associated adjunction sites, is further evidence for the free distribution of these phrases.

7.4.2.4 Aspectual Adjuncts

Aspectual adjuncts include *still*, *already*, *yet*, and *(n)ever*, and a few other adverbs, although I discuss only the first two. This subclass has received more attention than most others in the semantic literature, including treatments by König (1977), Nef (1981), Löbner (1989), Herweg (1991), Auwera (1993, 1998b), Michaelis (1996, 1998), and references cited in these works; and there are still many unresolved issues. What is most crucial for their syntax is that they denote a temporal relation between two events, of which one is linked to reference-time, and the other is of the same sort as the first and must have a specific temporal relation to it. This relation introduces a measure of complexity not found with loc-time, duration, or frequency adverbials, which increases the possibility of semantic conflicts with auxiliaries or other adjuncts, and therefore results in a somewhat more restricted distribution.

We start with *already*, adopting a version of the analysis proposed by Michaelis (1998):

(7.88) ALREADY: the immediate scope of *already* denotes a state S, located at reference-time, and whose inception precedes the time of an expected, possible state S′ of the same type as S. (Adapted from Michaelis 1998:173ff.)

Examine (7.89a–b).

(7.89) a. Karen has already performed.
b. Don't add any sugar, the tea is already sweet.

In the perfect-tense example in (7.89a), S is the result-state of Karen's performing. This state represents the completion of her performance, and (the beginning of) this moment precedes another interval at which she was expected to finish performing. In (7.89b) S is the state of the tea being sweet, holding at reference-time and starting before the addressee's (potentially) making the tea sweet. (7.90) gives a formal representation of this characterization, where P is the event description expressed by the material in the scope of *already*.

(7.90) ALREADY(P) = [P(s) & s O t & ◆ s′: [[e = begin(s)] & P(s′) & e < t′ & s′ ⊆ t′]]

In (7.89b) the description P 'the tea be sweet' holds at reference-time, the beginning (e) of this state precedes another possible state of the tea being sweet. ◆s indicates that s is expected but not necessarily actual. As before, s O t says that the state overlaps with the time interval t. In the interest of a streamlined discussion, the abbreviated form shown in (7.91) will be used in the discussion but should be understood as a shorthand for (7.90).

(7.91) ALREADY = [s O t & ◆[$_{S'}$ [e = begin(s)] & e < t′ & s′ ⊆ t′]]

Given this characterization of *already*, examine (7.92a–b) and the semantic representation of the first of these in (7.93).[27]

(7.92) a. Already the compounds have broken down.
b. The workers are already leaving.

(7.93) a. [$_{TP}$ ALREADY [$_{TP}$ TENSE [$_{PerfP}$ PERF [$_{Predp}$ the compounds break down]]]]
b. [ALREADY [t = n & s O t [$_{S}$ e ⊃⊂ s [B(e) . . .]]]]
c. [s O t &◆[$_{S'}$ [e′ = begin(s)] & e′ < t′ & s′ ⊆ t′] [t = n & s O t [$_{S}$ e ⊃⊂ s [B(e) . . .]]]]
d. [t = n & s O t [$_{S}$ e ⊃⊂ s [B(e) . . .]]] & ◆[$_{S'}$ e′ = begin(s) & e′ < t′ & s′ ⊆ t′]

(7.93a) gives the syntactic structure, and (7.93b) the corresponding semantic representation; (7.93c) instantiates ALREADY from (7.93a). Since Tense does not introduce a new event variable, *already* operates on s. (7.93c) can be reduced to (7.93d), which says that there is a state (s) of the compounds having broken down (the result-state of this dynamic event) that holds at reference-time (t), and that the beginning of this state precedes another possible, expected state of the compounds having broken down.

For (7.92b), we must consider the progressive operator PROG, which produces a homogenous aspectual type (s):

(7.94) a. ALREADY [t = n & s O t [$_S$ PROG [L(e) . . .]]]
b. [s O t & ◆[$_{S'}$ [e′ = begin(s)] & e′ < t′ & s′ ⊆ t′] [t = n & s O t [$_S$ PROG [L(e) . . .]]]]
c. [t = n & s O t [$_S$ PROG [L(e) . . .]]] & ◆[$_{S'}$ [e′ = begin(s)] & e′ < t′ & s′ ⊆ t′]

Following the same steps as in (7.93), we obtain (7.94c): there is a state of workers-leaving that obtains now (reference-time) whose beginning precedes the time of another (potential) expected state of workers leaving.

Already may occur after a second auxiliary, but only in some cases. Observe the pattern in (7.95) (in each sentence *already* would also be acceptable immediately before or after the first auxiliary).

(7.95) a. Carol could have already bought mangoes.
b. *Carol has been already buying mangoes.
c. *Mangoes were being already bought.

(7.95a) is acceptable for most speakers; as noted, *have* with Modals represents not the perfect but past time, and I posit a syntactic realization of this of *have* raising (optionally) to Modal^0, which allows an adverb following it to have higher scope, by the Scope Principle (see chapter 8 for further discussion of this movement). Thus the representation for (7.95a) is (7.96).

(7.96) a. ◇[ALREADY [t′ < t & s′ O t′ [$_S$ e ⊃⊂ s [B (e) . . .]]]]
b. ◇[[s O t & ◆[$_{S'}$ [e′ = begin(s)] & e′ < t′ & s′ ⊆ t′]] [t < n & s O t [$_S$ e ⊃⊂ s [B (e) . . .]]]]
c. ◇[t < n & s O t [$_S$ e ⊃⊂ s [B (e) . . .]] & ◆[$_{S'}$ [e′ = begin(s)] & e′ < t′ & s′ ⊆ t′]]

(7.96c) says that it is (epistemically) possible that Carol was in a state of having-bought-mangoes (i.e., the result-state of buying-mangoes), which occurred before expected (i.e., it began before an expected, possible subsequent state of having-bought-mangoes).

(7.95b–c) are unacceptable, or at least far worse than (7.95a–b). The difference lies in the fact that *be* does not raise as *have* does, so that its corresponding semantic element PROG takes scope over *already*, producing a semantic anomaly. As shown in (7.97), for (7.95b), *already* is forced to take a q-event (Carol-buying-mangoes, represented by [$_E$ B(e) . . .]).[28]

(7.97) a. $t' < t$ & s' O t' [$_{S'}$ $e'' \supset\subset s'$ & $e'' =$ end-state(s) [$_S$ PROG [$_E$ B (e) . . .]]]
b. $t' < t$ & s' O t' [$_{S'}$ $e'' \supset\subset s'$ & $e'' =$ end-state(s) [$_S$ PROG [ALREADY [$_E$ B (e) . . .]]]]
c. $t' < t$ & s' O t' [$_{S'}$ $e'' \supset\subset s'$ & $e'' =$ end-state(s)[$_S$ PROG [s O t &◆ [$_{S'}$ [$e' =$ begin(s)] & $e' < t'$ & $s' \subseteq t'$]] [$_E$ B (e) . . .]]]

(7.97c) is the expansion of (7.97b) including the full representation of ALREADY, whose selectional requirements are violated. (7.95c) can be explained in the same way, the only difference being that the immediate scope of *already* is a passive basic event.[29]

Now we turn our attention to *still*. *Still* requires a (homogeneous) state s holding from a past time up through reference-time, whose end follows the expected end-state of s. This is formulated in (7.98) (with a shortened version in (7.99), to be used later in the discussion, suppressing the identification of s by P).

(7.98) STILL (P) = [P(s) & s O t & s O t' & $t' < t$ & e = expected-end (s) & $e < t$]

(7.99) STILL = [$_S$ s O t & s O t' & $t' < t$ & e = expected-end (s) & $e < t$]

(7.98) indicates that the state scoped by *still* holds at reference-time, held at a previous time, and its expected end e was before reference-time (see Michaelis 1998:173ff.). I use s for convenience, but all that is required is for this event to be homogenous, thus possibly a process, which may be composed of iterated activities. The contrast in (7.100) illustrates this. *Yesterday* identifies the reference-time, and *still* indicates that the process was ongoing at an earlier event-time as well as at reference-time. However, since *did* in (7.100b) denotes a bounded event, *still* cannot have its temporal reading:

(7.100) a. They still were doing it yesterday.
b. *They still did it yesterday.

(7.100b) is actually grammatical but with the "adversative" reading, in which the event occurs despite some factor that would otherwise militate against it. This reading does not require a homogenous event type. This is brought out more strongly in (7.101), uttered on a Monday.

(7.101) Even though I told them not to do it on a weekend, they still (went ahead and) did it yesterday.

I avoid the adversative reading in the rest of the discussion (see Michaelis 1998:160, for discussion).

Like *already*, purely temporal *still* is (in principle) fine before or after the finite auxiliary (as in (7.102a)), but is ungrammatical with *have* alone and is often ungrammatical after a second auxiliary.

(7.102) a. They (still) are (still) refusing the treatments.
b. *They (still) have (still) refused the treatments. (temporal reading)
c. *They could have still refused the treatments. (temporal reading)
d. *They have been still refusing the treatments.

These patterns can be explained by patterns of semantic interference. In (7.102a) the state of refusal held in the past, continues up to now, and was expected to end earlier (see (7.103c), expanded from (7.103b)).[30]

(7.103) a. [$_{TP}$ Tense [$_{ProgP}$ STILL [$_{ProgP}$ PROG [$_{PredP}$ they refuse the treatments]]]]
b. [t = n & s O t [$_{S}$ STILL [$_{S'}$ PROG [R (e) . . .]]]]
c. [t = n & s O t [$_{S}$ s′ O t & t′ < t & e = expected-end (s′) & e < t [$_{S'}$ PROG [R (e′) . . .]]]]

For (7.102b), though, *still* takes the perfective in its immediate scope, as (7.104) represents. The sentence is ruled out because s′ is the *end-state* that results from the event of (iterated) refusals of treatments (see the discussion of perfects with states in Kamp and Reyle 1993:579 ff.); thus this result-state cannot hold at a time preceding reference time:

(7.104) a. t = n & s O t [$_{S}$ STILL [$_{S'}$ s″ ⊃≺ s′ & s′ = endstate(s″) [$_{S''}$ ITER [R (e) . . .]]]]
b. t = n & s O t [$_{S}$ s′ O t & t′ < t & e′ = expected-end (s′) & e′ < t [$_{S'}$ s″ ⊃≺s′ & s′ = endstate(s″) [$_{S''}$ ITER [R (e) . . .]]]]

That is, *still* requires that s′ hold at both reference-time t and the earlier time t′; but since s′ is the end-state of s″ ([s″ ⊃≺ s′ & s′ = end-state(s″)]), and this logically implies ∼[s′ O t′], we have a contradiction: [s′ O t′] and ∼[s′ O t′]. Thus *still* is incompatible with the present perfect. (7.102c) is unacceptable on the temporal (nonadversative) reading, for the same reason. Finally, in (7.102d) *still* is forced to be within the scope of PROG, but as (7.105) illustrates, this forces the adverb to modify a nonhomogenous event, the q-event of refusing treatment.[31]

(7.105) $t = n$ & $s''' \; O \; t \; [_{S'''} \; s'' \supset\subset s''' \; [_{S''} \; PROG \; [_{S'} \; s \; O \; t$ & $s \; O \; t'$ & $t' < t$ & $e' =$ expected-end (s) & $e' < t \; [_{E} \; R \; (e) \ldots]]]]$

While a coercion operator like ITER could turn this q-event into a homogenous one, such an interpretation requires the pragmatically difficult context in which each of the iterated events allows a separate reference-time at which the relevant conditions hold. Such a context can be invoked, with marginal acceptability, as in (7.106) where *still refusing the treatments* is taken as 'continuing to refuse the treatments'.

(7.106) ?They have been, every time the inspector arrived to check on the strikers' status, still refusing the treatments.

To summarize, the aspectual adverbs *still* and *already* may occur freely in the AuxRange as far as syntax is concerned. When they occur before or after the finite auxiliary, they are interpretable except for *still* with *have* (or the simple past), which is ill-formed semantically. Neither adverb, though, can be within the scope of the progressive operator represented by *be*: this results from anomalies caused by the meanings of PROG and the adverb, either contradictions as in (7.102b) or violation of selectional requirements as in (7.95b) or (7.102d). Thus these adverbs generally may occur after two auxiliaries only in Modal + *have* combinations. In effect, this limits them to higher (more leftward) positions than other functional adverbs.

So far in this section I have been providing evidence that aspectual adverbs are free in principle to adjoin to any projection but that semantic incompatibilities rule out particular combinations, especially when they occur with aspectual auxiliaries in English. I conclude with two pieces of support for this semantically based analysis of their distribution.

The best evidence comes from the Chinese *ba*-construction. Recall that *ba* is a functional head below modal and aspectual auxiliaries, taking an object in the Spec just below it.[32] Since *ba*'s meaning (if any) has no connection with that of aspectual adverbs, the prediction of the scope-based theory is that *hai* 'still' and *yijing* 'already' should be acceptable below *ba*. (7.107) shows that this is indeed the case (the adverbs are also acceptable before *ba*, again as predicted):

(7.107) a. Chi fan de shihou, Xiaoming ba chazi hai fang zai youbiar.
eat rice of time Xiaoming BA fork still put at right-side
'When he eats Xiaoming still puts his fork on the right.'

b. Women ba dianshiji yijing bai-hao-le.
we BA TV-set already set-good-PRF
'We already set up the TV set.'

This shows that UG imposes no strictly syntactic constraint on where aspectual adverbs occur in the AuxRange; when there is no incompatible semantic element preceding them, they may occur even in this very low position.

A second piece of evidence is that the more severe selectional requirements of aspectual adverbs account for their more restricted co-occurrence with other adjuncts. (7.108) shows this for two aspectual adverbs where this effect is at its sharpest.

(7.108) a. *They already are still refusing to leave.
b. *They still are already refusing to leave.

Already requires its state s to have a beginning that precedes an expected state of the same sort. This state s is represented by *still refusing to leave*, a state of refusal that obtains now. Thus (7.108a) is ill-formed semantically because *already* requires that one token of a state-obtaining-now precedes another token of a state-obtaining-now, a contradiction. As for (7.108b), *already* says that the state of refusing has started, and this inception of refusal came before a possible future state of refusal (i.e., earlier than expected). The relation between these two states is not homogenous and therefore cannot make up a state that holds continuously out of the past, as *still* requires. Thus again there is a semantic clash; the event scoped by *still* is of the wrong aspectual type. (See also Michaelis 1998:177ff. for discussion. I return to the topic of aspectual adverbs' co-ocurrence with other adjuncts in section 7.5.)

7.4.3 Frequency Adjuncts

Frequency adjuncts have been among the most widely discussed adverbials in the literature, at least since the influential work of Lewis 1975, with more recent treatments including Schwartzschild 1988, Moltmann 1991, 1997, Kamp and Reyle 1993, Swart 1993, and Vlach 1993. Of necessity I skirt many issues in this literature. What is important is that, following the generalized-quantifier analysis of Swart (1993), these adjuncts quantify over subsets of events within the set denoted by their sister constituent; the precise delineation of these sets depends on the focus structure of the sentence. To take (7.109) as an example: the sentence in (a) can be paraphrased as in (b) (in answer to "What sort of tapes does Sarah listen to?"), or as in (c) (for "What does Sarah like to do?").

(7.109) a. Sarah often listens to Clayfoot Strutters tapes.
b. In most situations in which Sarah listens to tapes, she listens to Clayfoot Strutters tapes.

c. In most situations in which Sarah does something, she listens to Clayfoot Strutters tapes.

For the interpretation in (7.109b) *often*, represented as OFTEN (A,B), says (roughly) that set A, made up of events of Sarah-listening-to-Clayfoot-Strutters-tapes, is a large proportion of set B, that of events of Sarah-listening-to-tapes. *Sometimes* says that the sets have at least one common event, and *twice* that their common events number (at least) two; *always* indicates that set A is a proper subset of set B; and so on. In what follows I ignore any more formal representation than ADV [. . .], with ADV being the frequency adjunct and [. . .] the event denoted by its sister constituent.[33]

(7.110) illustrates that one sentence may have multiple frequency adjuncts and that events may be layered, with one event possibly made up of numerous subevents. Thus, for example, (7.110a) asserts that there is one event (a subset of one event in the set of events of their doing something) and that this one event is composed of two subevents of dancing-the-hambo.

(7.110) a. Once they danced the hambo twice.
b. Many times they sneezed ten times (in a row).
c. They have always played Telemann sonatas together every night.

(7.111) a. Frequently the award had been given to a Latina.
b. The award frequently had been given to a Latina.
c. The award had frequently been given to a Latina.
d. ?The award had been frequently given to a Latina.

(7.110) and (7.111) together show the various possible positions for frequency adjuncts; essentially, as for loc-time phrases, they can go anywhere, in principle. Naturally, there can be differences of interpretation. Consider (7.112).

(7.112) a. They have frequently been knocked off their feet during training.
b. They have been frequently knocked off their feet during training.

Though the distinction is subtle, (7.112a) describes the frequent occurrence of an event in which they are knocked off their feet during training; (7.112b) describes one event in which they were knocked off their feet many times – perhaps in one training session. Thus, with the extensions shown in (7.113), in (a) *this* is most likely to be taken as 'be knocked off their feet', while in (b) it is instead 'be frequently knocked off their feet'.

(7.113) a. They have frequently been knocked off their feet during training – and this has happened to us, too.

b. They have been frequently knocked off their feet during training – and this has happened to us, too.

The same point can be made with (7.114), where *frequently* and the progressive can have different scopes. In (7.114a) Carol was many times in the process of buying gifts; in (7.114c) she was in the process of multiple gift-buyings. (7.114b) is ambiguous between the two readings, as expected given that *frequently* may adjoin either to ProgP (and take scope over *was* because it commands the latter's trace) or to PredP (where it takes narrow scope with respect to PROG).

(7.114) a. Carol frequently was buying gifts.
b. Carol was frequently buying gifts.
c. Carol was buying gifts frequently.

(7.115) represents the two readings.

(7.115) a. [FREQ [t < n & e ⊆ t [$_{E}$ PROG [$_{E'}$ B(e′) . . .]]]]
b. [t < n & e ⊆ t [$_{E}$ PROG [$_{E'}$ FREQ [$_{E''}$ B(e″) . . .]]]]

Note that, even though frequency adjuncts operate on events, these events are always related to times, so that the same sort of interactions, and the same possibilities for multiple occurrence and shift of aspect type as we saw for loc-time adjuncts, are preserved.

The distribution of frequency adverbs in the AuxRange is sometimes restricted at its lower end. Although the examples of frequency adverbs we have seen so far show that they can occur after two auxiliaries, in some cases they may not; this is result of semantic clashes induced by the auxiliary taking scope over the adverb.

(7.116) a. ?*Bob had been occasionally/twice stopping in the middle of the waltz.
b. Bob had been {occasionally/twice} stopping at the side of the road during each 1,000-mile leg of his cross-country drive.

The adverbs in (7.116a), obligatorily within the scope of the progressive *be*, can only be interpreted as giving the frequency of stoppages within each event of waltzing, which – given a covert operator interpreted in context – make up the homogeneous event of multiple waltzing events. Waltzes are fairly short, and it is pragmatically odd to stop occasionally or twice during such an event. (7.116b) provides a much longer interval, and now the adverbs are much better.

The Chinese *ba*-construction provides support for this semantically based explanation for the lower bound on the range of frequency adverbs in the AuxRange, paralleling the arguments made for aspectual adverbs:

(7.117) a. Zhangsan {neng/meiyou} ba xin xie-wan.
Zhangsan can/not-PRF BA letter write-finish
'Zhangsan {will/didn't} finish writing the letter.'
b. Wo bei ta ba wode daziji da-po-le.
I PASS s/he BA my typewriter hit-break-PRF
'I got my typewriter broken by her/him.'

Ba is located below all Mod and Asp (as in (7.117a)) as well as Voice (exemplified by the passive *bei* in (7.117b)). Even with it occurring so low, frequency adverbs have no trouble occurring to its right and thus hierarchically lower:

(7.118) Jinrong ba yanjiu ziliao changchang diu zai cesuo li.
Jinrong BA research materials often leave at bathroom in
'Jinrong often leaves the research materials in the bathroom.'

(Recall that *ba* does not move, so we cannot posit a base position for it below the frequency adverb.) This is expected because the semantic contribution of *ba*, if anything, is completely unrelated to that of the adverb; thus there is no interaction that could produce a semantic clash. If frequency adverbs must be generated higher in structure, as is often assumed for *often* and its equivalents in the literature (where it is usually pegged as being on the periphery of VP, corresponding here to the highest AuxP), then (7.118a–b) ought to be ungrammatical. That they are not supports the scope-based theory of adjunct licensing.

Before going on to focusing and clausal-degree adverbs, a quick note ought to be made about habitual adverbs like *habitually* and *generally* (which I treat here as a subclass of frequency adjuncts) and the "high end" frequency adverbs like *usually*, *often*, and *always*. Though much ink has been spilled on the semantics of these and related frequency adverbs since Lewis 1975 and Heim 1982 (e.g., Swart 1993, Lenci and Bertinetto 2000), little has been said about their syntax. They tend to occur higher in the clause than other frequency adverbials (compare (7.120) with (7.112); not all speakers find *usually* bad in (7.119b)).

(7.119) a. Tim was {usually/occasionally} being passed over for the best contracts.
b. Tim was being {??usually/occasionally} passed over for the best contracts.

(7.120) a. They have often been knocked off their feet during training.
b. ?? They have been often knocked off their feet during training.

Plausibly, this is the result of a semantic requirement that they quantify over a fairly large time interval. For example, in (7.119b), where *usually* is within the scope of the progressive operator, it is forced to quantify over a past state holding at event-time, while in (7.119a) it is free to quantify over the entire past reference-time. Evidence that this is correct comes from alternations like (7.121), where (7.121b) is ruled out because the temporal domain of *generally/usually* is restricted to too narrow an interval by *yesterday*.

(7.121) a. (When she was) In college she {generally/usually} refused to drink red wine.
b. *Yesterday she (generally/usually} refused to drink red wine.

Note that this requirement accounts for why these adverbs tend to occur higher in a clause than other frequency adjuncts: the relevant time intervals associated with lower positions are often too short, and the requirement goes unmet. Given this extra lexicosemantic requirement, no extra syntactic stipulation needs to be made.

In sum, although obviously much remains to be said about frequency adverbials, there is evidence for fairly free positioning in the AuxRange with the familiar semantic constraints determining distribution.

7.4.4 Focusing and Clausal-Degree Adverbs

Although focusing and clausal degree adverbs do not behave alike in all respects, they are similar enough that they deserve treatment together here. Examples are provided in (7.122).

(7.122) a. focusing: *even*, *only*, *also*, *just*
b. clausal-degree: *barely*, *merely*, *scarcely*, *hardly* ("B-class"); *almost*, *nearly*
very much, *really*, *absolutely*

The semantics of focusing adverbs has been fairly well explored; I adopt the type of event-based analysis of Bonomi and Casalegno 1993 for *only*, by which it zeroes in on some part of the material within its scope, dividing events into the familiar classes mapped onto a scale related to presupposition and expectation.[34] Examine (7.123).

(7.123) a. Doris will occasionally only speak German.
b. Doris only will occasionally speak German.

Although it is possible for *only* to focus the same item (such as *spoken* or *German*) in both sentences, in (7.123b) it has the extra option of focusing *occasionally*: she will speak it only *occasionally*, not often. Observe (7.124)–(7.125) (ignoring tense, for simplicity).

(7.124) $[_{E}$ OCC [S(e) & Agt(e,d) & Th(e,g)
& $\forall e' [_{E'}$ [S(e′) & Agt(e′,d)] → $[_{E''}$ S(e″) & Agt(e″,d) & Th(e″,g)]]
& e′ $\subseteq_{E}$ e″]]

(7.125) $[_{E}$ OCC [S(e) & Agt(e,d) & Th(e,g)
& $\forall e' [_{E'}$ [S(e′) & Agt(e′,d) & Th(e′,g)] → $[_{E''}$ OCC [S(e″) &
Agt(e″,d) & Th(e″,g)]] & e′ $\subseteq_{E}$ e″]]

In these formulations it is the second line that represents *only*. In (7.124), for (7.123a) (where *only* focuses *German*), the first line says that Doris occasionally will speak German, and the second line says that all events e′ of Doris speaking are included in an event (e″) of her speaking German. (7.123b) has a reading like that in (7.124) as well, where *only* focuses *German*, but the more salient reading is shown in (7.125). Recall that OCC, for *occasionally*, has the value that the event in its scope (here, Doris speaking German) is a rather small subset of the large set of contextually relevant events (perhaps, events of speaking some European language). (7.125) says that Doris will occasionally speak German (the first line), and every event e′ of her speaking German is included in this smallish set of events e″.

Though less has been said about the clausal-degree adverbs, it seems reasonable to say that they also target sets of events in this way, but map the event onto a scale of degree. Regardless of the specific semantic analysis, they have relatively few selectional requirements, and as a result they occur fairly freely with both auxiliaries and other adjuncts. This distributional freedom has been recognized at least since Jackendoff (1972), who gives the sample paradigm in (7.126) (his (3.141), p. 82). A similar set is provided for *even* in (7.127).[35]

(7.126) John { merely will have been / will merely have been / ?will have merely been / will have been merely / merely has been being / has merely been being / ?has been merely being / has been being merely } beaten by Bill.

(7.127) Karen { even could have been / could even have been / could have even been / ?could have been even / even has been being / has even been being / has been even being / ?has been being even } applauded by her enemies.

Although focusing adverbs have a preference for higher positions in the AuxRange, they are perfectly possible in the lower ones, with the preceding auxiliaries being part of the presupposed material; this is a somewhat marked focus, since it is unusual to have so much in the presupposition.

As is well-known, focusing adverbs focus some constituent in their scope domain. This domain is mostly defined by c-command, except that a focusing adverb in the post-Infl position (after the first finite auxiliary) may take scope over the entire rest of the sentence, including the finite auxiliary; recall the discussion of (7.16) in section 7.2 (given again here as (7.128)).

(7.128) So many weird things have happened this year. Harvard has even won a football game!

This possibility of wide scope follows from the fact that the movement of the finite auxiliary into Tense allows the intervening adverb – and only an adverb in this position – to have scope over the preceding (moved) auxiliary verb.

Intensifiers like *really* and *very much* also have wide positional possibilities:

(7.129) Tim { really could have been / could really have been / could have really been / could have been really } taking the loss hard.

(7.130) Bob { very much has been being / has very much been being / has been very much being / ?has been being very much } wrongly considered to be a traitor.

Again, this follows from their very general semantics.

As always, individual lexical items in a given language may impose further restrictions. In Chinese, for example, *shenzhi* 'even' does not occur as deeply in the AuxRange as does its English counterparts:

(7.131) Tamen (shenzhi) neng (*shenzhi) kai feiji.
they even can even drive plane
'They can even pilot a plane.'

This restriction follows if we take *shenzhi* as requiring a proposition as its object. Since Chinese modals do not raise (see Ernst 1998a and section 7.6), linear order indicates scope relationships straightforwardly. If we take the deontic modal in (7.131) as an event operator, the position of *shenzhi* is explained because when it follows the modal it must take an event in its immediate scope and cannot take a proposition. It can occur to the left of the modal, regardless of whether the FEO is event or proposition at this point, since (if it is the former) free raising to proposition is allowed. Further evidence comes from (7.132a–b), where *shenzhi* cannot occur to the right of aspectual and subject-oriented adverbs, respectively, both of which require events.

(7.132) a. Tamen (shenzhi) hai (*shenzhi) duo zhu ji-tian.
they even still even more live a-few-day
'They even will still stay a few more days.'
b. Tamen (shenzhi) guyi (*shenzhi) ba dongxi nazou-le.
they even purposely even BA thing take-away-PRF
'They even purposely took the things away.'

Again, as predicted, *shenzhi* may occur in the scope of an epistemic adverb like *shuobuding* 'maybe' (which takes a proposition, thus allowing *shenzhi* to do so as well):

(7.133) a. Tamen shenzhi shuobuding hui qu Xinjiapo.
they even maybe will go Singapore
'They even maybe will go to Singapore.'
b. Tamen shuobuding shenzhi hui qu Xinjiapo.
they maybe even will go Singapore
'They maybe even will go to Singapore.'

Thus languages may differ in the distribution of seemingly identical adverbs, because the precise nature of their scope requirements may differ.[36]

7.4.5 Purpose, Causal, Conditional, Result

Purpose, causal, conditional, and result adverbials are relatively rare in the AuxRange in VO languages because they are clauses and thus very heavy. There is a small number of adverbs of these types (e.g., *thus*, *therefore*, *if so*), but otherwise the clauses are in peripheral positions, clause-initial or clause-final. As noted in earlier chapters, we can use scope interpretation and ellipsis tests to show that they occur fairly freely with respect to each other and negation. Thus (7.134), for example, is ambiguous between a reading where it is not the case that Rex will bark as a signal to be let out (maybe he has too much pride) and one where Rex's master only lets him out when he refrains from barking: to be let out, Rex does not bark.

(7.134) Rex won't bark in order to be let out.

(See also the discussion of ambiguities between negation and right-adjoined adverbials in chapter 3.)

Adverbials of this type impose few restrictions on the events they relate, so the scope-based theory correctly predicts their relative freedom. Here I merely provide a few examples to demonstrate this freedom, drawn from European VO languages' adverbs and from Chinese and Korean (where VO languages' weight restrictions do not apply):

(7.135) a. Management will therefore hardly be ready to offer a new contract.
b. Management will hardly therefore be ready to offer a new contract.

(7.136) a. Ils avaient bientôt par conséquent reçu l' argent promis. (French)
they had soon by consequence received the money promised
'They had soon as a result received the promised money.'
b. Ils avaient par conséquent bientôt reçu l' argent promis.
they had by consequence soon received the money promised
'They had as a result soon received the promised money.'

(7.137) a. Xuesheng yinwei xihuan yinyue suoyi jiu changchang qu ting yinyuehui. (Chinese)
student because like music so thus often go listen concert
'Because the students like music, they often go to concerts.'

b. Xuesheng changchang yinwei xihuan yinyue suoyi jiu qu
student often because like music so thus go
ting yinyuehui.
listen concert
'Often the students go to concerts because they like music.'

(7.138) a. Wo weile zhuan qian meiyou qu nian yuyuanxue.
I in-order-to make money not-PRF go study linguistics
'In order to make money, I didn't study linguistics.'
b. Wo meiyou weile zhuan qian (er) qu nian yuyanxue.
I not-PRF in-order-to make money so go study linguistics
'I didn't study linguistics in order to make money.'

(7.139) a. Kunye-nun hangsang [nalssin hayciki - wihay(se)] wuntong-ul
she-TOP always get slim in-order-to exercise-ACC
hando. (Korean: Ae-ryung Kim, p.c.)
do
'She always [exercises in order to be slim].'
b. Kunye-nun [nalssin hayciki - wihay(se)] hangsang wuntong-ul
she-TOP get slim in-order-to always exercise-ACC
hando.
do
'She [always exercises] in order to be slim.'

(7.140) a. Ton-i eps-ese nayil Jim-un lamyen-ul
money-NOM not-exist-because tomorrow Jim-TOP ramen-ACC
mekulketita.
eat-will-DEC
'Because he's broke, Jim will eat ramen noodles tomorrow.'
b. Nayil ton-i eps-ese Jim-un lamyen-ul
tomorrow money-NOM not-exist-because Jim-TOP ramen-ACC
mekulketita.
eat-will-DEC
'Tomorrow, Jim will eat ramen noodles because he's broke.'

7.4.6 Summary

In this section we examined how the semantically based adjunct-licensing principles proposed here account for the distribution of functional adverbials in the AuxRange. Four types were examined: time-related adjuncts (location-time, duration, and aspectual), the closely related frequency adjuncts (including generic/habitual adverbs), focusing/clausal-degree adverbs, and the

heterogeneous group of (mostly) nonadverb, clause-modifying phrases (purpose, conditional, concessive, and so on). In general, we saw that the proposed semantic principles account for the facts. Greater semantic restrictions correlate with greater syntactic restrictions, as seen, for example, in the contrast between the aspectual (more restricted) and frequency (less restricted) subclasses.

Among other results, this explains the differences in ranges shown in (7.47) (section 7.4.2). Aspectual adverbs necessarily map events to reference-time and thus can only appear just after Tense or to the left of this; loc-time adjuncts can map events to either event-time or reference-time, but as event-external modifiers they cannot be interpreted within the lexical VP; frequency adjuncts can be either event-external or event-internal and therefore have the widest range.[37]

I proposed that, if we abstract away from Directionality Principles and Weight theory, the theory of adjunct licensing includes (a) lexically encoded selectional properties of adjuncts; (b) fixed positions for items like auxiliaries, sentential negation, Chinese *ba*, and so on, and thus fixed positions for the application of certain rules of semantic composition, and (c) the FEO Calculus. The major claim is that as long as no semantic clashes are produced by the interaction of these principles, an adjunct is free to adjoin anywhere. We have now seen that for functional adjuncts this is largely true: their distribution is mostly free, and where there is a lower bound on their range, it is created by whatever rules or principles conspire to make the adjunct uninterpretable below this point.

7.5 Support for the Scope-Based Theory

7.5.1 Goals

This section presents data to show that the scope-based system makes correct predictions for sentences containing two or more adjuncts, thus widening the theory's empirical base. With this presentation, I flesh out the arguments made in chapter 3. In particular, first, I show that the same elements of the system are responsible both for a given adjunct's range of possible positions with respect to heads like auxiliaries or the Chinese *ba* and for its co-occurence restrictions with relation to other adjuncts. This avoids numerous problems entailed on feature-based approaches to adjunct licensing (e.g., restrictions on head movement) and also is considerably simpler, since most of the selectional and other semantic mechanisms are needed independently. Second, these data demonstrate that, in general, adjuncts occur in alternate orders fairly freely

with predictable differences in meaning, as expected on this theory – once we consider the effects of semantic clashes (of two adjuncts or of an adjunct and a head) and of context (especially in licensing coercion operators), and concentrate on the general cases, abstracting away from a few exceptional instances of narrow selection, negative polarity, anaphoric requirements, and the like. Since pairs of two predicational adverbs were examined in section 7.3, in the next two sections I focus on pairs containing at least one Functional adverb.

7.5.2 Functional/Functional Pairs

7.5.2.1 Introduction

We saw above that functional adjuncts differ in the semantic requirements they impose on their objects, and thus they differ correspondingly in how easily they co-occur with each other. The ones with the most general meanings, such as focusers and loc-time adjuncts, are the most free; aspectual adverbs like *already* and *still* are the most restrictive both semantically and syntactically; duration and frequency expressions fall in the middle (with further gradations within each group, of course). We start from the restrictive end and work toward increasing freedom (and omitting a separate section on duration adjuncts, since they are most often outside the AuxRange). Although the focus is on adverbs in the AuxRange of VO languages, occasionally postverbal adjuncts will be brought in, in the service of the larger point.

7.5.2.2 Aspectual Adverbs

This subclass is among the most restrictive. Temporal *still* requires a homogenous event (process or state) and thus normally excludes duration and loc-time adverbials from its scope, as well as other aspectual adverbs (see (7.108)) and frequency adjuncts that do not form homogenous event types (e.g., *again*). All of these are allowed, however, if there is an intervening operator, overt or covert, that converts a q-event into a homogenous one. This is illustrated by the contrast in (7.141).

(7.141) a. *Jan still ran on Friday.
b. Jan was still running on Friday.
c. Jan still runs on Fridays.

(7.141a) is ruled out because *still* cannot take a q-event as its object, and although it can do so with the progressive in (7.141b), *on Friday* must take scope over *still*; if it is within the scope of *still* an anomaly occurs, because the

state of Jan running on Friday cannot also have obtained at a time preceding Friday. This is merely a subcase of loc-time taking an aspectual adverb in its scope, as in (7.142), which is common and unproblematic.

(7.142) On Friday Jan still had not run.

However, in (7.141c) *still* may take wide scope, because *runs on Fridays* may include a covert operator that makes the event a homogenous state consisting of repeated running-on-Friday events, and it is this state that obtains now and also persists from a preceding time.[38]

The semantic requirements of *still* interacting with those of deictic loc-time adverbs like *now*, *then*, and past-reference *once* end up requiring wide scope for the latter group when they denote a single time interval (in (7.143b) the postverbal *now* takes wide scope).

(7.143) a. Right then they were still running around.
b. They are still running around now.

(7.144) a. *They still were (right) then running around.
b. *They still are now running around.

The ungrammaticality of the narrow scope cases in (7.144a–b) follows from the semantics of these lexical items: a process with a unique event-time (*then* or *now*) cannot hold both at a reference-time and at some preceding event-time, as *still* requires. Instructively, (7.141c) is fine because *on Fridays* can denote multiple times and thus can be within the scope of an (aspectually "homogenizing") frequency operator; the deictic adverbs in (7.144) usually do not and thus are anomalous in the scope of *still*. Note, though, that in some contexts an adverb like *then* can refer anaphorically to a day or a time that *can* have multiple occurrences; in context *Jan still runs then* is fine to replace (7.141c), for example, with *then* being mapped to multiple Friday event-times in this case. The difference is that when the deictic loc-time adverbs are high in the clause they must denote reference-time, refer only to a single interval, and thus must have scope over *still*; when they are lower in structure they are acceptable (in the scope of *still*) only when context permits reference to multiple time intervals.

Already is similar to *still* in that its scoped event must be able to hold potentially at two different times, but it is different in that this event is quantized. Specifically, it is the beginning of some state. Once again, a deictic loc-time adverb like *now* may take wide scope, denoting the interval at which the inception of the state took place (see (7.145a)).

(7.145) a. Now they have already moved the statue.
b. *They already have now moved the statue.

(7.145b) is ruled out because *already* says that the beginning of having-moved-now precedes a possible, expected, future having-moved-now. However, this is anomalous: *now* denotes a unique time interval that cannot precede itself. Marginally, *then* can be within the scope of *already* if it refers anaphorically to a repeatable time interval and is within the scope of a (possibly covert) frequency operator and if the state created by this operator is the scoped event of *already*. For example, if we are talking about a dance company that is considering moving their usual performance time from 8:00 PM to 7:00 PM, we could say (7.146) of some other troupe.

(7.146) Oh, they are already performing then.

As with *still*, this is precisely as predicted: only "smaller" times can be multiple in this way, so the aspectual adverbs take wide scope only in these circumstances.

Now consider aspectual adverbs with duration adjuncts. The latter impose a bound on the state they modify. As (7.147) illustrates, *still* can easily take one in its scope if some operator (like *every day*) allows the aspectual adverb to take a homogenous event type. *Already*, since it tolerates bounded events, does not even need such an operator, as (7.147b) shows.

(7.147) a. She still swims for an hour (every day).
b. George already had briefly considered a career as a geologist.

The reverse scope (DUR > ASP) is much less acceptable. It does not seem possible at all for a duration phrase to mark reference-time with *already* (see (7.148)). This follows from the fact that the state mapped to reference-time by the perfect or *already* "lasts forever" (Parsons 1990:234) and therefore must be unbounded.[39]

(7.148) *For years the Russian oligarchs have already plundered the new enterprises.

Now examine frequency adverbs occurring with aspectual adverbs, where pairs can usually be found in either order; as should be clear by now, when the former take narrow scope, it is because they may act as operators that create homogenous events upon which the aspectual adverbs may operate. (7.149)–(7.150) provides examples of the order ASP > FREQ.

(7.149) a. They still brush their teeth twice (every morning).
b. [The] New England [Revolution soccer team] is receiving kudos for its improved record, but in truth, the Revs are still often being bombarded. (*Soccer America*, May 24, 1999, p. 8)
c. The reclusive diva is still frequently refusing interviews.

(7.150) a. They already have occasionally sold off a painting or two.
b. ?Ken has already been once again charged with disturbing the peace.

Examples from French ((7.151)–(7.152)), Italian ((7.153)–(7.154)), and Chinese ((7.155)–(7.156)) show that pairs of aspectual and frequency adverbs can occur in either order if compatible quantificational and aspectual structures exist in the sentence.

(7.151) a. Les soldats sont déjà fréquemment rentrés à la base.
the soldiers are already frequently returned to the base
'The soldiers have already frequently returned to base.'
b. Les enfants sont fréquemment déjà couchés quand j'arrive.
the children are frequently already in-bed when I arrive
'The children are frequently already in bed when I get there.'

(7.152) a. Maggie sourit encore toujours à Stéphane.
Maggie smiles still always at Stéphane
'Maggie still always smiles at Stéphane.'
b. Maggie sera toujours encore à son bureau après la fermeture.
Maggie will-be always still at her office after the closing
'Maggie will always still be at her office after closing time.'

(7.153) a. Lei già risponde sempre al padrone.
she already answers always to-the boss
'She already always answers the boss.'
b. Lei ha sempre già preso i libri (quando arrivi).
she has always already taken the books (when you-arrive)
'She has always already taken the books (when you arrive).'

(7.154) a. Pietro sarà sempre ancora lì quando tutti sono andati via.
Pietro will-be always still there when all are gone away
'Pietro always will still be there after everyone has gone.'

b. Pietro guarda ancora sempre da tutte e due le parti prima de
Pietro looks still always of all two the sides before to
attraversare.
cross
'Pietro still always looks both ways before crossing.'

(7.155) a. Gou yijing zongshi ting ta zhuren de yaohe le.
dog already always listens his master of urging INCH
'The dog already always listens to its master's commands.'

b. Wo daoda yiqian, ta zongshi yijing ba shu nachuqu-le.
I arrive before s/he always already BA book take-out-PRF
'Before I get there s/he has always already gotten her/his books out.'

(7.156) a. Guo jie qian, Baorong hai zongshi hui xian kankan
cross street before Baorong still always will first look
liang-bian.
two-side
'Before crossing the street, Baorong still will always look both ways.'

b. Bieren dou zou-le yihou, Baorong zongshi hai hui zai
others all go-PRF after Baorong always still will be-at
bangongshi.
office
'After all the others have gone, Baorong is always still at the office.'

(7.157)–(7.159) demonstrate that the habitual subclass of frequency adjuncts allows the same sort of alternation with aspectual adverbs.

(7.157) a. This species adapts rapidly to humans; already they generally avoid construction camps but know to come close to the tourist camps.

b. This species adapts rapidly to humans; I'm confident that they soon will generally be avoiding construction camps but know to come close to the tourist camps.

c. This species adapts pretty slowly to change; they still usually avoid camps even though the construction camps are long gone, and only tourists camp nearby.

(7.158) a. Ils donnent déjà d'habitude à l' organisation.
they give already usually to the organization
'They already usually give to the organization.'

b. Ils sont d'habitude déjà partis quand j'arrive.
they are usually already left when I arrive
'They've usually already left when I get there.'

(7.159) a. Fanno già solitamente beneficenza abbastanza
they-make already usually contribution rather
generosamente.
generously
'They already usually contribute rather generously.'
b. Solitamente sono già partiti quando arrivo.
usually they-are already left when I-arrive
'Usually they have already left when I arrive.'

(7.160)–(7.161) demonstrate, as predicted, that pairs of aspectual and focusing or clausal-degree adverbs allow either scope relationship, in principle.

(7.160) a. The agency still only approves one grant out of ten.
b. The agency only would still approve a grant after the deadline under special circumstances.

(7.161) a. It hardly would still be a problem for them if they'd started earlier.
b. It still would hardly be a problem for them if they'd started earlier.

And finally, aspectual adverbs can be found on either side of negation, although there are restrictions; as usual, once semantic clashes are avoided either order is possible (cf. Auwera 1998b:102ff.):

(7.162) a. They still don't teach evolution in Kansas.
b. That's a trilobite, in case they don't still teach evolution in Kansas.

(7.163) a. Il n'est pas déjà arrivé. (French)
he Neg is not already arrived
'He has not already arrived.'
b. Déjà il ne nous a pas très fortement impressionés.
already he Neg us has not very strongly impressed
'Already he has not impressed us very much.'

7.5.2.3 Frequency Adverbs

Frequency adverbs (including *again*) have fewer restrictions than aspectual adverbs do and correspondingly have freer distribution with respect to co-occurring adverbials. Starting with alternations between frequency and loc-time adverbials, observe (7.164a–c).

(7.164) a. Several times the cook started at 3:00 AM.
b. In his talks with the chemistry demonstration, Fred often would immediately afterward go on to discuss the nature of science.
c. Recently, Vivian has again been waking up at 4:00 AM most nights.

Such sentences are quite common, with the frequency adverbial taking wide scope. The reverse scope relationship is just as common; compare (7.165).

(7.165) a. At 3:00 AM the cook coughed several times.
b. Immediately after his operation, Fred often visited Alma.
c. {At four/Recently} Vivian again performed her new composition.

Deictic loc-time adverbs like *then* and *now* may replace the sentence-initial adjuncts in (7.164), for example, taking wide scope over frequency expressions or in (7.165), taking narrow scope (see (7.166)); in the latter case it is somewhat easier than with aspectual adverbs, since the frequency expression automatically makes the multiple event-time interpretation of *then* salient, with no need for a covert operator.

(7.166) a. Several times the cook started then.
b. Now Fred often visits Alma.

Pairs of frequency and duration adjuncts are also easy to find (see (7.167)–(7.168)).

(7.167) a. Ken has frequently stayed for a whole hour.
b. Occasionally she would briefly look at her notes before going on stage.

(7.168) a. For the whole hour Ken frequently returned to the bar, and by the time we got home he was drunk.
b. She briefly would occasionally drop in on him, but after a month of tepid responses she gave up and never saw him again.

(7.168b) is fine if the context establishes a long time frame to begin with (perhaps in a retrospective of her long life), so that *briefly* may refer to a month. Although sentences like these are acceptable, adverbs like *twice* and *again* do not go as easily in the scope of duration adjuncts, as they take an event to yield not a homogenous event type but a bounded one. Thus (7.169) is often taken as unacceptable without a context.

(7.169) (*)She briefly danced {twice/again}.

But again, with an overt or covert frequency operator and the right context, cases like (7.169) become possible, as in (7.170), for example.

(7.170) She briefly danced {twice/again} on Saturdays, once for the matinee and once in the evening, but after a month it was clear that her performance was suffering.

Here *briefly* gives the duration of a homogenous event made up of subevents (each located on a Saturday) of dancing-twice.

Sentences with pairs of frequency adverbials are also possible, although, as noted, this requires a covert operator. (7.171a–b) illustrate this for *always* and *frequently* (see also Lenci and Bertinetto 2000:273ff. for discussion of pairs of iterative and habitual adverbs).

(7.171) a. Always frequently back up your files. (from a word-processing software manual)
b. Frequently (among the various cultures we studied), a centralized political system would always require military service regardless of a young man's social class.

7.5.2.4 Focusing/Clausal-Degree Adverbs

Focusing and clausal-degree adverbs impose the fewest semantic restrictions on the rest of the sentence, resulting in the greatest degree of freedom with respect to co-occurring adverbs (see (7.172)–(7.174)).

(7.172) a. Stef merely is {still/frequently/again/briefly/now} staying at home.
b. Stef {still/frequently/again/briefly/now} is merely staying at home.

(7.173) a. Zhangsan {ou'er/ xianzai} zhi (hui) chi ji
Zhangsan occasionally/now only will eat a-few
kuai. (Chinese)
piece
'Zhangsan {occasionally/now} will only eat a few pieces.'
b. Zhangsan zhi (hui){ou'er/ xianzai} chi ji kuai.
Zhangsan only will occasionally/now eat a-few piece
'Zhangsan only will occasionally/now only eat a few pieces.'

(7.174) a. Lotfi avait seulement été {de temps en temps/ brièvement} mis
Lotfi had only been from time to time/ briefly put
à l'écart. (French)
aside
'Lotfi had only been {occasionally/briefly} left aside.'

b. Lotfi avait {de temps en temps/ brièvement} seulement été mis
Lotfi had from time to time/ briefly only been put
à l'écart (plutôt que carrément renvoyé).
aside rather than completely sent-away
'Lotfi had only been {occasionally/briefly} left aside (rather than completely sent away).'

7.5.2.5 Summary

In this section we examined three sorts of sentences containing two functional adverbs: those with aspectual adverbs, with frequency adverbs, and with focusing or clausal-degree adverbs. I showed that, in general, the latter permits the greatest freedom for permutation (alternate orders), with frequency adverbs displaying less freedom and aspectual adverbs even less. This correlates with these subclasses' degree of semantic restriction and therefore provides support for the scope-based theory proposed here.

7.5.3 Predicational/Functional Pairs

7.5.3.1 Introduction

In this section we examine sentences containing one predicational and one functional adverbial. (In all cases the former will be clausal, since event-internal predicationals, that is, manner and measure adverbs, are always very low in clausal structure and almost never occur higher than another adjunct in the same clause.) The theory as I have developed it so far makes two types of predictions. First, for functional adverbials that operate on events, the theory predicts that when paired with subject-oriented adverbs like *willingly* or *stupidly* either order should be possible. This prediction is largely borne out, and, as expected, cases where one or both orders are impossible are attributable to various semantic clashes. Second, the relative order of event-modifying functionals with speaker-oriented adverbs, such as *frankly, maybe*, and *surprisingly*, is predicted to be rigid, the speaker-oriented adverb coming first. This is true in many instances but not in others. Thus an important task will be to adjust the theory so that these cases are accounted for as well.

7.5.3.2 Functionals and Subject-Oriented Adverbs

For pairs of one functional and one subject-oriented adverb, either order should be possible, with corresponding differences in the reading; this should

be the case because subject-oriented adverbs' only real requirement, aside from taking an event, is that this event be controllable, in the sense discussed in chapter 2. (7.175)–(7.177) bear out this prediction. These sentences involve frequency and agent-oriented adverbs (*again* would also work here in place of the frequency adverb, or *deliberately*, a mental-attitude adverb, in place of *stupidly*, along with their equivalents in French and Chinese; the same facts hold for Italian as well):

(7.175) a. Occasionally, Dan would stupidly forget to tell Security that he was going out.
b. Stupidly, Dan would occasionally forget to tell Security that he was going out.

(7.176) a. Daniel avait stupidement parfois oublié de dire au
Daniel had stupidly sometimes forgotten to say to-the
service de sécurité qu' il partait.
service of security that he leave-IMPF
'Daniel had stupidly sometimes forgotten to say to the security service that he was leaving.'
b. Daniel avait parfois stupidement oublié de dire au
Daniel had sometimes stupidly forgotten to say to-the
service de sécurité qu' il partait.
service of security that he leave-IMPF
'Daniel had sometimes stupidly forgotten to say to the security service that he was leaving.'

(7.177) a. Lao Wang hen congming de changchang pai ta laoban
Lao Wang very intelligent DE frequently pat his boss
de mapi.
DE bottom
'Lao Wang intelligently frequently buttered up his boss.'
b. Lao Wang changchang hen congming de pai ta laoban
Lao Wang frequently very intelligent DE pat his boss
de mapi.
DE bottom
'Lao Wang frequently intelligently buttered up his boss.'

The same holds for aspectual adverbs shown in (7.178)–(7.180). Recall that the aspectuals were among the most restricted adverbs when co-occurring with other functionals, because they require particular aspectual types and a

particular relation between two time intervals. These problems need not arise in sentences with subject-oriented adverbs, nor is the latter's controllable event requirement a problem, since agents can control whether they partake of an event with particular aspectual characteristics. Thus (7.178)–(7.180) are acceptable, with either scope relationship. This distinction, between the likelihood of an aspectual adverb being acceptable with functional versus subject-oriented predicationals, is directly predicted on the scope-based approach.

(7.178) a. The club still is willingly accepting new members.
b. The club is willingly still accepting new members.

(7.179) a. Annick est sagement (toujours) déjà prête (avant l' arrivée
Annick is wisely always already ready before the arrival
de Philippe). (French)
of Philippe
'Annick is wisely (always) already ready before Philippe's arrival.'
b. Annick avait déjà sagement quitté Philippe.
Annick had already wisely left Philippe
'Annick had already wisely left Philippe.'

(7.180) a. Zhangsan hai guyi ba tongwu chaoxing.
Zhangsan still deliberately BA roommate wake-up
'Zhangsan still deliberately wakes up his roommate.'
b. Zhangsan guyi hai ba tongwu chaoxing.
Zhangsan deliberately still BA roommate wake-up
'Zhangsan deliberately still wakes up his roommate.' (Chinese)

Duration adverbs work the same way, and for the same reasons: their time-related semantic requirements are unrelated to the controllability requirement of the subject-oriented adverbs:

(7.181) a. {Briefly/For a brief time}, Alan had been cleverly telling people that he was only a journalist (every time someone seemed to recognize his famous face).
b. Cleverly, Alan had been briefly turning away until they passed (every time some journalist seemed to recognize his famous face).

(7.182) a. Brièvement, Alain était intelligemment resté chez sa
briefly Alain had intelligently stayed at his
copine. (French)
friend
'Briefly, Alain had intelligently stayed with his friend.'

b. Intelligemment, Alain était brièvement resté chez sa copine.
intelligently Alain had briefly stayed at his friend
'Intelligently, Alain had briefly stayed with his friend.'

(7.183) a. Jinrong you-yi-zhenzi hen congming de zao
Jinrong a-while very intelligent DE early
qu shang ban. (Chinese)
go go-to-work
'For a while Jinrong intelligently went to work early.'
b. Jinrong hen congming de you-yi-zhenzi zao qu shang ban.
Jinrong very intelligent DE a-while early go go-to-work
'Jinrong intelligently went to work early for a while.'

I conclude this subsection with examples using focusing (7.184), clausal-degree (7.185), or loc-time (7.186) adverbs, all again acceptable because there are no semantic conflicts (though only English sentences are given, the data hold for other languages as well).

(7.184) a. She even had reluctantly given up weight-lifting.
b. She had reluctantly even given up weight-lifting.

(7.185) a. The meeting organizers nearly had stupidly left out a whole panel.
b. The meeting organizers stupidly had nearly left out a whole panel.

(7.186) a. At that time George had deliberately gone back to an abstract style of painting.
b. George deliberately had at that time gone back to an abstract style of painting.[40]

7.5.3.3 Functionals and Speaker-Oriented Adverbs

The prediction of the theory as developed so far is that functional adverbs that modify events should not be able to precede speaker-oriented adverbs, because the latter combine with propositions to produce propositions. However, there are numerous examples where this prediction does not hold. Examine (7.187)–(7.189).[41]

(7.187) a. "[The Lewinsky affair] will always unfortunately stain [Clinton's] tenure in office." (Christine Todd Whitman, quoted in the *New York Times*, Dec. 22, 1998, p. B6)
b. They have often quite curiously found themselves alone even in a crowded city.

c. Again he probably won't remember anything when he wakes up. (after the third of three operations, the first two of which produced temporary amnesia)
d. And Gretchen Delmere was always certainly an expert on politeness. (Sharon Shinn, *The Alleluia Files*, 57)

(7.188) a. We are still probably north of Princeton. (uttered spontaneously by linguist driving south from New York toward Philadelphia)
b. ?She already had strangely been involved in an obscure goat-worshipping cult.

(7.189) a. Once she probably would have done that, but not anymore.
b. Right then the children were luckily being examined by a doctor, so she noticed the infection right away.
c. We can now advantageously preserve the spirit of Kayne's analysis [. . .]. (Pollock 1997:36)

The sentences in (7.187) show the order FREQ > SPKR-OR (including *again* as a subtype of frequency adverb), where the second adverb is taken from the modal, evaluative, and evidential subclasses. (7.188) illustrates ASP > SPKR-OR, and (7.189) shows loc-time > SPKR-OR (where the loc-time adverbs are deictic). There is a certain amount of variation in speakers' acceptance of some of these; but all, and sentences like them, are fine for a large percentage of speakers, and some (e.g., (7.187c) and presumably the published sentences) are accepted universally or close to it.

Given the scope-based theory, there are at least three ways we could approach this sort of data. First, we could say that for the functional adverbs that partake of this pattern, there exist "homonyms" that take propositions, in addition to the version that takes events. Second, we could say that the speaker-oriented adverbs may in some cases take propositions into events, so that the (nonhomonymous) functional adverbs operate on their "output" normally. Third, we could posit coercion operators, parallel to those discussed that change the aspectual type of an event but are associated with certain functional adverbs, to take the propositions expressed by the [Spkr-Or + sentence] sequence and make events out of them. Although all three options are compatible with the basic theory proposed here, I argue for the third solution.[42]

I reject the first approach in an attempt to avoid this sort of "homonymy" if possible; it requires not only a more complex lexicon but a reformulation of the compositional system for all the relevant adverbs so that they work with

propositions at different times as well as events at different times. Of course, it is a venerable tradition to take propositions as holding at times, but in an event-based system it is simpler to avoid this. The second approach wrongly predicts the possibility of wide-scope negation with modal and evaluative adverbs. As already noted, this is not possible:

(7.190) *Jim did not {fortunately/oddly/tellingly} remove his shoes.

(7.191) *Jim did not {probably/possibly} remove his shoes.

If adverbs like *oddly* and *probably* combined with propositions to optionally produce events, nothing would prevent cases like (7.190) and (7.191), because *not* may freely take events without restrictions (compare (7.190)–(7.191) with the acceptable sentences where adverbs like *always* or *wisely* are substituted); only by treating the material to the right of negation as propositions, as outlined in section 7.2, can these sentences be accounted for.

The third approach has the advantage of pegging the grammaticality of sentences like (7.187)–(7.189) to the functional adverbs, as on the "homonym" hypothesis, yet retains the advantage of allowing a simpler semantics the latter solution lacks. Moreover, it captures the intuition that these sentences very often are paraphrasable by means of the adjectival predicates associated with the adverb, as in (7.192) for (7.189a).

(7.192) Once it was probable that she would have done that, but not anymore.

Probable functions syntactically as a main predicate in (7.192) and thus denotes an event, a state of some fact being probable. Thus we analyze (7.189a) as a case of *once* being able to coerce a fact (the result of combining *probably* with a sentence) into an event. (7.193) illustrates this, ignoring irrelevant material.

(7.193) [$_{\text{EVENT}}$ ONCE [$_{\text{EVENT}}$ [$_{\text{PROP}}$ PROBABLY [$_{\text{PROP}}$ she would do that]]]]

The result of combining *probably* with a sentence is a proposition; *once* has the ability to coerce this proposition into becoming an event, so that the normal semantics of *once* may operate.

Of course, this approach does not automatically predict that every combination of one functional and one speaker-oriented adverb will be acceptable in that order. For example, although *always* was fine in (7.187a), describing

a state that will hold continuously in the future, more "granular" frequency adverbs denoting separate times are less acceptable (if at all) with this sort of wide scope (cf. Vlach 1993:236):

(7.194) */?Quite often they {certainly/perhaps} left because of the rain.

(7.195) */?Très souvent ils sont {certainement/peut-être} partis à cause
very often they are certainly/ perhaps left because
de la pluie. (French)
of the rain.
'Quite often they {certainly/perhaps} left because of the rain.'

I have no ready explanation for this difference, but it appears to follow the same cleavage lines we have seen all along – differences between deictic and nondeictic time adverbs, more and less granular frequency adverbs, and the like. What generalizations we find are semantically based, and may be accounted for by linking these generalizations to the possibility of a given adverb subclass to coerce a proposition into an event.

This approach also allows us to explain some cross-linguistic variation, since the coercion possibilities are lexically encoded and might be expected to vary. The type of sentences in (7.187)–(7.189) is, of course, not restricted to English, as (7.196a–b) illustrate for Chinese and (7.197a–b) for French.

(7.196) a. Ta youshihou dagai bu chi fan.
s/he sometimes probably not eat rice
'S/he sometimes probably doesn't eat rice.'
b. Lisi you dagai yao ba xiaoshuo xie-wan.
Lisi again probably want BA novel write-finish
'Lisi once again probably wants to finish writing the novel.'

(7.197) a. Cette année-là, la production avait déjà probablement
that year the production had already probably
dépassé 100 par mois.
passed 100 by month
'That year, production had already probably passed 100 a month.'
b. Encore une fois ils avaient curieusement décidé de ne
again one time they had curiously decided to Neg
pas rentrer.
not return
'Once again they had curiously decided not to go back.'

However, in some ways English seems to be more permissive; at least some speakers accept (7.198a–b), while few if any Chinese speakers accept (7.199a–b) (although even this generalization is preliminary, since to my knowledge little or no work has been done on these patterns).[43]

(7.198) a. She still probably won't be here on time.
b. ?Sally always has luckily been willing to work.

(7.199) a. *Ta hai dagai bu (hui) zhunshi dao.
s/he still probably not will on-time arrive
'S/he still probably won't get here on time.'
b. *Xiao Li yizhi xingkui yuanyi gongzuo.
Xiao Li always luckily willing work
'Xiao Li always has luckily been willing to work.'[44]

It appears that loc-time and frequency adjuncts more easily take wide scope over predicational adverbs cross-linguistically, while aspectual adverbs, like *still/hai* in (7.198a) and (7.199a), are less tolerant of such scope. This is as expected on the current theory (if there is to be any variation at all), since the former have fewer selectional requirements and the latter have more.

It must be emphasized that, at least to my knowledge, there have been no systematic analyses (or even data collection) of sentences where functional adjuncts precede predicationals, so anything said here must be considered tentative. Neverthless, the evidence suggests that there is support for the scope-based theory, with its prediction of the direction of variation among functional adverbs (with respect to their degrees of restrictiveness and thus their range of distribution) and its use of coercion operators to convert propositions into events under certain circumstances.

7.5.3.4 Functionals and Exocomparatives

I proposed in chapter 2 that exocomparative adverbs like *similarly*, *accordingly*, and *likewise* are unspecified for FEO type and therefore may easily take either events or propositions. Thus in the former case, at least, they yield events as well, and, as predicted, they are freely ordered with respect to functional adjuncts, in principle (see (7.200)–(7.201)).

(7.200) a. We haven't yet accordingly deleted his files.
b. Accordingly, we haven't yet deleted his files.

(7.201) a. They previously had likewise refused to leave.
b. They likewise had previously refused to leave.

7.5.4 Summary and Conclusion

We have examined two kinds of sentences containing more than one adjunct, first with two functional adjuncts, then with one functional and one predicational. In general, the prediction is confirmed that any order is possible in principle. Of course, certain subclasses of adjuncts have a rigid ordering with respect to certain other subclasses or to particular types of modal or aspectual auxiliaries, because the impossible order yields some sort of semantic clash. This confirms the validity of the semantically based approach, especially in light of the overall pattern in which subclasses with more restrictive selectional properties (e.g., aspectual adverbs) show more instances of rigid ordering than those with fewer requirements (such as focusers). Finally, we found that unexpected orderings provide evidence that some functional adverbs represent coercion operators, permitting otherwise disallowed conversions of one FEO type to another.

7.6 Adjunct-Verb Order and Variation in the AuxRange

7.6.1 Introduction

I have discussed in detail how (clausal) predicational and functional adverbials are licensed in the AuxRange, adjoined to the functional projections above VP. There are no purely syntactic restrictions aside from the Directionality Principles and Weight theory; the adverbials may adjoin anywhere that their semantic requirements are met. In effect, any of the predicational and functional adverbials may adjoin (fairly freely) either to a projection of Tense, and thus precede the finite verb in the familiar languages where the latter raises to Tense, or to the first projection below this, whether it be ModP, AspP, NegP, or the like, where they still can take wide scope over the raised verb (and Tense) by the Scope Principle. In many cases, however, the occurrence of an adjunct after a second or third auxiliary, or after negation, will be disfavored or ruled out because of the semantic effects of the adjunct being forced to take narrow scope. A few examples are repeated here:

(7.202) a. *Jim did not {fortunately/oddly/tellingly} remove his shoes. (= (7.190))
b. *Oskar had been luckily leaving the office at the time. (= (3.20b))
c. Tim was being {??usually/occasionally} passed over for the best contracts. (= (7.119b))

However, there are cross-linguistic variations in this pattern. In the Romance languages, epistemic adverbs like those in (7.202a–b) occur easily after a second (i.e., nonfinite) verb, as shown in (7.203), and in Chinese they usually cannot even occur after the first one (see (7.204)).

(7.203) a. Marc avait été peut-être refusé par la majorité des
Marc had been perhaps refused by the majority of-the
candidats.
candidates
b. Cette stratégie a été malheureusement essayé.
this strategy has been unfortunately tried

(7.204) a. Xiaolan (yiding) hui (*yiding) hui-jia.
Xiaolan definitely will definitely go-home
'Xiaolan will definitely go home.'
b. Xiaolan (dagai) dei (*dagai) hui-jia.
Xiaolan probably must probably go-home
'Xiaolan probably must go home.'

On the theory proposed here, such differences must result from the languages' different mapping from syntax to semantics: either they have different semantic elements or rules, or verb movements produce different scope possibilities by means of the Scope Principle. In this section I show that the latter is in fact the case: French has more extensive head movement in the AuxRange than English, and both have more than Chinese does.

7.6.2 Previous Approaches

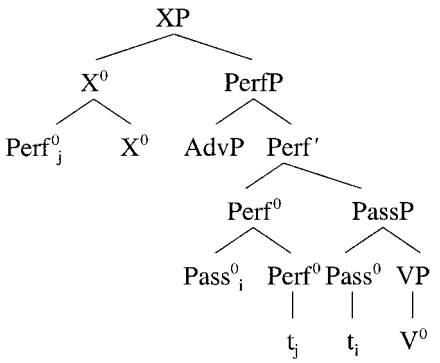
As far as I know, there are essentially two basic approaches to the French/English contrast. The first is to deny that any head movement takes place and posit instead different possible base positions for the adverbs; this is presumably the tack that Williams (1993) and Bouchard (1995) would take (though they do not address this sort of data directly). Given the relatively undeveloped nature of this approach and the fact that it has a number of significant problems (see chapter 8), I do not consider it here. The second is to invoke head movement. One variant of this, which might be called the "successive-adjunction" strategy, derives from Pollock (1989) and Belletti (1990), and has been continued by Alexiadou (1997), Laenzlinger (1997), Cinque (1999), and others; it allows heads to adjoin to successively higher heads in the hierarchy of empty functional projections, potentially as far up as

the position just below the next highest overt head, passing various adjuncts along the way. Although this approach admits the option of positing different adverb base positions in different languages (as does Laenzlinger 1997:97, for example), the main determinant of surface linear order is the landing site of the verb(s).

I noted in chapter 2 that Cinque's version of the successive-adjunction approach runs into the problem of having to trigger and constrain a massive number of verb movement options. Additionally, his approach must allow excorporation of a verb (say, a participle) adjoined to the trace of a higher verb (e.g., an auxiliary) that has already raised. Take the pattern shown in (7.205a) (with the English glosses in (7.205b) for the French sequence in (7.203a)), for example, where the AdvP is licensed in a fairly low position and all three verbs must start out lower, subsequently raising above AdvP.[45] After Perf raises, Pass must be able to adjoin to the base position of Perf and then excorporate in order to adjoin to a position higher than AdvP to derive the order in (7.205). (7.206) shows the structure just before excorporation; $Perf^0$ has raised to X^0, leaving a copy, to which $Pass^0$ has then raised and adjoined.

(7.205) a. Perf - Pass - AdvP - V
b. had - been - perhaps - refused

(7.206)



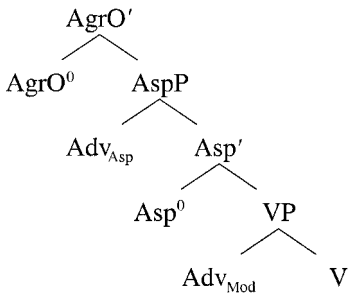
Recall that on the copy theory of movement, the head that will eventually be a trace is still a genuine lexical item at the point where excorporation takes place (Chomsky 1995b, Ernst 1998a, Fox 1999). This, however, opens up a significant problem. Unless severely constrained, allowing this sort of excorporation in essence obviates the Mirror Principle: it permits any order of morphemes in the final incorporated head, because heads are free

to hop over one another to produce different orders. It is precisely the impossibility of this sort of excorporation that keeps head movement largely local.

We can preserve the Mirror Principle and a restrictive movement theory, following Baker (1996:478), by only allowing two types of head-adjunction: (a) movement of the entire head, with no excorporation (this would be the case if the whole $Perf^0$ node in (7.206), made up of $Pass^0$ and $Perf^0$, moved to X^0) or (b) excorporation of the head (as shown in (7.206), when $Perf^0$ moves out of the node $[_{Perf^0}\ Pass^0\ Perf^0]$ subsequent to its creation by raising of $Pass^0$). The restriction to just these options has the result that any head X can raise and adjoin to the next highest head Y, creating $[_X\ Y\ X]$, but the only possible moves after this are movement of this whole amalgamated head X or movement of the original X out of it.

Laenzlinger (1997) has a somewhat more constrained theory than the one required by Cinque's use of head movement (see especially pp. 90ff.). He suggests that in a structure like (7.207) (adapted from his (95)), French allows the participle to optionally raise from V to $AgrO^0$, which predicts correctly that it may precede aspectual[46] and modal adverbs. (7.208) shows this movement, of *résolu* 'solved' from the position marked t_j across the adverbs (*a* 'has' has moved out of Asp to AgrS).

(7.207)



(7.208) Jean a {souvent/probablement} résolu$_j$ {souvent/probablement} t_j
Jean has often probably resolved often probably
tes problèmes.
your problems
'Jean has {often/probably} resolved your problems.'

English participles do not raise in this way, so they must follow such adverbs.

Laenzlinger's theory avoids some of the problems inherent in Cinque's proposals, because V does not need to raise so far and excorporate from various

heads on its way. It does still face a difficulty endemic to the feature-oriented, one-to-one Spec-head theory of adjunct licensing. Laenzlinger is forced to allow French modal adverbs to be licensed below $AgrO^0$ (the exact projection is unimportant) in addition to in CP (presumably, one of several "CPs" in the expanded Comp). This is necessary if the participle were to raise high enough to end up above an adverb in CP (or any other projection above Aux, hosting the modal adverb), it would have to move long distance and thus have to adjoin to and then excorporate from intervening heads. However, the price one must pay for this is high: modal adverbs must be allowed to raise at LF so as to be licensed in their proper slot in CP (Laenzlinger 1997:91). The same conclusion must apply also to discourse-oriented and evaluative adverbs, since they also can appear to the right of a participle (see (7.209)).

(7.209) a. Les Kenyans ont rompu quand même un record mondial.
the Kenyans have broken all-the-same a record world
'The Kenyans have all the same broken a world record.'
b. L'équipe a essayé malheureusement cette stratégie.
the team has tried unfortunately this strategy
'The team has unfortunately tried this strategy.'

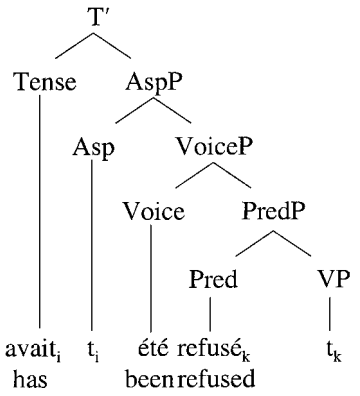
Thus while avoiding one problem, another one is introduced: as long as licensing can be accomplished by LF-movement alone, the prediction is that these adverbs can occur anywhere in a sentence below their LF licensing point (at least if they are not below another adverb, which they would have to cross when they raise), which is plainly false. One might avoid this by fixing these lower base positions by some sort of licensing as well, but clearly that defeats the whole point of a theory where licensing is exclusively to be by means of a tight semantic relationship between a head and an adverb in Spec.

7.6.3 An Alternative

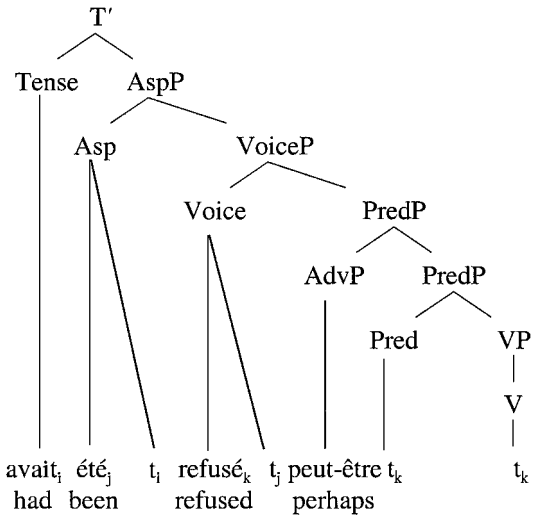
I adopt here the more restrictive version of the head movement approach mentioned with respect to (7.206), in which the number of empty functional heads is quite limited and a verb may adjoin (only) to the next highest overt head. Unlike the successive-adjunction theory, I assume that excorporation of nonheads is not allowed – once a verbal head (such as a participle) adjoins

to any real head, it cannot move on. This preserves the Mirror Principle and disallows one verb "following" another one up the same sequence of clausal heads, as was the case with Perf and Pass in (7.205) for (7.203a). Observe how the latter would be represented on this more restrictive approach, in (7.210)–(7.211) (irrelevant parts omitted).

(7.210)



(7.211)

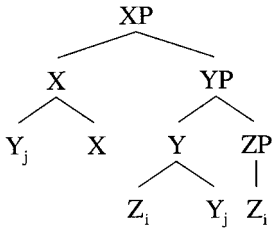


(7.210) represents the base structure plus the movements that occur for both French and English: the finite verb to Tense and the main verb (participle) to Pred. (7.211) adds the adverb and shows the second step allowed for French but not for English, in which nonfinite verbs may adjoin to the trace (i.e, the

copy) of the preceding verb. As noted, this is as far as they may go, assuming a ban on excorporation of nonheads.[47]

The big question at this point is: how can a modal adverb like *peut-être* occur below an aspectual auxiliary? It is precisely this configuration that blocks the English equivalent of (7.203a); all adverbial elements must have their semantic requirements met without causing any other violations, and here the aspectual auxiliary is not able to operate on an event, since modal adverbs yield propositions. However, if we take adjunction to a trace to create a chain relevant to the Scope Principle, there are no semantic problems for (7.211) because the verbal sequence *avait été refusé* 'has been refused' forms a chain. Schematically, let us say that, for the purposes of the Scope Principle's determination of chains, in a configuration like (7.212), i = j. This creates an extended chain. (See Chomsky 1986 for a similar use of this idea for parasitic gaps.)

(7.212)



This coindexing under the Scope Principle allows any adverb to the right of *refusé* in (7.211) to take scope over the whole chain, that is, the whole sentence (given VP-internal subjects). It also allows the adverb to occur anywhere within the sequence as well. By contrast, the English structure is (7.210), with only one movement, not (7.211). Thus if *perhaps* or some other speaker-oriented adverb adjoins to VoiceP or PredP, it is forced to take an event as its FEO object, which it cannot do, and the sentence is ungrammatical.

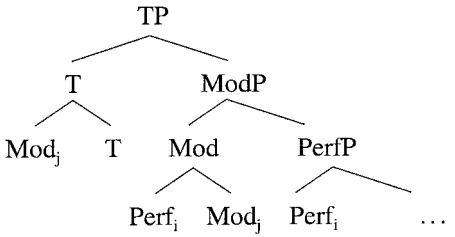
We may now easily capture the English data discussed in chapter 3 involving Modal + *have* sequences, which allowed adverbs following the second auxiliary (*have*) when this was not possible with other two-auxiliary sequences (see (7.213)).

(7.213) a. They could have probably worked a bit harder.
b. *They could be probably working a bit harder.
c. *They could have been probably working a bit harder.

Given the theory outlined here, we may posit that English allows an (optional) overt movement of *have* to adjoin to the base position of Modals; as (7.214)

shows, this is precisely a realization of (7.212), with the modal having moved to Tense, as usual.[48]

(7.214)



7.6.4 Discussion

Much current work would assume that sentences like those discussed in this section include Agr nodes of some sort to host the participial inflections (English *-en* and *-ing* and their counterparts in Romance), as illustrated for Italian in (7.5) and for English in (7.6), with the verbal roots moving to these Agr nodes to form the fully inflected participle. In line with our desideratum of avoiding radically semantically empty nodes, however, an Agr-less analysis ought to be considered. Of course, it would take us too far afield to make a full comparison between the approaches, but a few remarks are in order nonetheless.

First, we have been making the assumption – common even in work adopting Agr nodes for participles – that for movement of the finite verb to Tense, Romance languages raise the V-stem overtly (where it combines with its inflection(s)), whereas English verbs come from the lexicon fully inflected and move only at LF to check that inflection against tense features (Chomsky 1995b). However, the theory differs only slightly if we take both types of language to inflect verbs fully in the lexicon. The difference is then merely in whether movement for feature checking is overt (Romance) or covert (English). Consistently, the Romance languages overtly adjoin a verb to the head that conditions its participial morphology and check its features with that head, at LF. English adjoins participles to the conditioning head at LF and checks features there and then.

Second, the Scope Principle only responds to overt movement, consistent with the results of Ernst (1991a). If A raises over B at LF to check morphological features, B must still always take scope over A, according to surface positions (while overt movement allows either scope, in principle). This mirrors the fact that movement of DPs to check Case at LF does not create new anaphor-binding options (Chomsky 1995b, Lasnik 1995), unlike

overt movements like Scrambling. In particular, if heads raise overtly across adverbs, we should find (at least some of the time) scope ambiguities or reverse scope, with the apparently lower adverb taking scope over the moved head.

Third, regardless of whether one adopts an Agr-ful or Agr-less framework, there is evidence that verb raising is the correct way to approach the phenomenon of "high" adverbs occurring to the right of "low" auxiliaries (and main verbs), as in (7.215), when straightforward scope considerations would rule the structure out.

(7.215) Douglas is frankly trying our patience.

The argument rests on the widespread assumption that the possibility of verb raising is tied to the richness of inflection (see Vikner 1994, 1995 for a detailed theory of this connection). As is well-known, the Romance languages, more heavily inflected than English, allow main verbs to raise to Tense, while English allows only auxiliaries to do so. In a parallel way, the Romance languages allow participles and infinitives to raise, while English does not, thus accounting for the contrast in (7.202)–(7.203). This conception predicts that lack of inflection (or close to it) should correlate with no verb movement at all.

This is precisely what we find with Chinese, which is only minimally inflected, with nothing but simple aspect markers on main verbs and no participial inflections parallel to the Romance and English forms. Thus the only inflection-related verb raising it has (if at all) is covert, with the aspect markers raising to Asp to check their features (Ernst 1995b). As demonstrated by Ernst (1996b, 1998a), Chinese does not show the ambiguities associated with V-to-T, such as alternate readings of modals and negation, modals and adverbs in post-Tense position, or the sentential-scope option for focusing adverbs like *even* discussed in section 7.2. This is as predicted: the order of adverbs and auxiliaries should strictly follow linear order (indicating c-command), see (7.216)–(7.217).

(7.216) a. Ni bu keyi qu.
you not may go
'You [may not] go.' ['You are forbidden to go'; Not > Permission]

b. Ni keyi bu qu.
you may not go
'You may [not go].' ['You have permission to not go'; Permission > Not]

(7.217) a. Ta liang-ci neng chi yi-dun hao cai.
s/he two-time can eat a-meal good food
'S/he twice was able to have a good meal.'
b. Ta neng liang-ci chi yi-dun hao cai.
s/he can two-time eat a-meal good food
'S/he was able to twice have a good meal.'

In (7.216)–(7.217) the modal cannot raise over negation or an adverb (as it does in English and French), so linear order represents the unique possible scope relation in each case.[49]

Thus the three-way distinction between Romance, English, and Chinese languages shows a consistent correlation between the richness of inflection and the possibility of reverse scope options for adverbs and other AuxRange elements: the more inflection, the more such options exist, which supports a verb-raising approach to this word order/scope phenomenon. But it also supports a theory with very *limited* verb movement, unlike Cinque (1999) and the others in that tradition. Since Cinque's theory would require *some* overt verb movement in Chinese – modals across frequency adverbs, necessary to derive (7.218b), for example – we would predict scope ambiguities or cases where one word may take scope over one to its left.

(7.218) a. Xuesheng changchang neng pao dao shanding shang.
student often can run to mountaintop on
'Students often can run up to the mountaintop.'
b. Xuesheng neng changchang pao dao shanding shang.
student can often run to mountaintop on
'Students can run often up to the mountaintop.'

As expected, the Chinese sentences in (7.218) are univocal, with linear order mirroring the scope of the modal and the adverb. Compare this to the ambiguous English counterpart in (7.219), with overt movement of *can* yielding the readings of both (7.218a) and (7.218b).

(7.219) Students can often run up to the mountaintop.

Thus, if we assume the limited movements triggered (as is traditional) only by some sufficiently rich morphology, the language-specific facts and the cross-linguistic contrasts of English, French, and Chinese fall out directly.

7.6.5 Summary

In this section I argued that cross-linguistic variation in the order of adverbs and auxiliaries should be taken as the result of verb raising, but only very limited verb raising. In general, when an adverb in an Aux – AdvP sequence may take scope over Aux, the latter raises over the adverb, and the Scope Principle permits using the trace to mark its scope. Where an adverb may have scope over two preceding auxiliaries, I proposed that the second auxiliary raises to adjoin to the trace (copy) of the first. By allowing "extended chains" in such cases, the adverb may take wide scope, but there can be no multiple raisings through heads that were once occupied overtly; a head can only raise as far as the trace of the next highest overt head. Aside from the advantage of restricting head movement options and preserving the Mirror Principle, empirical evidence for these proposals was found in English Modal + *have* constructions and in the three-way contrast between French, English, and Chinese.

7.7 Conclusion

In this chapter we saw evidence that the proposed semantically based licensing principles can correctly account for the distribution of adverbials in the AuxRange. The basic prediction is that as long as the Directionality Principles and Weight theory are respected, nothing purely syntactic restricts where an adverbial can adjoin in base structure – it is free to adjoin anywhere. This being so, we must explain why the many impossible positions and orders are ungrammatical. As always, the form of the explanation is: in such cases, the semantic selectional requirements of one or more adverbials cannot be met.

Thus we need to know a given adjunct's selectional requirements, what sort of FEO its sister is, and what kind of FEO results from its combining with that sister. The FEO Calculus allows taking any SpecEvent and making it into an event or taking an event to form a proposition, but this process cannot be freely reversed. Most adjuncts' selectional requirements conform to this ban on lowering, either preserving or raising the FEO type, although a few adjuncts and covert coercion operators can take propositions to yield events or can change one event type to another. The only mechanisms available to license adverbs on the LF side of the grammar are lexical requirements and the compositional rules of the FEO Calculus, including the fixing of some of these rules to specific points in the clause.

All this applies to base structure. Syntactic movement may change orders, but the evidence discussed here suggests that, aside from finite verbs moving to Tense, head movement is rather limited.

The data presented in this chapter, collectively, provides two strong pieces of evidence for this theory of adjunct licensing, reflecting two arguments originally presented in chapter 3. First, cases of genuinely rigid order among functionals are not as common as recent literature suggests. Once the right context is found and other obscuring factors removed, many pairs of adverbials from this group may occur in either order. Where rigid orderings are discovered, they seem to be reducible to semantic clashes resulting from independently necessary semantic mechanisms, either selectional requirements or properties of the FEO Calculus. Predicational adverbs do show more rigid orderings, but fewer than is often supposed; and again, the rigidity is explained naturally, without recourse to syntactic stipulations.

Second, the degree to which a given adjunct subclass may co-occur in a sentence with others, and with auxiliary elements, is directly predictable from the degree of restrictiveness in its lexical semantics. Thus the same fundamental, semantically based principles underlie a broad range of facts about the distribution of AuxRange adjuncts.

To be sure, the data reviewed are only the proverbial tip of the adverbial iceberg: we have only sampled the possible orderings of adjuncts and other elements, have only considered a handful of actual examples from each subclass, and have tested the theory on only three languages in any depth. From what we have seen, however, a simple, compact, and restrictive set of principles appears to account for a wide range of data in the AuxRange.

8

Adjuncts in Clause-Initial Projections

8.1 Introduction

8.1.1 Overview

In this chapter I examine the distribution of clause-initial adjuncts, such as those in (8.1).

(8.1) a. Obviously this is going to bother you.
b. {Domestically/In most states}, that law doesn't apply.
c. Donald thinks that for all intents and purposes the season is over.
d. Briefly, what did you say the plan was?
e. Scarcely had they arrived when the mirror fell off the wall.
f. (*Just) A guy (just) can't get any respect around here.

Clause-initial adjuncts are fairly free in English, as (8.1a–b) show, with or without comma intonation. They occur not only in matrix declarative clauses but in embedded clauses (8.1c), in initial position in interrogatives (8.1d), and in negative inversion structures (8.1e). I also address the questions of why some adverbs may occur between subject and finite verb but not before the subject (8.1f), and why some languages forbid adverbs between the subject and the finite verb, such as French in (8.2) (compare the English glosses, where all three positions are possible).

(8.2) a. *Jean-Pierre {certainement/souvent/stupidement} a parlé
Jean-Pierre certainly/often/stupidly has spoken
à Marie.
to Marie

b. Jean-Pierre a {certainement/souvent/stupidement} parlé à Marie.
Jean-Pierre has certainly/often/stupidly spoken to Marie
c. {Certainement/Souvent/Stupidement}, Jean-Pierre a parlé à Marie.
certainly/often/stupidly Jean-Pierre has spoken to Marie
Jean-Pierre {certainly/often/stupidly} spoke to Marie.'

The major part of the answers depends on the features defining extended projections, specifically the feature composition of the Tense node, which is the interface between the realm of [+C] heads (which license regular semantic rules for the interpretation of nonhead predicates, arguments, adverbs, etc.) and [+Disc] heads (which introduce such discourse notions as illocutionary force, focus, and topic). In particular, I propose that the difference shown in (8.2) results from whether a language takes Tense as [+C] or [−C]. In the course of the discussion, it will be necessary to examine the elaborated structure of what Rizzi (1997) calls the Left Periphery (referred to here as the CompRange). Rizzi proposes that what used to be taken as Comp and IP- (TP-) adjoined positions may profitably be taken as a series of functional heads: Comp (Force), Focus, and Topic. Although I argue for a somewhat pared-down version of the CompRange, its effects are important. For clause-initial adjuncts I propose that topicalized adjuncts (possibly several) may adjoin to projections bearing a [+Top] feature, particularly TP and TopP.

8.1.2 Goals and Organization

As always, formal syntactic research in the P&P framework must aim to balance empirical and theoretical goals. On the empirical side, I try to account for the possibility of adjuncts occurring in the positions sketched in section 8.1.1 and for their ungrammaticality in the pattern in (8.2a) in French, as well as for their ungrammaticality in presubject position in some structures in some languages. There are three theoretical goals: (a) to identify and elaborate the principles determining the distribution of adjuncts in the CompRange; (b) to show that semantic principles play an important role even here, where purely syntactic devices are more in evidence than in the AuxRange; and (c) to flesh out the details of the subtheories necessary for these tasks (in particular, the features defining extended projections, Weight theory, and the linked theories of checking and movement theory).

Sections 8.2–8.3 contain the main proposals of this chapter. The first of these addresses the phenomenon shown in (8.2), in which some languages forbid adjuncts between the subject and finite verb; section 8.3 argues that the feature [+Top], which triggers movement to clause-initial projections, can be checked more than once for adjuncts, allowing multiple adjunctions. In sections 8.4–8.6 I discuss related issues: conditions on adjunct preposing, the status of FocusP and ForceP, and the question of alternative subject positions in Germanic languages. I close with a summary and short discussion in section 8.7.

8.2 Adjunction to T′

8.2.1 Introduction

In section 8.2 we examine restrictions on adjuncts adjoined to T′. (Throughout this chapter, Infl and Tense are taken as equivalent and Tense is abbreviated as T in more technical discussions.) Given the view of adverbial licensing under development here, we may not take anything in the meaning inherent in T^0 to affect the general (in)ability of adverbials to occur adjoined to this projection, since there is no relevant difference in the semantics of tense between languages that show the I′-Restriction and those that do not. Therefore, we must look to more syntactically based principles to explain it.

8.2.2 The I′-Restriction

8.2.2.1 The Data

The I′-Restriction is the ban on (nonparenthetical) adjuncts between the subject and finite verb, stated in (8.3).

(8.3) The I′-Restriction: Nothing may adjoin to I′ (T′).

The I′-Restriction has been claimed at least for French and Danish. For French the evidence is fairly straightforward, as the pattern shown in (8.2) holds generally. In Danish it is less clear; although some clause types forbid adverbs between the subject and finite auxiliary, as illustrated in (8.4) (Vikner 1995:142 (25a–b)), (8.5b) shows that this is allowed elsewhere.

(8.4) a. Helge vil gerne læse den her bog.
Helge will readily read this here book

b. *Helge gerne vil læse den her bog.
Helge readily will read this here book

(8.5) a. *Det var en overraskelse at Helge ville gerne læse den
It was a surprise that Helge would readily read this
her bog.
here book
b. Det var en overraskelse at Helge
It was a surprise that Helge
gerne ville læse den her bog. (Vikner's (27a–b), p. 143)
readily would read this here book

By contrast, English and several Romance languages other than French generally allow adverbs in this position, providing prima facie evidence for adjunction to Infl′ (raising of the finite verb to Infl is standardly assumed for the Romance languages in (8.7).

(8.6) a. Kim {obviously/cleverly/deliberately} was accompanying Bart to the dance.
b. The report {almost/hardly/just} had caused a sensation.

(8.7) a. Gianni stupidamente accettò di venire. (Italian)
Gianni stupidly agreed to come
b. O Paulo provavelmente foi para Paris. (Portuguese)
Paul probably went to Paris
c. Juanita siempre va con nosostros. (Spanish)
Juanita always goes with us

On the one hand, in a theory of clausal structure like that of Chomsky (1986), where IP immediately follows Comp, and VP (possibly an auxiliary VP headed by *have* or *be*) immediately follows Infl (Tense), adverbs like those in (8.6)–(8.7) must be adjoined to I′. On the other hand, if Infl is split into Agr, Tense, and possibly other categories, as for Pollock (1989) and the bulk of writers on clausal architecture since 1989, it is possible to say that the adverbs adjoin to the maximal projection below the one hosting subjects; for example, the adverb adjoins to TenseP and the subject is in Spec,AgrP. Note that with the "split Infl" analysis nothing forces this adjunction: it would still be possible to adjoin the adverbs to Agr′, with the subject in Spec,AgrP and the finite verb having raised into Agr. Nevertheless, one attraction of positing adjunction to TP is that, adjunction at the X′ level might be barred in UG. In this case, "I′-adjunction" is really adjunction to T″ (IP). We examine

these alternative hypotheses after a preliminary excursus about the nature of arguments against adjunction to X′ nodes in general.

8.2.2.2 Arguments about X′-Adjunction

Before examining possible analyses of the I′-Restriction, three comments are in order, the first two about commonly heard arguments for banning adjunction to X′ nodes. First, a "conceptual argument" is often appealed to, and although it is rarely articulated, the relevant concept seems to be that adjuncts should, iconically, adjoin only to the edges of maximal projections because they are more peripheral (perhaps less central semantically?) to a phrase than heads and whatever goes in Spec positions. The argument, presumably, is that restricting adjunction to the X″ level captures this notion of peripherality. However, this sort of appeal to iconicity is very widely ignored in formal syntax,[1] which is founded on (and makes a virtue of) ignoring such notions unless they are formalized. To my knowledge, this particular functional notion has not been formalized, and to the extent that it could be, it is not clear that it is correct (see Ernst 1991b for some discussion). For example, if it is semantically based, it is not clear why it should ever apply in functional projections outside VP: there are no arguments interpreted there to be peripheral to, nor does it seem that, for example, a DP subject licensed by a purely formal EPP feature should be more "central" to its licensing head than some clausal adjunct (which is presumably more closely related semantically to higher clausal heads than subjects are). Thus the conceptual argument has relatively little force.

Second, restricting adjunctions to the X″ level represents a legitimate attempt to constrain the class of possible grammars. However, it is not so obvious that this move is ultimately more restrictive once all the relevant facts are accounted for. In what follows, I hope to establish that allowing X′-adjunction is no worse in terms of restrictiveness than the alternative, which is to posit a number of ad hoc functional heads and/or head movements.

Observe that there are relatively few clear cases of a filled Spec with an overt head; the major ones of which I am aware are shown in (8.8).

(8.8) a. XP-Comp (where XP is usually a *wh*-phrase, but not always)
b. XP-Top/Foc
c. Subj-Infl (Infl = Tense, Agr, Fin, etc., depending on the language and analysis)
d. Neg-V (where Neg is in Spec: English, French, Chinese)[2]

(It might be that other sites for X′-adjunction exist, where either X or its Spec

is empty, but if so one cannot easily be sure if adjunction is to X′; adjunction could be to XP if Spec is empty or to the YP complement of X if X is empty.) Of these four cases, (8.8a–b) in fact do seem to bar adjuncts between head and Spec, while (8.8c–d) appear to provide many instances where adjuncts in fact intervene. In the first group, Danish illustrates the pattern for (8.8a) in (8.4). Assuming that V2 is obligatory in matrix clauses with V moving to C (Vikner 1995), then *gerne* 'readily' is adjoined somewhere below C in (8.4a) (e.g., to VP) but is adjoined to C′ in (8.4b).

We also saw in (8.7) that adverbs appear to adjoin to I′, the pattern in (8.8c); and (8.9) shows adjunction between Neg and the following modal verb (the pattern in (8.8d)).

(8.9) Tamen bu tiantian dou hui ba pijiu he-wan. (Chinese)
they not every-day all will BA beer drink-finish
'They will not finish drinking the beer every day.'

If X′-adjunction is to be uniformly banned, then syntactic theory must compensate by adding (a) empty functional heads and/or (b) extra movement constraints and triggers. Consider how the facts can be captured without X′-adjunction:

(8.10) a. $[_{\text{NEGP}}$ bu Neg $[_{\text{XP}}$ AdvP X $[_{\text{VP}}$ V]]]
b. $[_{\text{XP}}$ Subj X $[_{\text{TP}}$ AdvP $[_{\text{T}}$ $V_i]$ $[_{\text{VP}}$ $t_i]]]$

Chinese *bu* 'not' could be analyzed as being in Spec,NegP, as in (8.10a), with Neg being the empty head of NegP. In this structure, an adverb in the pattern of (8.8d) is adjoined to (or in the Spec of) some XP complement of Neg. (See Laenzlinger 1997:11 for this sort of analysis.) In (8.10b), to account for the pattern of (8.7), the addition of XP is necessary for the adverb to be taken as adjoined to the maximal projection TP. Then, if X is Agr, Mood, or some other head requiring affix checking at LF (i.e., assuming standard views of checking and agreement), we must account for the fact that V must raise into X at LF, but in overt syntax move only as far as Tense for English and Chinese, and into X for French. We therefore must posit movement triggers that may differ between languages, and, at least in the case of Chinese – where there is no relevant verbal morphology to justify an LF checking process that would justify the existence of XP in (8.10b) – we must posit another ad hoc functional head and specify that subjects move to its Spec position (perhaps by stipulating that X hosts an EPP feature). If we adopt a theory allowing adjunction to X′, we permit a more restrictive theory of both empty functional heads and movement triggers.

The addition of these mechanisms reduces the restrictiveness of the grammar by forcing an unconstrained account of head movement, rather than a simple one where Infl (Tense) and Comp are the only possible targets, and by allowing extra, empty functional heads as in (8.10b). Since there are possible ways to constrain X′-adjunction, there seems to be no compelling argument from restrictiveness against it. (Of course, it is still necessary to account for (8.8a–b); we return to this matter in section 8.5.)

The third argument relating to X′-adjunction is that, given the phrase structure theory of Speas (1990) and Chomsky (1995a), there is no straightforward way to ban X′-adjunction, because it is impossible to refer to bar levels. Within this theory, it might seem that allowing X′-adjunction is unavoidable, but this is not quite true: there are indirect ways to get the same result. For example, one could ban adjunction to X′ by defining Spec as the sister of the node immediately dominating a head and its complement (Speas 1990, Sybesma 1999; cf. discussion in Ernst 1993, Chametzky 1996). This approach, however, requires a way to identify the node made up of just the head and complement, a mechanism presumably banned in a minimalist phrase structure theory. Alternatively, although Chomsky preserves the distinction between Spec and adjoined positions (by assigning different labels to the projection that results from their creation by Merge or Move), it would be possible to order them. One could claim (sticking to Merge operations for simplicity) that UG says either (a) all adjunctions come before an item is merged into Spec; (b) all adjunctions come after this point; or (c) there is no restriction. These correspond, respectively, to allowing (a) only X′-adjunction, (b) only adjunction to XP, or (c) adjunction at either level. It remains true that (c) is the null option (it is implicitly chosen by Chomsky [1995a:421]), as it makes for a simpler grammar, other things being equal. However, further arguments must consider the exact mechanisms involved.

Henceforth I assume that adjunction to the X′ level is possible in principle. Of course, we must still explain the cases where nothing may appear between a Spec and its head. In the next subsection I examine analyses of the I′-Restriction, showing that they all pose serious difficulties.

8.2.2.3 Previous Analyses

Previous analyses of the I′-restriction fall into two categories: those in the tradition of Pollock (1989), with a split Infl, and those that explicitly reject the split Infl line of analysis. I briefly discuss them in turn, starting with the latter.[3]

Williams (1993) and Bouchard (1995) attempt to account for the relative order of verbs, adverbs, and negation without positing either Agr (or any

other Infl-related functional projections besides Tense) or raising of V to Tense (-T^0). Both variants are characterized by the properties in (8.11).

(8.11) Immobile V Analyses (Williams 1993, Bouchard 1995):

a. There is no V-to-I raising.
b. Adverbs' semantic interpretation is with respect to heads (V^0, T^0).
c. Adverbs may (sometimes must) adjoin to the heads they modify.

I focus on Bouchard's analysis for illustrative purposes, although my main points also apply to Williams' version. (For more discussion of their approach, see Abeillé and Godard 1997.)

In Bouchard's approach, the crucial difference between French and English is not that only the former triggers raising of V to T, but that French T is "strong" and thus a separate node from V, while English T is "weak" and forms an amalgamated T/V node. English allows left-adjunction of heads, so an adverb may adjoin to T/V; if the adverb in question is clausal (such as *probably*) it can then modify T, and if it is a verb modifier (like *softly*) it can modify V, since both are parts of the amalgamated node. The correct result for main verbs is shown in (8.12a).

(8.12) a. Claude {probably/softly} calls his cat.
b. Claude {probably/*softly} has called his cat.
c. Claude has {probably/softly} called his cat.

When an auxiliary is present, the result is the same for pre-T clausal adverbs like *probably,* but manner adverbs like *softly* are correctly ruled out because they would be forced to adjoin to and modify the auxiliary (presumably, part of a T/Aux node), rather than V, and this would be semantically anomalous, as in (8.12b). When it is after the auxiliary, as in (8.12c), the manner adverb can felicitously modify V; for *probably,* T licenses clausal adverbs to its right under c-command (Bouchard 1995:415).

(8.13) a. Claude {*probablement/doucement} appele son chat.
Claude probably/ softly calls his cat
b. Claude {*probablement/*doucement} a appelé son chat.
Claude probably/ softly has called his cat
c. Claude a {probablement/doucement} appelé son chat.
Claude has probably/ softly called his cat

For French, in (8.13), the explanation is the same as for English for the case of adverbs following an auxiliary (see (8.13c)), but for the pre-T cases

it is different. For both of these, the adverbs *probablement* 'probably' and *doucement* 'softly' must adjoin to T, but for French, adverbs left-adjoin only to heads (Bouchard 1995:409), and when they do so must modify some subpart of that head. For clausal adverbs like *probablement* modification of a subpart of the "pure" T in French is impossible;[4] for the verb-modifying *doucement* it is equally ruled out because it has no way to modify the verb, which in both (8.13a) and (8.13b) is separate from the T node.

There are a number of stipulative aspects of this analysis (as there are for Williams), but we may focus on the broad bases of Immobile V analyses as a class to see why they should be rejected in the form shown in (8.11). First of all, the mechanism of adverb-to-head semantic interpretation faces some of the same problems as found in Travis 1988, Alexiadou 1997, or Cinque 1999 discussed in chapter 3. These authors must stipulate the range of different heads that license an adverb to account for multiple positional possibilities for the same adverb with the same interpretation. Since Immobile V analyses ban "short" head movement, at least in spirit, they do not have the option of moving heads around the unique position for one adverb. Bouchard admits of a mechanism by which a clausal adverb may be licensed under c-command, and this appears to allow more possibilities, but how this is to work and how one would formulate the necessary restrictions on it are unclear.

Second, for both Williams and Bouchard the I′-Restriction ends up either being stipulative or making incorrect predictions. For Bouchard's account of (8.13a–b) to work, an adverb (as an element adjoined to a head) must modify a subpart of T, but in (8.13a) the verb itself cannot be one of its subparts or *doucement* would be grammatical preverbally. Instead, Bouchard claims, T contains only the binder of V. Yet, V is phonologically realized where the binder is – in T, not in V – and this, the equivalent of V-raising, is the crucial stipulation. Williams relies instead on direction-specific subcategorization frames (1993:166–67): clausal adverbs in English have the frame [__VP] or [V[+Aux]__], while in French they are marked [__V[-Tns]] and [V__]. It might be possible to relate the direction of head-adjunction to the morphological properties of the languages, as seen in the direction of (recursive) adjectival modification of nouns, leftward for English and rightward for French (see (8.14)). This would make the wrong prediction, however, for Italian, Spanish, and Portuguese, which are like French in this respect but like English in having no I′-Restriction.

(8.14) a. the happy woman (*happy)
b. la (*contente) femme contente

Third, both analyses depend heavily on adverbs as X^0 elements, adjoining to other X^0 elements – T^0 and V^0. However, it is clear that (in most cases, at least) adverbs are XPs, not X^0's. They can be modified (see (8.15a)), and they can be separated from the following head by a parenthetical expression, as in (8.15b); if they were X^0's adjoined to another X^0, parentheticals would be impossible (since parentheticals cannot break up a word).

(8.15) a. George quite obviously is reveling in his new job.
b. The judges always, it seems, had given a few extra points to their countrymen.

Moreover, in cases where weight restrictions do not hold, they may have complements, such as in the Chinese AuxRange (in (8.16a)), or sentence-initial positions in English and many other languages (as in (8.16b), where the fronted manner expression presumably must have moved from within VP and therefore ought to be a constituent, assuming that only constituents may move).

(8.16) a. Ta zongshi bi wo geng congming de fenxi ziliao.
s/he always than me more intelligent DE analyze material
'S/he always analyzes the material more intelligently than me.'
b. Very quietly for a six-year-old, Robert crept down the stairs.

Thus it appears that this sort of Immobile V analysis has fundamental flaws that make it dubious as the correct account of the I′-Restriction on adverbs.

Belletti (1990) provides a second approach to this phenomenon. She suggests that the French (8.2a) and its English gloss differ because English (and Italian) allow focalization freely, but French does not, as (8.17) illustrates.[5]

(8.17) a. *Jean j'ai vu.
b. John, I have seen.
c. Gianni ho visto.

Belletti proposes that English and Italian derive sentences with an adverb between subject and finite verb by moving the subject leftward in the same way that the object is moved in (8.17b–c), adjoining it to the left of sentence-initial adverbs. However, as Pollock (1997) points out, this wrongly predicts that a subject pronoun must be stressed when immediately followed by an adverb, as are object pronouns (see (8.18a–b)), and that while topicalized indefinite quantifiers, such as *nessuno* 'no one' in Italian, require contrastive stress (a fact Belletti uses as evidence for her approach) the same is not true of English (see (8.19)).

(8.18) a. *She*/She often will kiss me.
b. *Her*/*Her I will kiss.

(8.19) a. *Nessuno* probabilmente telefonerà alle 5.
b. No one probably will telephone at 5.

In addition, Belletti's proposal wrongly predicts, without additional mechanisms, that any adverb that can occur in postsubject position should also be able to occur before the subject, and vice versa, but this is not borne out:

(8.20) {*Almost/*Just/*Scarcely} Audrey {almost/just/scarcely} woke up.

Accounting for this fact would require some way to make movement of the subject sensitive to some property of an intervening adverb, which seems counterintuitive. Thus, given these arguments, it appears that Belletti's proposals are also inadequate.

A second general type of approach to the I′-Restriction, and perhaps the best known, is adopted by Zwart (1996), Pollock (1997), Alexiadou and Anagnostopoulou (1998), and Cinque (1999), who assume that there are different possible surface positions either for finite verbs or for subjects, or both, in the different languages. The most complete discussion of this approach is by Pollock (1997:262 ff.), who proposes the clausal hierarchy of functional heads in (8.21), and (simplifying somewhat) posits that while English (auxiliary) verbs move to Mood only optionally, in French this movement is obligatory.

(8.21) Mood – (Neg) – Tense – (Neg) – Agr

Assuming that subjects are in Spec,MoodP and that adverbs adjoin only to maximal projections (NegP or TenseP, and presumably also MoodP for presubject adverbs, in this case), the contrast between French and English with respect to the I′-Restriction is accounted for:

(8.22) a. *Paul probablement a accepté.
b. Paul probably has accepted.
c. Paolo probabilmente ha accettato.

In (8.22a) the French auxiliary *a* obligatorily moves to Mood, so that *probablement* 'probably' cannot adjoin between it and the subject *Paul*. In English the auxiliary *has* only raises to Tense, so that *probably* can adjoin legitimately to TP. Since French and Italian verb-raising patterns seem to be identical otherwise, Pollock further adopts Belletti's topicalization analysis for Italian subjects (see (8.22c)). Even though the Italian auxiliary *ha* raises to Mood

just as in French, the subject *Paolo* raises over *probabilmente* into a higher, focus-related projection. This combination of V-raising and topicalization avoids the problems in Belletti's analysis of the I′-Restriction while preserving the standard verb-raising differences between English and Romance languages.

For Cinque (1999:110ff.), UG provides another option to handle this sort of contrast, namely multiple subject positions. On this view the distinction between French and English/Italian in (8.22a–c) can be analyzed as having the adverb in a unique position but with two landing sites for subjects moving out of VP, one before the adverb, as in (8.22b–c), for English/Italian subjects and one after it (predicting (8.22a) for French, since the subject *Paul* must land to the right of *probablement*).

There are at least three problems with this group of analyses. First, there is little to suggest motivated movement triggers that would yield some of the patterns for subjects and adverbs. Pollock suggests that English tense morphology optionally counts as mood in the auxiliaries, thus allowing optional movement to Mood to check the relevant mood features (yielding Subject – Aux – AdvP order in English). But there is little reason to posit English tense as mood except as a way to trigger movement. With the multiple subject option, English/Italian would allow subjects to move (out of VP) into postadverb position and stay there (as in (8.23a)), or to move into a position preceding the adverb (as in (8.23b)); the I′-Restriction could be explained by forbidding this second movement for French.

(8.23) a. Purtroppo Gianni ha accettato.
unfortunately Gianni has accepted
b. Gianni purtroppo ha accettato.

However, there is no obvious explanation for why this movement to the higher site should occur at all, nor why it should be blocked in French but allowed in English and Italian (as Cinque admits, p. 115).

Second, this approach ignores the fact that adverbs in clause-initial projections tend to be foregrounded, that is, made salient or active in the mind of the speaker. In other words, they have the basic topic property of being "activated" (see Lambrecht 1994:160 ff.). In (8.24)–(8.25), for example, more emphasis is placed on *obviously/often* in (a) than in (b).

(8.24) a. (Obviously) Bob (obviously) has impressed the judges with his accordion solo.
b. Bob has obviously impressed the judges with his accordion solo.

(8.25) a. (Often) the ants (often) will form symbiotic relationships with plants.
b. The ants will often form symbiotic relationships with plants.

This is a problem for any theory that keeps the adverb in a unique position and moves the verb and/or subject around it, because the different position of the subject (or the presence/absence of a movement process) would somehow have to be linked to the interpretation of the adverbial, and there is no obvious way to do this in current generative theory.[6]

Third, this sort of analysis actually ends up requiring more empty functional heads than it seems at first. For example, on Pollock's analysis, an English auxiliary verb (optionally) moves to Mood to produce sentences like (8.26a), assuming that the adverb adjoins to TP. That *obviously* takes scope over *must* confirms this ((8.26a) means 'it is obvious that they are obliged to leave'), but other adverbs are possible before the auxiliary, as in (8.26b).

(8.26) a. They must obviously leave.
b. They now must obviously leave.

If so, then to avoid positing adjunction of the adverb to Mood', there must be another empty functional head above Mood, whose Spec hosts English subjects; the adverb must be adjoined to MoodP. In this case, we must say that French verbs now raise to this head rather than to Mood (or, alternatively, we must explain why adverbs cannot adjoin to MoodP in French).

Such examples can be multiplied, but in general the only argument for such extra functional projections rests on the assumption that adverbials have fixed positions. We have seen in detail in previous chapters that this assumption is not warranted. All of the various adverbial positions with respect to subjects and auxiliaries, except for the I′-Restriction itself, can be accounted for by allowing free-adjunction. Thus a theory permitting these empty heads is less restrictive than one disallowing them. It is therefore worth pursuing a more restrictive approach that minimizes the realization of such heads, in accordance with the principle proposed in chapter 1 (1.51), given again here as (8.27).

(8.27) Functional heads are legitimate iff (a) overtly realized or (b) they contribute to the semantic representation of a given sentence.

We turn to this alternative in section 8.2.3.

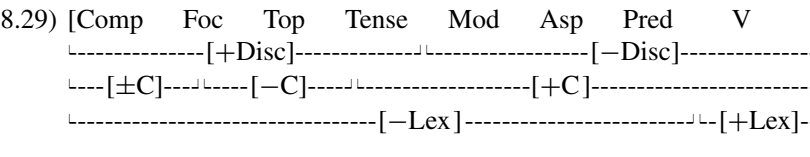
8.2.3 An Alternative Solution

8.2.3.1 Preliminaries: Extended Projections and Checking Theory

In chapter 5 I proposed that the phrase structure of the clause is generally constrained by extended projections and that the latter are defined by the features [±Lex], [±C] and [±Disc]. The first of these represents the familiar lexical/functional head distinction, with VP being lexical and all heads above VP being functional. [+Disc] heads are those primarily encoding discourse-related notions, such as illocutionary force, topichood, and focus interpretation, and most often are in the CompRange, although FocusP has occasionally been proposed at lower levels. [+C] heads define projections in which regular rules for the basic semantic interpretation for nonheads may apply. In what I take as the normal case for now, [+C] heads and [+Disc] heads overlap at T^0 and at C^0; that is, only these nodes may be both [+C] and [+Disc]. This reflects the original intuition of the *Barriers* framework (Chomsky 1986) that Infl (= Tense) and Comp are in some sense the primary functional projections in a clause, unlike the other functional heads of the AuxRange and CompRange:

(8.28) a. T^0, C^0 are normally [+Disc, +C]; otherwise,
b. [−Lex] heads below T^0 are [+C, −Disc]; those below C^0 are [−C, +Disc].

(8.29)–(8.30), in chapter 5 as (5.114)–(5.115), show (respectively) the schematic structure of the clause, with the relevant feature values for [±C], [±Disc], and [±Lex], and how the features define extended projections. (Henceforth I abbreviate Focus as Foc and Topic as Top.)

(8.29)


(8.30) Extended Projections:

Feature	Name	Highest xp
[−Disc]	Extended VP	AuxP (∈ {Mod, Asp, Voice}), NegP, PredP
[+C]	IP	TP[7]
[+Disc]	Extended CP	CP (= Rizzi's ForceP)

There are several implications of these feature assignments for the syntax of clause-initial adverbials. First, any [+C] XP allows adjuncts to be licensed

within that XP as long as their lexical requirements and those of the relevant semantic rule are fulfilled.[8] By assumption, adjunction may be to either the X″ or X′ level, so adjuncts may (in principle) adjoin anywhere up to and including both the X′ and the X″ levels of TP. However, in [−C] categories adjuncts may not be interpreted in situ, meaning, in effect, that no adjuncts may be base-generated in TopP or FocP.

Second, [+Disc] categories impose a "discourse interpretation" on adjuncts. This is, of course, the essence of categories like FocP and TopP, requiring that items in their Spec positions (whether arguments or adjuncts) be interpreted as focused and topicalized, respectively. Although there is evidence for focused items being restricted to one (in the Spec position of a unique FocP) there is equally evidence for multiple positions for topics and for multiple topics in one sentence. Full discussion is found in section 8.3, but for the moment, observe (8.31)–(8.32).

(8.31) a. I stress that if you come, most likely whatever you don't eat we will give to the dog.

b. Zhu Hong shuo hui-jia yiqian neixie ruanjian haoxiang
Zhu Hong says go-home before those software apparently
keyan xiaozu yao zai taolun yixia. (Chinese)
research group want again discuss once
'Zhu Hong said that before going home, that software, apparently the research team wants to discuss (it) a little bit more.'

(8.32) a. {In Seattle/In your opinion}, why would he open a taco stand instead of a coffee bar?

b. (Clearly) This matter (clearly) will (clearly) have to be resolved soon.

(8.31a–b) show examples of multiple topics, both the well-known and fairly common instances exemplified for Chinese and an English sentence, somewhat more awkward but acceptable with the right intonation. Topic phrases may precede Comp, as in (8.32a), or follow it, as in (8.31a–b). (8.32b) illustrates three positions for clausal adverbs, where (as noted above) speakers report a foregrounding effect for the first two positions that is missing for the third, post-modal position.[9] Given the multiple possibilities for topic expressions (as opposed to the uniqueness of focused phrases, and, in the normal case, moved *wh*-expressions), I take [+Top] as a feature that can occur on any [+Disc] node and license a topic interpretation on any item in Spec or adjoined position.

I assume that Full Interpretation requires either [+C] or [+Disc] on every clausal head (i.e., ignoring features within DP, PP, etc.). This is expressed in (8.33a), along with other featural relationships in (8.33 b–c) and necessary definitions in (8.34)

(8.33) a. $[-\alpha] \rightarrow [+\beta]$, where $\alpha, \beta \in \{C, Disc\}$ and $\alpha \neq \beta$
b. [+Lex] → [+C]
c. [+Disc] is always a checking feature

(8.34) a. primary feature: the feature that provides the categorial label for X^0
b. checking feature: any feature (including primary features) on X^0 against which the same feature of an item in the checking domain must be checked

(8.33a) states that all heads must be able to license a base-generated argument or adjunct, or they must add a discourse interpretation to such nonheads, or both. (8.33b) simply states formally the usual assumption that lexical categories, VP for our purposes, may generally host arguments and adjuncts in base structure. For (8.33c) I take [+Disc] as a cover term for features such as [+Foc], [+Force], or [+Top]. This statement claims that, regardless of whether one of these is a primary feature (and thus the head of FocP, ForceP, TopP, etc.), it checks this feature in its checking domain. For example, as is commonly assumed, Foc^0 checks [+Foc] in Spec,FocP.[10] [−Disc] primary features, such as those for V or Modal, need not be checking features. Note also that (8.33)–(8.34) do not involve any new notions; they are merely a hypothesis about the organization of the set of features already widely assumed in current P&P syntax.

In chapter 4, Spec positions were defined as those adjoined positions where a [+F] feature is checked. I take all features that license XP phrases in [+Disc] categories to be [+F] features and assume (as is standard) that all [+F] features must be checked:

(8.35) All [+F] on YP in the checking domain of X^0 must be checked against [+F] in X^0.

If a given maximal projection may host only one [+F] feature, then there is a unique Spec for any maximal projection. However, I posit that a limited number of [+F] features (for this chapter, only one of these is at issue, [+Top]) may be checked more than once in a single projection. This requires a slight revision in the definitions given in chapter 4.

As already mentioned, I assume (with Speas [1990], Ernst [1993], and others) that the X′ schema ought not to be a primitive, and that Spec position should be a derived notion. Any projection starts from some item X drawn from the lexicon; as items are Merged or Moved, the resulting node is another instance of X. Ernst (1993) proposed that one of these X nodes (labeled X* for convenience) may be arbitrarily chosen; features can then be assigned or checked with respect to the sister of X*. This unique sister of X* is defined as Spec:[11]

(8.36) Spec_{def}: [+F] sister of X*

Adopting the assumption of one Spec per projection, we require that [+F] (checking) features on nonheads be in a one-to-one relationship with primary features in the normal case (the standard view until recently).[12] Now we may define the checking domain for maximal projections (YPs) as in (8.37).[13]

(8.37) checking domain for YP: the set of positions adjoined to X_n and c-commanding X_n*

The formulation (8.37) includes Spec,XP positions in the checking domain for X, since the sister of X* c-commands X* (consistent with Chomsky 1993). I assume, following Rizzi (1997) but contra Chomsky (1995b), that when a feature is checked it is not erased, because it still may be necessary for its semantic effects at LF; this is especially obvious for the discourse-oriented features like [+Top] and [+Foc] that are at issue in this chapter.

8.2.3.2 Analysis

The crucial assumption for the analysis of the I′-Restriction was expressed in (8.28): T^0 is normally both [+Disc] and [+C].[14] Thus, adjuncts may be base-generated adjoined to T′ or TP, but if so they must have a topic interpretation, (I continue to refer to bar-levels informally, although they should be understood in terms of the formulations given here). That assumption also means that we have a way to capture the I′-Restriction: languages that display it have T^0 nodes that are [−C], forbidding base-generation in adjoined positions. In these languages anything adjoined to TP must be moved there, semantically licensed in some lower position, and moved to TP by some featural trigger. Given the usual assumption that items only move if triggered (Last Resort; Chomsky 1995b) and the assumption that such features can only be checked in the checking domain made up of Spec or X″-adjoined positions, for any language with a [−C] T^0 node only adjunction to T″ will be possible, via

movement, and not adjunction to T′.[15] Thus, the predictions are as stated in (8.38).

(8.38) a. Only languages with [+C] T^0 allow adjunction to T′.
b. No (syntactic) movement to T′ is possible.

As support for this analysis, observe that adjuncts may occur between the subject and finite auxiliary in languages having the I′-Restriction, but only if they are parenthetical expressions, moved there by "nonsyntactic" movement. As discussed further in section 8.3.3, parenthetical expressions are derived at PF and therefore do not necessarily obey LF-encoded principles. Thus they may be moved downward (ignoring c-command), and they may land in X′-adjoined positions, in general. This latter is shown for French in (8.39)

(8.39) Les entraineurs, {parait-il/ malheureusement/délibérément}, ne
the coaches it-seems/unfortunately/ deliberately Neg
sont pas encore partis.
are not yet left
'The coaches, {it seems/unfortunately/deliberately}, haven't left yet.'

Clause-initial adjuncts are not necessarily parentheticals, however, as the lack of any special comma intonation in (8.40) illustrates (of course, any constituent may also be set off intonationally and thus become a parenthetical expression, without being moved).

(8.40) Il prétend que très souvent un des chevaux a
he claims that very often one of-the horses has
été drogué. (French)
been drugged
'He claims that very often one of the horses was drugged.'

This lends support to the claim here that the I′-Restriction is most basically a matter of licensing a position at LF, because it can be circumvented at PF, where neither [−C] operates to deny semantic interpretation to an element adjoined to T′, nor a movement trigger [+F] needs to be checked at LF.

8.2.3.3 Light Adverbs and T′-Adjoined Position

English, as well as Italian, Spanish, and Chinese, have a T^0 bearing both [+C] and [+Top], so T′-adjunction is possible in these languages. Why is

T″-adjunction of light adverbs not possible? This was illustrated in (8.20) given again here as (8.41), and is shown for Italian, French, and Chinese in (8.42)–(8.44), respectively (see also chapter 4 and Ernst 1998e).

(8.41) {*Almost/*Just/*Scarcely} Audrey {almost/just/scarcely} woke up.

(8.42) a. (*Già) Maria (già) è di ritorno, per la una.[16]
already Maria already is returned at the one
'Maria had already returned, at one.'
b. (*Quasi) Maria (quasi) cadde dall' emozione.
almost Maria almost fell from emotion

(8.43) a. (*À peine) les enfants comprennent (à peine) ce que dit
barely the children understand barely that which says
l' institutrice.
the teacher
'The children barely understand what the teacher says.'
b. (*Presque) Jean-Claude est (presque) tombé la première fois.
almost Jean-Claude is almost fallen the first time
'Jean-Claude almost fell the first time.'

(8.44) a. (*Cai) Xiaolan (cai) mai-le san bang niurou.
only Xiaolan only buy-PRF three pound beef
'Xiaolan only bought three pounds of beef.'
b. (*Ye) Xiaolan (ye) huilai-le.
also Xiaolan also come-back-PRF
'Xiaolan also came back.'
c. (*Luan) tamen (luan) reng-le bi.
wildly they wildly throw-PRF pen
'They threw pens all over the place.'

The difference in acceptability between the two adverb positions cannot be simply linked to the presence or absence of the I′-Restriction, since French shows the same pattern of light adverbs as Italian, English, and Chinese, none of which show the restriction. Also, because we are assuming that the post-subject occurrences are adjoined to T′, we cannot make the ungrammaticality of the presubject occurrences contingent on some fact about the T node, which affects both T′- and T″-adjunction.

Consider instead a solution related to the topichood of clause-initial adjuncts. Suppose T bears the feature [+Top], and this is an iterable feature, as defined in (8.45):

(8.45) Iterable feature$_{def}$: any checking feature [+Z] that permits checking of more than one YP with respect to X^0.

Since the iterable feature [+Top] can be checked more than once by the same head, multiple topic(alized) adjuncts should be allowed adjoined to TP. (None of them need be in Spec,TP and, in fact, cannot be when this position is occupied by a subject.) Now note that the adverbs in (8.41)–(8.44) are Lite adverbs (see chapter 5), acceptable only when adjoined to functional projections in the AuxRange. Thus their inability to appear in clause-initial position could be due to an increment of weight that must be added in the checking domain of a head bearing this feature; this is natural given that focus or topichood is one factor in weight. If so, just as the presence of a left-adjoined heavy adjunct in a functional projection causes a Weight theory violation (see (8.46), for example), a Lite adverb, incapable of being heavy, causes violation if it is forced to have too much weight (see (8.47)).

(8.46) *They will without looking have crossed the street.

(8.47) Checked [+Disc] features on XP add heaviness to XP.

All items adjoined to T″, in the checking domain of the head, will fall under (8.47), whether base-generated there or moved there. Since the same holds of all [+Disc] features, Lite adverbs can never move; if they move upward they will always be forced to be too heavy, and if they move downward the ECP will be violated. Note that Lite adverbs do not move rightward either (unless they are parenthetical expressions derived in PF, in which case they are set off prosodically):

(8.48) Audrey {almost/just/scarcely} woke up {*almost/*just/*scarcely}.

This follows on the normal assumption that syntactic rightward movement is only possible if the moved constituent is heavy, and that Lite adverbs cannot be made heavy.

The proposal in (8.47) receives support from the contrast in (8.49)–(8.50), showing that adverbs that have moved to clause-initial adjoined position prefer parentheticalization, while they did not in their original positions.

(8.49) a. {Wisely,/??Wisely} they stopped for the night.
b. {Cleverly,/??Cleverly} Bob hid his accordion behind the seat.

(8.50) a. {Possibly,/Possibly} they stopped for the night.
b. {Apparently,/Apparently}Bob hid his accordion behind the seat.

As discussed in chapter 3, agent-oriented adverbs like *wisely* and *stupidly* must be c-commanded by the DP denoting the relevant agent, which means that they can only be licensed below surface subject position. By contrast, speaker-oriented adverbs like *possibly, clearly*, and *luckily* are possible in clause-initial position. As (8.49)–(8.50) illustrate, the latter group is better without comma intonation in initial position, while the former appears to require it or at least strongly favor it. This is predicted if the agent-oriented adverbs in (8.49) have to move to adjoin to TP and the speaker-oriented adverbs in (8.50) do not. (Frey 2000: 121ff. reaches the same conclusion on the basis of German.)

The morphological character of the restriction on Lite adverbs is borne out by data like (8.51) from Chinese, where the two adverbs *gang* and *gangcai* 'just now' have the same meaning but differ in weight; only *gangcai* is possible in initial position:

(8.51) a. {Gangcai/*gang} Xiaolan jiao-le yi-sheng.
just-now Xiaolan cry-PRF one-sound
b. Xiaolan {gangcai/gang} jiao-le yi-sheng.
Xiaolan just-now cry-PRF one-sound
'Just now Xiaolan gave a shout.'

The same point holds with respect to cross-linguistic variation. The Italian sentence with *già* sentence-initially is ungrammatical in (8.42a), while its English equivalent is fine in (8.52) (contra Cinque 1999:112); and where the Chinese *zhen* 'really' in (8.53a) is bad sentence-initially, its English equivalent is acceptable in (8.53b)

(8.52) Already Maria had come back, at one o'clock.

(8.53) a. (*Zhen(,)) Tamen (zhen) bu dong.
really they really not understand
b. (Really,) they (really) don't understand.

Thus whether a light adverb is Lite or not is subject to some measure of arbitrary variation.

8.2.4 Summary

In this section, a primary goal was to account for the I′-Restriction: that some languages allow adjunction to T′, and others forbid it. I proposed that this turns on whether the language marks its T^0 node as [+C] or [−C]. Only a [+C]

T^0 node allows (semantic) licensing of base-generated adjuncts adjoined to either the T′ or T″ levels. A second goal was to explain why, in the languages with a [+C] Tense node, certain light adverbs may only adjoin to T′ but not to T″. If they adjoin to T″, they must have the [+Top] feature checked there, and this adds weight to the adverb, which is too light to bear this weight.

8.3 Clause-Initial Adjuncts

8.3.1 Introduction

In section 8.2 we established that clause-initial adjuncts may adjoin to a TP bearing [+Top]. In this section I elaborate on the question of [+Top] in TP and TopP. In particular, I argue that topicalized arguments are in Spec,TopP but that adjuncts may adjoin to any projection bearing [+Top]: TP, TopP, or others in the CompRange.

8.3.2 Clause-Initial Adjunction and Argument/Adjunct Asymmetries

8.3.2.1 The Issue

As noted in section 8.2, any (semantically appropriate) adverbial may adjoin to TP in English, since TP is [+C]. TP also bears [+Top] in English; since this feature is iterable, nothing restricts the number of TP-adjoined adjuncts. These topic adverbials may either be base-generated (licensed via ordinary semantic composition as permitted by [+C]) or be moved, via Last Resort, to satisfy checking requirements (assuming that [+Top] is freely assigned on adverbials adjoined lower in the clause).[17] It is clear, though, that topicalized arguments do not iterate as easily, at least in head-initial languages like English, French, and Italian. This leads us to consideration of argument/adjunct asymmetries with respect to topicalization, which in turn provides evidence that, while moved arguments land in Spec positions, adjuncts moved by topicalization are adjoined.

Until recently, topicalization was usually assumed to involve adjunction to TP (= IP) and has explicitly been taken as such by Baltin (1981), Tang (1990), Lasnik and Saito (1992), Epstein (1998), and others. However, it has recently been claimed (e.g., by Müller and Sternefeld [1993] and Rizzi [1997]) that at least arguments, if not all topicalized phrases, are in the Spec position of a separate projection, TopP. There are three pieces of evidence that this latter position is correct for arguments but not for adjuncts, involving a difference in behavior between the two types of constituent (sections 8.3.2.2–8.3.2.4).

8.3.2.2 Iterability

First, in the head-initial western European languages like French and English, multiple topicalization of arguments is impossible ((8.54)–(8.55)), while multiple adjunct topicalization is fine ((8.56)–(8.57)).[18]

(8.54) a. Bill knew that, the necklace, Fred had given to Jeannette before he met Alice.
b. Bill knew that, to Jeannette, Fred had given the necklace before he met Alice.
c. *Bill knew that, the necklace, (to) Jeannette, Fred had given before he met Alice.

(8.55) a. Guillaume savait que, ce collier, Bruno l'avait donné à
Guillaume knew that this necklace Bruno it-had given to
Jeannette avant de rencontrer Alice. (French)
Jeannette before of meet Alice
'Guillaume know that, this necklace, Bruno had given to Jeannette before meeting Alice.'
b. Guillaume savait que, à Jeannette, Bruno avait donné ce collier avant de rencontrer Alice.
c. *Guillaume savait que, ce collier, à Jeannette, Bruno l'avait donné avant de rencontrer Alice.

(8.56) a. Bill knew that generally in Paris, even after seeing all the museums, tourists have much to choose from.
b. Bill knew that maybe this year, on all the beaches, people will be dancing to your music.

(8.57) a. Guillaume savait qu'en générale à Paris, même après avoir
Guillame knew that in general in Paris even after having
vu tous les musées, les touristes ont beaucoup de choses
seen all the museums the tourists have many of things
à voir.
to see
'Guillame knew that, in general, in Paris, even after having seen all the museums, the tourists have many things to see.'
b. Guillaume savait que peut-être cette année, sur toutes les plages,
Guillaume knew that perhaps this year on all the beaches
les gens vont danser à sa musique.
the people will dance to his music
'Guillaume knew that, perhaps, this year, on all the beaches, the people will dance to his music.'

(See also Fukui 1993.) If all topicalizations were to adjoined positions, and if we retain the assumption that adjunction is unrestricted except for semantic effects, there would be no easy way to account for these contrasts.[19] However, if we posit one (and only one) optional TopP immediately dominating TP, the facts can be made to follow. This TopP provides a Spec position for one topicalized argument, but there are no syntactic constraints on the number of adjoined phrases bearing the [+Top] feature, whether they adjoin to TP or to TopP. Presumably, the rather awkward sentences with a large number of topicalized adjuncts, such as (8.58), are explained by the processing/pragmatic difficulty of having too many activated, salient phrases.

(8.58) ??Bill knew that luckily this year, maybe, on all the beaches enthusiastically with their friends, people would be dancing to his music.

In the absence of such added difficulties, a sentence with multiple topicalized adjuncts is acceptable, as predicted if adjunction is involved. I assume that arguments may not check [+Top] features in adjoined positions because they are generated in Spec positions (licensed by a [+F] feature), and under some formulation of "proper movement," they must move only to Spec positions.[20]

8.3.2.3 Comp-trace Effects

The second argument/adjunct asymmetry with topicalized elements is in their behavior with respect to Comp-trace effects: in many languages, embedded subjects may not be extracted when preceded by an overt complementizer of the *that*-type:

(8.59) a. Who_i do they think t_i left?
b. *Who_i do they think that t_i left?

This phenomenon still holds in English when an argument is topicalized but is ameliorated when an adjunct is topicalized (Culicover (1993) calls this the "adverb effect," and for Rizzi (1997) it is the "anti-adjacency effect"):

(8.60) a. *Who do they think that, this painting, sold last year?
b. Who do they think that, {last year/luckily}, sold this painting?

Rizzi (1997) points out that the difference shown in (8.60) does not hold in French, where Comp-trace effects surface in a slightly different form from

English. (8.61a–b) (Rizzi's (111a–b)) illustrate that in French the complementizer *qui* allows subject extraction, while *que* does not.

(8.61) a. *Voici l'homme que je crois t que t pourra nous aider
here-is the man that I believe that will-be-able us help
l'année prochaine.
the year next
'Here is the man who I believe that will be able to help us next year.'

b. Voici l'homme que je crois t qui t pourra nous aider
here-is the man that I believe who will-be-able us help
l'année prochaine.
the year next
'Here is the man who I believe qui will be able to help us next year.'

But with *que*, where the Comp-trace effect holds, an adjunct does not ameliorate it, unlike English; compare (8.60a–b) with (8.62a–b) (Rizzi's (112a–b)).

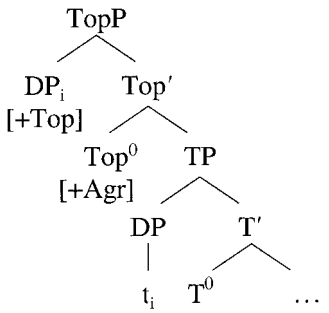
(8.62) a. *Voici l'homme que je crois que, ce tableau-là, t va
here-is the man that I believe that this painting there will
acheter l'année prochaine.
buy the year next
'Here is the man who I believe that, that painting, will buy next year.'

b. *Voici l'homme que je crois que, l'année prochaine, t va
here-is the man that I believe that the year next will
acheter ce tableau-là.
buy this painting there
'Here is the man who I believe that, next year, will buy that painting.'

Rizzi (1990) accounts for Comp-trace effects by assuming that the trace must be licensed by a Comp that agrees with the trace, via Spec-head agreement between Comp and a trace in Spec,CP, which is coindexed with the original trace in subject position. For a violation to be avoided, not only must this structural configuration obtain, but the Comp in question must bear a [+Agr] feature. English *that* and French *que* are marked [−Agr] in the lexicon and therefore cannot license subject traces, while a zero Comp in English and *qui* in French are [+Agr] Comps, and thus can license the traces. This accounts for the patterns seen in (8.59) and (8.61) (see Rizzi 1990, 1997 for more discussion).

Adopting this account in its essentials, we can explain these patterns. Following Rizzi (1997), I assume that the head of TopP may be a [+Agr] head and that, as in the other cases, the *wh*-moved subject must travel through the relevant Spec position (Spec, Top) for this head to license the trace. The relevant configuration is schematized in (8.63).

(8.63)



Taking the argument/adjunct asymmetry in English first, the topicalized object in (8.60a), *this painting*, must be in Spec,TopP (since arguments may not adjoin to TopP). This means, however, that the extracted *wh*-subject cannot pass through the same position, so that there is no Spec-head agreement and the trace goes unlicensed, violating the ECP. In contrast, adjuncts may adjoin to TopP (just as they may to TP), as in (8.60b), leaving the Spec,TopP position free for the subject on its way up the clause, so that the head may license the original trace. Crucially, the adjuncts may adjoin to TopP, while an argument may not. Thus there is evidence that clause-initial adjuncts are adjoined, and that arguments are in Spec.

8.3.2.4 Asymmetries in Long-Distance Topicalization

The analysis of clause-initial adjunction for topicalization also gains support from an asymmetry in how arguments and adjuncts behave for long-distance topicalization: arguments may topicalize out of their own clause, while adjuncts cannot. Examine the contrast in (8.64)–(8.65).[21]

(8.64) a. Carefully, he eased the violin out of its case.
b. *Carefully$_i$, they saw [him ease the violin out of its case t$_i$]. (marginally OK as focus)
c. *Carefully$_i$, they said [that he eased the violin out of its case t$_i$].

(8.65) a. The violin$_i$, he eased t$_i$ out of its case.
b. The violin$_i$, they saw [him ease t$_i$ out of its case].
c. The violin$_i$, they said [that he eased t$_i$ out of its case].

This falls out directly from a scope-related constraint to be discussed in section 8.4. For the moment, it is sufficient to note that this constraint only applies to adjoined positions; if arguments like *the violin* were adjoined in (8.65), we might expect it to be subject to the scope constraint. The same holds if both are in Spec positions. If there is a distinction in their positions, though, the scope constraint can be keyed to true adjunctions but not to Specs (in (8.64)–(8.65) respectively).

To summarize, we have seen three arguments for the proposal that topicalized arguments move to Spec,TopP but that topicalized adjuncts adjoin to TopP. First, given the usual assumption that there is only one Spec per projection, this analysis correctly predicts the possibility of multiple topicalization for adjuncts but not for arguments. Second, this analysis correctly accounts for Comp-trace effects being ameliorated when an adjunct follows Comp. Third, it correctly predicts the asymmetry between (possible) long-distance topicalization of arguments and (impossible) long-distance topicalization of adjuncts. I conclude that, despite a few remaining problems, there exists a TopP taking one argument in its Spec, and/or multiply adjoined adjuncts.[22] In the next subsection I consider and reject an alternative analysis requiring a separate TopP projection for each topicalized phrase.

8.3.2.5 A Kaynean Alternative and French/English Asymmetries

I have implicitly been arguing against a theory where all topicalizations are adjunctions. For Rizzi (1997), Laenzlinger (1997), and others in the tradition of Kayne (1994), the opposite is true: all topicalizations are movements to Spec,TopP, with iterated TopPs to account for data like (8.56)–(8.57). This theory faces two significant problems. First, it treats as an accident that TopP can appear between any two of the other functional projections posited by Rizzi (1997). His proposal for the extended Comp is shown in (8.66), where Force may host *wh*-expressions and (other) markers of illocutionary force; Top* indicates the possibility of iteration, to account for cases like (8.67a–b) (Rizzi's (38a,f)) in Italian.

(8.66) Force – Top – Foc – Top* – Fin

(8.67) a. Credo che a Gianni, *questo*, domani, gli dovremmo dire.
I-believe that to Gianni *this* tomorrow to-him we-should say
'I believe that *this*, tomorrow, to Gianni, we should say.'

b. Credo che questo, domani, a Gianni, gli dovremmo dire.
I-believe that *this* tomorrow to Gianni to-him we-should say
'I believe that *this*, tomorrow, to Gianni, we should say.'

There are certainly cases where two topicalized expressions may occur before a focalized one (at least for those English speakers who allow topicalization fairly freely, and for Chinese speakers in general):

(8.68) a. I really think that tomorrow before going home the *car* we'll sell (but not the *boat*).
b. Wo kan mingtian huijia yiqian *chezi* women ye dei mai.
I see tomorrow go-home before *car* we also must sell
'I think that tomorrow before going home the *car* we also will have to sell.'

Moreover, cases like (8.69) would appear to require a TopP preceding ForceP in this system, giving the revised extended Comp sequence in (8.70).

(8.69) {On Thursday/In Rome}, where did you go?

(8.70) Top-Force-Top*-Foc-Top*-Fin

For cases like (8.69), we must also account for the fact that topicalized arguments do not precede *wh*-expressions.

(8.71) *Those hot peppers, where did you buy?

Thus on an account where a TopP is always necessary for any topic, we must add something to explain the contrast between (8.69) and (8.71), while if topicalized adjuncts can be adjoined we need only say that Force can be marked [+Top] but cannot be preceded by a TopP.

Rizzi himself (1997: 296) notes the appeal of an analysis in which topics can be freely adjoined to other projections without a TopP, but he rejects it on the grounds that TopPs are needed to account for the amelioration of Comp-trace effects and the need for a proper movement trigger. However, we have seen that maintaining the Spec/adjoined distinction for topicalized constituents still allows an account of the former phenomenon. As for maintaining Last Resort, I have proposed here that a small number of [+F] features allow iteration, permitting multiple checking and thus multiple movements to adjoin to the same maximal projection (including one to Spec position). While this admits an extra option for feature checking, the theory may still be kept fairly restrictive if only a small set of [+F] features (possibly [+Top] alone) make use of the option; and the evidence for it here suggests that it is a warranted extension of the theory. Thus the relative freedom of topics in these examples becomes a legitimate reason to reject an obligatory TopP for every topicalized phrase.

The second problem with the all-TopP approach to topicalization is that it has trouble dealing with a French/English asymmetry in the account of Comp-trace violations. Rizzi (1997) takes the role of Comp in his 1990 analysis to be assumed now by Finite (Fin^0), which takes TP as its complement.

(8.72) a. an amendment which they say that next year t will be law.
b. . . . that [next year [[+Agr]Fin^0_i [Top^0]] [t′ t_i [t will be law]]]

In (8.72b), representing (8.72a), the [+Agr] head Fin^0 can license traces because it agrees with the subject that moved through Spec,FinP, marked as t′. Fin^0 moves by head movement to adjoin to Top^0; in its base position it governs t, and in its derived position it governs t′. For object topicalization, Rizzi assumes (following Cinque [1990]) that there is an empty topic operator in Spec, Fin, as indicated in (8.73b), representing (8.73a).

(8.73) a. *a man who I think that, this book, t knows very well.
b. . . . that [this book Top^0 [Op [+Agr]Fin^0 [t will be law]]]

Here, Op can never agree with [+Agr]Fin^0, so the trace t can never be licensed.

As Rizzi notes, a problem arises for the French agreeing Comp *qui*. Compare (8.74a–b), which are versions of (8.61a–b) obtained by topicalization.

(8.74) a. *Voici l'homme que je crois t que, l'année prochaine, t
here-is the man that I believe that the year next
pourra nous aider.
will-be-able us help
'Here is the man who I believe that, next year, will be able to help us.'
b. Voici l'homme que je crois t qui, l' année prochaine, t
here-is the man that I believe who the year next
pourra nous aider.
will-be-able us help
'Here is the man who I believe qui, next year, will be able to help us.'

If French were exactly like English (8.74a) ought to be fine, just like (8.60b) and (8.72a), since the [−Agr] Comp *que* is "insulated" from the subject trace by TopP, which provides a landing site for [+Agr] Fin^0. Rizzi proposes the difference to be in whether Fin raises to Top; when it does, in English, the raised [+Agr] head can license the trace in Spec,FinP (t′ in (8.72b)), but if it

does not, as in French, this trace causes an ECP violation. However, the same ought to hold for (8.74b) yet does not. In response, Rizzi further posits that French has a [+Agr]Top^0 node with an AgrP above it, as shown in (8.75). This Top^0 licenses t′ in Spec,FinP, and *qui* can license the trace in Spec,AgrP.

(8.75) *qui* [$_{\text{AGRP}}$t″ Agr [$_{\text{TOPP}}$ l'anneé prochaine Top^0[+Agr] [$_{\text{FINP}}$t′ Fin^0[+Agr]
that next year
[t pourra nous aider]]]]
will-be-able us help

This analysis posits three additional mechanisms for French: lack of movement by Fin^0, the [+Agr] feature on Top^0, and an extra AgrP.[23] Moreover, the [+Agr] Top^0 should not be able to govern t′, as required, since it does not agree with its specifier; (8.74b) ought still to be ungrammatical. Thus this analysis ends up as stipulative, and to fix the wrong prediction for (8.74b) one would have to somehow allow Top^0 [+Agr] to govern without agreement with its Spec. By contrast, on the analysis proposed here, where, crucially, topicalized adjuncts do not occupy Spec,TopP, the corresponding analysis for (8.74a–b) is (8.76).

(8.76) a. . . . que [l'anneé prochaine (t′ Top^0 t [) pourra nous aider]]
that next year [−Agr] will-be-able us help
[−Agr]
b. . . . qui [l'anneé prochaine t [pourra nous aider]]
that next year will-be-able us help
[+Agr]

Rather than having any raising of Fin^0, I posit no FinP and no TopP necessary for topicalized adjuncts, but take the French/English difference to be one of whether Top^0 is [+Agr] (English) or [−Agr] (French). Starting with French in (8.76a), whether TopP appears or not, none of the relevant nodes are [+Agr], so that the traces violate the ECP, and (8.74a) is ruled out. In (8.76b), however, the optional TopP need not appear, and when it does not the [+Agr] *qui* in Comp (Rizzi's Force) governs the subject trace t. For English in (8.77), although *that* is [−Agr], the optional [+Agr]TopP is free to appear, which makes the English equivalent of (8.74a) grammatical.

(8.77) . . . that [next year t′ Top^0 [t will be able to help us]]
[−Agr] [+Agr]

In sum, allowing adjuncts to topicalize by adjoining freely to TP or (the optional) TopP accounts for the French/English asymmetry with just one additional difference, that is, the value of [±Agr] on Top^0, which is simpler than Rizzi's analysis. Combined with the arguments from iteration, asymmetries in long-distance topicalization, and Comp-trace effects, this provides evidence for maintaining the Spec/adjoined distinction for arguments and adjuncts.

8.3.3 A Note on Parentheticalization

Very little has been said in the syntactic literature about parenthetical expressions in discussions of syntax.[24] Yet we must explain why topicalized phrases often must be set off by comma intonation. I suggest that many facts about them can be handled under Weight theory:

(8.78) Some Effects of Weight Theory:
- (a) AuxRange effect: functional heads in VO languages allow only nonheavy items in left-adjoined positions.
- (b) Specs allow phrases of any weight, since the AuxRange effect holds only where C-Dir is activated, and C-Dir is not activated for Spec positions.
- (c) At PF, parentheticalization
  is immune to the AuxRange effect,
  applies optionally to any constituent, and
  is constrained by "true PF adjacency" (see section 8.5)

The effect in (8.78a) is derived by means of (8.79)–(8.80): (8.79) gives heavy expressions the C-complex feature [+Heavy], and since they are adjoined, by (8.80) they must be adjoined to the right.

(8.79) Sufficient weight licenses the C-complex feature [+Heavy]. ("Sufficient" is variable for style and relative weight.)

(8.80) If C-Dir is active, then for any adjoined YP in XP, if X^0 or YP bears a C-complex feature, then YP is [+R].

However, heavy items may appear in such a position if moved there by post-Spell-Out movement, creating a parenthetical expression, set off prosodically. (Pending further investigation, I tentatively assume that this holds because parentheticalization may involve overriding [+R] on heavy expressions; thus the first generalization in (8.78c) holds.) Of course, adverbs that are not especially

heavy may also be parenthesized, according to the second generalization in (8.78c); see (8.81).

(8.81) a. Ben has probably eaten lunch already.
b. Ben has, probably, eaten lunch already.

By contrast, preverbal arguments, whether subjects or preposed objects, can be of any weight, which follows because they are in Spec positions, that is, licensed by noniterating [+F] features (see (8.78b)). The same holds for *wh*-expressions and initial phrases in V2 language matrix clauses: they do not require parentheticalization even when at their heaviest. (8.78c) provides a starting point for principles of parentheticalization. Surely it will have to be revised, but as a start it accounts for much of the data concerning clause-initial adjuncts discussed in this chapter.

It apparently must be revised for topicalized constituents, as opposed to *wh*-expressions and subjects, since (at least in VO languages like English) they need to be parentheticalized unless they are fairly light; notably, this includes arguments in Spec positions. Observe (8.82)–(8.85) for English and French.[25]

(8.82) a. *She told me that those croissants he would not buy.
b. She told me that, those croissants, he would not buy.

(8.83) a. She told me that {tomorrow/probably/*unless the quality improves rapidly} she would not buy those croissants.
b. She told me that, {tomorrow/probably/unless the quality improves rapidly}, she would not buy those croissants.

(8.84) a. *Elle m' a dit que ces croissants elle ne les
she me has said that these croissants she Neg them
acheterait pas.
would-buy not
'She told me that these croissants she would not buy.'
b. Elle m'a dit que, ces croissants, elle ne les acheterait pas.

(8.85) a. *Elle m' a dit que {demain/probablement/à moins que leur
she me has said that tomorrow/ probably/ unless their
qualité ne s'ameliore rapidement} elle n' acheterait pas ces
quality Neg improve rapidly she Neg would-buy not these
croissants.
croissants
'She told me that {tomorrow/probably/unless their quality improves rapidly} she would not buy these croissants.'

b. Elle m'a dit que, {demain/probablement/à moins que leur qualité ne s'ameliore rapidement}, elle n'acheterait pas ces croissants.

This is not predicted by Weight theory as formulated so far.

Judgments on such sentences vary quite a bit, but it seems clear that topicalized and focused items are more subject to being set off prosodically (which I take to be a case of parentheticalization) than are other clause-initial items licensed by [+F] features. Presumably, this is related to their having marked discourse values. I leave this complex matter aside, with the remark that an account of this phenomenon must precede a final theory of clause-initial adjuncts.

8.3.4 Summary

The goal of section 8.3 was to account for the licensing of clause-initial adjuncts. First, I presented evidence that these adjuncts are in adjoined positions, unlike topicalized arguments. In particular, positing this structural distinction (a) explains the possibility of multiple adjuncts in clause-initial position, unlike arguments; (b) accounts for the argument/adjunct asymmetry in (dis)allowing Comp-trace effects; (c) accounts for the argument/adjunct asymmetry with respect to long-distance topicalization; and (d) avoids certain problems with a Kaynean analysis where both types of phrase are in Spec positions, or one where they are both adjoined (including a French/English asymmetry with respect to Comp-trace effects). Finally, I made a tentative proposal in section 8.3.3 for how the facts of parentheticalization in initial position may be handled. In section 8.4 we consider what syntactic and semantic conditions there might be on adjunct topicalization.

8.4 Topicalization, Wide Scope, and Crossing Movements

8.4.1 The Issue

We have established that topicalized arguments move to Spec,TopP, but that topicalized adjuncts adjoin to any [+Top] projection, accounting for their ability to iterate, for their circumventing Comp-trace effects, and for other facts. However, their distribution is not completely free. In particular, clause-initial adjuncts are often not possible when they seem to have moved across another adjunct:

(8.86) a. {Wisely/Willingly}, she left the house at dawn.
b. {Wisely/Willingly}, she didn't leave the house at dawn.
c. {*Wisely/*Willingly}, she had unfortunately left the house at dawn.

In (8.86) the adverbs given in initial position are fine in (a-b), where they easily take scope over *at dawn* and *not*, respectively, but (8.86c) is ungrammatical, where the adverbs cannot take wide scope over *unfortunately*. Is this a syntactic phenomenon, a semantic one, or some mix, and how exactly is it to be analyzed?

There at least three possible approaches to cases like (8.86). A syntactic approach might say that the topicalized adverbs have moved from a position below *unfortunately* and that this movement violates some sort of minimality condition, perhaps Relativized Minimality (Rizzi 1990) or the Minimal Link Condition (Chomsky 1995b). A more purely semantic approach holds that adjuncts do not topicalize at all but rather are base-generated in initial position; here, straightforwardly, the scope-based principles discussed in earlier chapters rule (8.86c) out. Finally, one might agree with the first approach, that there is syntactic movement, but impose a surface scope condition on the resulting structure to rule this sentence out, as the second solution does. I present evidence that this last approach is the correct one. To the extent that it is successful, it will provide evidence for the multiple-adjunction analysis of topicalization, as it accounts for the scope of topicalized adverbials from adjoined positions.

8.4.2 Wide Scope

When quantified DPs are topicalized they require wide scope (see Kim 1991, among others):

(8.87) a. Everyone has annoyed somebody.
b. Somebody, everyone has annoyed.

(8.87a) is ambiguous, although it is best with wide scope *everyone*; in (8.87b) *somebody* must take wide scope, having a specific interpretation. Of course, in such cases the object does not lose its basic interpretation as the theme of *annoy*. In this sense the interpretation of this DP comes from two positions in its chain: the thematic information from its base position and the scope of its quantificational element from its LF position, which is determined by its surface position.

The behavior of adjuncts like those in (8.86) may be explained if a similar dichotomy exists: the basic FEO type required by an adjunct must first be determined in its base position, but the actual content of that FEO is determined by its sister in its surface position (at Spell-Out, the input to LF, where no movement of adjuncts is permitted). On this view, (8.86a–b) are all right because the base position of the adverbs can be above *at dawn/not*; when topicalization occurs the scope ends up being exactly the same (the only intervening element, the subject, is interpreted in its base position). For (8.86c), though, adverbs must have started below *unfortunately* (taking an event FEO). Now, when they move, they are forced to take the latter adverb in their scope, and this violates their lexical requirements: *unfortunately* combines with a fact to yield another fact, so the clause-initial adverbs are forced to modify facts, which they cannot do.

Thus, to a large extent, this conception of adjunct topicalization says that scope-taking adjuncts may not move if by doing so they change their scope from what it was in base position. I refer to it as the Scope Matching approach, formulated tentatively in (8.88).

(8.88) Scope Matching Constraint on Adjunct Topicalization:
  a. The scope of a topicalized adjunct must match that of its base position.
  b. Scope matching holds if the lexical material is identical except for "presupposed tense" and the base-position copy of the adjunct.

(I return to the exception for presupposed tense.) Though there are some exceptions to deal with, I argue in the next three subsections that it is largely correct.

8.4.3 Manner Adverbs

The effect of the Scope Matching approach is perhaps best seen with manner adverbs. Observe the examples in (8.89).

(8.89) a. Icily, he spoke to the lieutenant.
  b. Carefully, he eased the violin out of its case.
  c. Hesitantly, television executives decide that the show must go on. (*New York Times*, Sept. 22, 1998, p. 21 headline)
  d. Abruptly, Cavanaugh sat down on the edge of the bed. (Nancy Kress, *Oaths and Miracles*, 89)

In all these cases, the lexical material in the scope of the manner adverb in its base position is the same as the material it scopes at its surface position. In (8.89a), for example, *icily* in its base position (adjoined to VP or PredP) takes the basic event shown in (8.90) ('he speak to the lieutenant') in its scope.

(8.90) $[_{\text{EVENT}}$ S(e) & Agt(e, he) & Goal(e,l)]

The correct FEO (SpecEvent) is determined for the manner adverb at this base position, but the determination of SpecEvent rather than (External) event is not part of this event's lexical content. In preposed position, the lexical content of the adverb's scope (excluding Tense) is the same. Observe the representation in (8.91).[26]

(8.91) TR(e, ICY(e*)$_i$) [t $<$ n & e $\subseteq$ t $[_E$ S(e) & Agt(e,he) & Goal(e,l)]] & ICY(e*)$_i$]]]

(Recall that e* is merely a notational convenience to reflect the use of a different comparison class for e than that used for clausal adverb endings.) TR (e, P (e)) is a topic restriction, expressing a restriction on the hearer's attention to events having some property P, here the property of being-done-in-an-icy manner. (cf. the discussion in Geis 1986.) Thus (8.91), focusing in on events in which something was done icily, says that there is an event before the reference-time t, of him speaking to the lieutenant, which was done icily. It shows a stage of semantic representation where the topicalized adverb *icily* and its copy in base position are both represented by ICY(e*) (indices have been left on the moved item and its copy at LF for clarity of exposition only). The starred event variable represents the SpecEvent of him speaking to the lieutenant shown in (8.90); likewise, the scope of TR(e, ICY(e*)), ignoring Tense and the lower copy of the manner adverb, is also (8.90). Thus there is a scope match according to (8.88). Now observe the much less acceptable sentences in (8.92).

(8.92) a. *Icily, he didn't speak to the lieutenant.
b. *Icily, he still/always spoke to the lieutenant.
c. *Icily, he probably/craftily spoke to the lieutenant.

In all these cases *icily* could only have moved from a position below negation or the adverb (since it is a pure manner adverb), and if it were, it would end up taking a different scope from that in its base position. Thus, (8.89a) is acceptable, but (8.92a–c) are not.

As noted in (8.88), it seems that the Scope Matching requirement may ignore tense, at least the simpler tenses presupposed in context, as in (8.89a–d). The more complicated and marked tenses become, with the perfect in (8.93a) and the progressive in (8.93b), the worse such sentences are (see Goldberg and Ackerman 2000: section 3 on relative markedness of tenses).

(8.93) a. ?Icily, he had spoken to the lieutenant.
b. ?Icily, he would speak to the lieutenant.
c. ??Icily, he was speaking to the lieutenant.

In addition, topicalization of manner adverbs is disfavored or unacceptable in imperatives and generic sentences:[27]

(8.94) a. *Tightly, hold on to the railing or you will fall!
b. *Tightly, a cardinal grips the branch that it lands on.

We must assume that there are covert operators in such sentences that cause a violation of the matching constraint, and in fact this a common assumption for (8.94a–b). Clearly, the precise formulation of the constraint requires work, but its general form is clear. That it accounts for simple contrasts like that between (8.89) and (8.92) is the first piece of evidence in its favor.

8.4.4 Measure Adverbs

The Scope Matching approach accounts for the inability of measure adverbs to topicalize. An example of the relevant contrast with manner adverbs (which are close if not identical in their distribution otherwise) is (8.95).

(8.95) a. *Completely, he eased the violin out of its case.
b. *Partway, Karen filled the glass.
c. *Again, Sylvia closed the door. (on restitutive reading; OK on repetitive reading)

In German, *wieder* 'again' shows the same pattern as in (8.95c) (Pittner 2000:210). Recall from chapter 6 that measure adverbs modify a predicate internal to the one represented by the verb. (8.95b) is represented in (8.96a), showing the two copies of PARTWAY (e'') at the relevant stage of LF.

(8.96) a. t < n & e ⊆ t [$_{E}$ CAUSE (e) & Agt(e,k) & Th (e, [$_{E'}$ BECOME (e′) & Th (e′, [PARTWAY [$_{E''}$ FILLED (g)]]])]
b. TR(e, PARTWAY(e″)) [t < n & e ⊆ t [$_{E}$ CAUSE (e) & Agt(e,k) & Th (e, [$_{E'}$ BECOME (e′) & Th (e′, [PARTWAY [$_{E''}$ FILLED (g)]])])]]

It is obvious that the two occurrences of PARTWAY (e″) have different scopes, since the lower instance has scope only over FILLED (g), while the topicalized instance has scope over CAUSE and BECOME.[28] Since measure adverbs all are interpreted in this way, they never can be topicalized.

8.4.5 Clause-Boundedness of Adjunct Topicalization

Recall the asymmetry discussed in relation to (8.64)–(8.65) for long-distance topicalization, given again here as (8.97)–(8.98).

(8.97) a. Carefully, he eased the violin out of its case.
b. *Carefully$_i$, they saw [him ease the violin out of its case t_i]. (marginally OK as focus)
c. *Carefully$_i$, they said [that he eased the violin out of its case t_i].

(8.98) a. The violin$_i$, he eased t_i out of its case.
b. The violin$_i$, they saw [him ease t_i out of its case].
c. The violin$_i$, they said [that he eased t_i out of its case].

It was suggested in section 8.3.2.4 that we need the adjoined/Spec position distinction to account for this. Now it can be seen precisely why (8.97b–c) are ruled out: any time an adjunct moves to adjoin outside its clause, it will violate the Scope Matching Constraint since it crosses over the matrix verb, at the very least. Note that focus and *wh*-movements do permit long-distance extraction of adjuncts:

(8.99) a. *Quietly*, I said he had come in. (low intonation on rest of sentence)
b. How quietly did you say he had come in?

This is predicted, because these movements are necessarily to Spec positions (since their triggering [+F] features are not iterable); the Scope Matching Constraint applies only in adjoined positions.[29]

That scope matching can explain the clause-boundedness of adjunct topicalization is another piece of evidence in its favor.

8.4.6 Alternative Solutions

The idea of treating sentence-initial manner adverbs as base-generated (Wyner 1994, Shaer 1998, 2000) is attractive, since many other adverbials can be generated in this position; we might then avoid positing a topicalization process for adjuncts altogether. However, three factors lead us to reject it. First, if free adjunction is assumed, it cannot easily explain why manner adverbs cannot occur between the subject and any auxiliary verbs; compare (8.100) with (8.93a), which, though not perfect, is far better in context.

(8.100) *He icily had spoken to the lieutenant.

Second, even if the adverbs are "hanging topics" (Shaer 1998), it cannot explain the contrast between manner and measure adverbs; if manner adverbs can be interpreted long-distance, it is not clear why the same could not be true of measure adverbs – yet only the former can be topicalized. Third, it does not account for why speaker-oriented adverbs need not be set off by comma intonation in initial position and why subject-oriented and manner adverbs must be (see (8.49)–(8.50)); if the latter must be moved, the contrast can be made to follow.

A second alternative to the Scope Matching approach is some type of minimality constraint on movement. Data like those in (8.92d–e) and (8.86) might be handled via Relativized Minimality (Rizzi 1990), by which (to simplify somewhat) a constituent of type X may not raise past another constituent of type X, where in the standard (Rizzi's original) version the three possible values of X are heads, phrases in A-specifiers, and phrases in A′-specifier. One could try to account for the cases under consideration (as Laenzlinger [1996] and Cinque [1999:19] suggest) by taking the adverbs as being A′-specifiers, so that the sentences are Relativized Minimality violations. However, aside from the issue of whether adjuncts should be taken as being in specifier positions at all, there are two reasons not to adopt this approach.

First, it cannot account for cases like (8.101a–b), where a manner adverb is topicalized over a modal.

(8.101) a. *Carefully, he might ease the violin out of its case.
b. *Tightly, she must hold on to the railing.

Since modals are heads and adverbs are XPs, Relativized Minimality should not apply in (8.101), yet the sentences are ungrammatical. The Scope Matching approach accounts for these easily, since the presence of a modal is just

as bad as the presence of an adverb (as in (8.92d–e)). Second, (8.102) shows that we would have to further distinguish different types of A′-elements and A′-positions.[30]

(8.102) a. How quickly did they {already/probably} cross the bridge (today)?
b. This bridge, they {already/probably} crossed (today).
c. *Haltingly, they {already/probably} crossed this bridge (today).

With *wh*-movement to Spec,CP in (8.102a) and argument topicalization to Spec,TopP in (8.102b), there is no trouble in crossing over an adverb. However, adverb topicalization in (8.102c) is not possible. A minimality approach must distinguish different types of Spec positions (if all adjuncts are in Specs) or add adjoined positions to the list of relativized position types subject to minimality. On the Scope Matching approach, this distinction is made automatically.[31] In sum, alternative analyses of sentence-initial adverbs cannot account easily for the contrasts in (8.101)–(8.102). This provides further support for the Scope Matching approach.

8.4.7 Summary of Arguments

In this section I presented three arguments as evidence for the Scope Matching approach to adjunct topicalization. First, it accounts for constraints on topicalization of manner adverbs. Second, it explains why measure adverbs cannot be topicalized. Third, it explains why adjunct topicalization is clause-bounded. The only obvious alternatives to scope matching face significant problems in accounting for the same set of data, which lends further support to this analysis and, by extension, to the multiple-adjunction account of clause-initial adjuncts I have proposed.

8.5 FocP, *Wh*-CompP (ForceP), and Kinds of Adjacency

8.5.1 Introduction

I have offered explanations for the I′-Restriction (illustrated in (8.2)), normal cases of clause-initial adjunction (in (8.1a–c)), and the ban on Lite adverbs in initial position (in (8.1f)). (8.1d–e), repeated here as (8.103a–b), remain to be discussed.

(8.103) a. Briefly, what did you say the plan was?
b. Scarcely had they arrived when the mirror fell off the wall.

This requires addressing the question of CompRange projections above TopP, which leads to a discussion of why adjuncts do not adjoin to Comp′; we will be find that there is a semantic explanation for this, further removing evidence that syntax must stipulate a ban on X′-adjunction.

8.5.2 FocP

As Cinque (1990), Rizzi (1997), and others have shown, topicalization and focalization have different properties, derivable mostly from a difference between a fundamentally quantificational A′-movement (focalization) and a nonquantificational one (topicalization) (Rizzi 1997: section 10; q.v. for further details). Thus, for example, in Italian a resumptive clitic is possible only with topicalization (cf. (8.104)–(8.105); Rizzi's (15–16)), and weak crossover (WCO) violations occur only with focalization (as in (8.106)–(8.107); Rizzi's (17–18)).

(8.104) a. Il tuo libro, lo ho comprato.
'Your book, I bought it.'
b. *Il tuo libro, ho comprato.
'Your book, I bought.'

(8.105) a. **Il tuo libro* lo ho comprato (non il suo).
'*Your book* I bought it (not his).'
b. *Il tuo libro* ho comprato (non il suo).
'*Your book* I bought (not his).'

(8.106) Gianni$_i$, sua$_i$ madre lo$_i$ ha sempre apprezzato.
'Gianni, his mother always appreciated him.'

(8.107) ??*Gianni*$_i$, sua$_i$ madre lo$_i$ ha sempre apprezzato t$_i$ (non Piero).
'*Gianni,* his mother always appreciated, not Piero.'

Recall that one clause may have both a topicalized and a focalized constituent (although there may only be one of the latter). I also take FocP as the landing site for instances of the type of clause-initial adverb in English illustrated in (8.108) and for French in (8.109), since the possibility of embedding shows the structure to be below *Wh*-Comp. (Recall that the classical CP, hosting *Wh*-expressions in its Spec, is relabeled ForceP on this account.)[32]

(8.108) a. (He said that) Scarcely had he arrived home when the lawyers got there.

b. (He said that) No sooner would they put meat on the table than the cat would eat it.
c. (He said that) So carefully did he peel off the labels that no one knew they had even been there.

(8.109) a. Peut-être que nous irons au théatre ce soir.
perhaps that we will-go to-the theater this night
'Perhaps we'll go to the theater tonight.'
b. Peut-être irons- nous au théatre ce soir.
perhaps will-go we to-the theater this night
'Perhaps we'll go to the theater tonight.'

8.5.3 CP

On the basis of examples like 8.110, it has sometimes been argued (e.g., in McCloskey 1996) that no adjunction is allowed to CP, with embedded-clause construals of the adjuncts.

(8.110) a. Agatha said (*probably) that (probably) Sebastien held the pistol.
b. The commissioner asked (*tomorrow) where (tomorrow) they would release the suspect.
c. songs (*clearly) that (clearly) everyone knew by heart

Ranged against such examples, however, are (8.111a–c)

(8.111) a. Briefly, why did Sebastien hold the pistol?
b. They said he had told them roughly where they would release the suspect.
c. ?songs more or less that we knew by heart

Examine (8.111a) to start with: adverbs with discourse-oriented readings (cf. *simply, roughly, however, similarly*), domain adverbs, and scene-setting locatives and temporals (see 8.112), among others, are fine preceding *Wh*-expressions in English, and the same holds for other familiar languages, such as French in (8.113) and Italian.

(8.112) {Politically/In Washington/Yesterday}, why was this problem so hard?

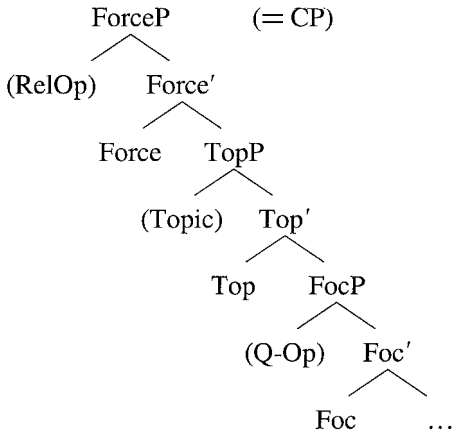
(8.113) {Grosso modo/Politiquement/À Washington/Hier}, pourquoi
roughly politically in Washington yesterday why
ce problème a-t-il été si difficile?
this problem has-it been so difficult
'{Roughly/Politically/In Washington/Yesterday}, why was this problem so hard?'

Clearly this has the hallmarks of topic(alized) adjuncts. Since topicalized arguments are not allowed in this position, as (8.114) shows (cf. (8.111)), we must assume that there is no TopP but rather merely a [+Top] feature on Force that allows these adjuncts to appear.

(8.114) a. *The pistol, why did Sebastien hold?
b. *They said he had told them, the suspect, where they would release.
c. *relish, on their hot dogs, that everyone put

How can these facts be reconciled? One solution (adopted by Rizzi [1997]) is to assume the locations of operators shown in (8.115), with relative operators in Spec,ForceP (= CP) and question operators in Spec,FocP.

(8.115)



This solution essentially stipulates the ordering constraints involved and predicts neither (a) the class of cases in (8.111b–c) and (8.116) (involving focusing and degree-of-precision adverbs that adjoin to essentially the full range of syntactic categories) nor the ungrammaticality of topicalized arguments (as in (8.114a)).

(8.116) They asked us {only/roughly} when we would have to leave.

Other solutions are not without their own problems, so the analysis schematized in (8.115) may yet be correct; it is in fact compatible with the general analysis of the CompRange adopted here.

Nevertheless, I will suggest an analysis that is more in line with the view that semantic constraints are mostly responsible for adverbial distribution, positing the features [+C] and [+Top] on Comp (= Force^0, at least for matrix clauses), and assuming that both the relative operator and *Wh*-operator land in Spec,CP. One would predict that it ought to be possible to base-generate adjuncts adjoined to C′ or to CP, although no arguments may be topicalized to this position (thus, the ungrammaticality of (8.114)). When the adjunct adjoins to CP, we find cases of matrix questions, as in (8.111)–(8.112). These must be base-generated in situ, as they must take scope over the question operator (cf. chapter 2), and cannot be moved from a lower position (since they would violate the Scope Matching Constraint if they did). Adjunction to C′ is also banned if we take constituent questions to involve a two-part operator, with the locus of illocutionary force ('give me the value for x') in C^0 and specification of the range for x in Spec,CP. This means that elements adjoined to C′ cannot take wide enough scope and are therefore banned (except as parentheticals, of course):

(8.117) a. *Why briefly did Sebastien hold the pistol?
b. Where (*apparently) had the dog (apparently) gone?

This provides an independent semantic account of the pattern in (8.8a), at least when XP = *wh*, eliminating one possible piece of evidence for a stipulated ban on X′-adjunction (see also (8.127c)).

As for (8.110)–(8.111), we may posit nominalizing and "adjectivalizing" functions as part of relative operators or embedded declarative clauses. Such functions are well-documented in the form of nominalizing morphology, as in Korean or Quechua (see especially Kim 1984 and Lefebvre and Muysken 1998), and adjectivalizing particles such as *de* in Chinese DPs (Paris 1977, Li and Thompson 1981). Once this is done, in the cases where we find relative operators, adjuncts preceding them are ruled out simply because they do not take the proper scope. Such adjuncts must take an FEO (propositions or events), times, topic operators, or the like, in their immediate scope. If, however, we take the nominalizing function to include triggering the change of a propositional FEO to an object, then most adverbs cannot take the resulting entity as their argument. (8.118a) shows the result for (8.110a) ((8.110b–c) follow in the same way).

(8.118) a. *Agatha said [probably [$_{\text{OBJECT}}$ [$_{\text{PROP}}$ that Sebastien held the pistol]]].
b. Agatha said [only [$_{\text{OBJECT}}$ [$_{\text{PROP}}$ that Sebastien held the pistol]]].

Probably cannot take an object as its argument. But focusing adverbs like *only* can, so (8.118b) is grammatical (see also (8.111b–c) and (8.116)). Focusing and degree-of-precision adverbs have no semantic scope requirements that are violated by the nominal/adjectival relative operators; rather, they simply characterize the accuracy of the description or relate it to focus-presupposition structure. If this analysis holds, there should be no syntactic ban on adjunction to CP.

On this view, we then need no stipulative requirement that CPs (or arguments) cannot be adjoined to; the majority of cases where such adjunction is ungrammatical are explained by the scope properties of the adjuncts in question and the presence of nominalizing or adjectivalizing relative operators.

8.5.4 True PF Adjacency

There has occasionally been a confusion in the literature about positions where adjuncts are allowed under any circumstances and those where adjuncts are allowed only if they are parenthetical expressions. Part of the problem is that there is no readily available theory of how parentheticalization works. Although the one proposed in this chapter is surely only a first stab, it allows us, combined with the properties of [+Disc] and [+C], to make some useful distinctions. Most important, it gives us a diagnostic for positions from which adjuncts are syntactically excluded, but which may be filled by parenthetical movement at PF (where the relevant syntactic constraints are no longer applicable), and positions where not even parenthetical expressions are possible, which will be characterized here as instances of true PF adjacency, due to a constraint operative at PF.

Observe (8.119)–(8.121) from continental Germanic, English, and Chinese, respectively (in all of these, the corresponding sentence without the sequence [(,) . . . (,)] is grammatical).

(8.119) a. . . . *dat (,) gisteren (,) ze ziek was (Swedish; Platzack 1986, cited in Vikner 1995:44)
that yesterday she sick was
'. . . that she was sick yesterday'
(cf. . . . dat (,) gisteren (,) Lise was '. . . that Lise was sick yesterday')

b. *Den bog har (,) faktisk (,) Johan ikke læst. (Danish: Sten Vikner, personal communication)
this book has actually Johan not read
'This book Johan actually has not read.'

(8.120) a. *Would (,) definitely (,) Sarah finish the assignment?
b. *For (,) apparently (,) Jill to finish the assignment would be a shame.
c. *Jill does ([dəz]) (,) always (,) not finish the assignment on time.

(8.121) a. *Tianxing da pingpang-qiu shi bei (,) haoxiang (,) Zhu Hong
Tianxing hit ping-pong time PASS apparently Zhu Hong
da-bai-le. (Chinese)
hit-defeat-PRF
'Tianxing was beaten by, apparently, Zhu Hong at ping-pong.'
b. *Zhu Hong ba (,) zuotian (,) Tianxing da-bai-le.
Zhu Hong BA yesterday Tianxing hit-defeat-le
'Zhu Hong defeated, yesterday, Tianxing.'

Now compare this set with (8.122)–(8.125).[33]

(8.122) a. *Lorraine danced quite elegantly the waltz.
b. Lorraine danced, quite elegantly, the waltz.

(8.123) a. *Carol ran her shoes last year completely threadbare.
b. Carol ran her shoes, last year, completely threadbare.

(8.124) a. *Where as far as you can tell will the money come from?
b. Where, as far as you can tell, will the money come from?

(8.125) a. Claudette a dit que Laurent, sans être venu lui-même,
Claudette has said that Laurent without being come himself
n' en saurait rien. (French)
not of-it would-know anything
b. Claudette said that Laurent, without coming himself, wouldn't know anything.

(8.119)–(8.121) (for convenience, Set A) is made up of the patterns shown in (8.126), and (8.122)–(8.125) (Set B) are schematized in (8.127); the dash indicates the position of the adverbial:

(8.126) SET A:
a. Comp – Subject (8.119)
b. [$_{COMP}$ Aux/P] – Subject (8.120a–b)
c. *do – not* (8.120c)
d. [−Lex]^0 – Subject/Object (8.121)

(8.127) SET B:

a. V – Object	(8.122)
b. V – Resultative Predicate	(8.123)
c. *wh* – Comp	(8.124)
d. Subject – V[+Fin]	(8.125)

In all of Set A the first element is a light functional head; in Set B, with one exception, it is a lexical head or an XP. This suggests that there is an additional effect of Weight theory, holding at PF, on items adjoined to the complement of this sort of light head in Set A. Tentatively, we might say that the head is a PF clitic that requires the item in its (head-)governed Spec as host:

(8.128) Light functional heads may be marked to cliticize to an element in the following Spec position.

(cf. Vikner 1995:55, Laenzlinger 1997: chapter 3, Holmberg 2000: 474, and references therein.) This approach (referring to Weight theory) is supported to some extent by the fact that unstressed auxiliaries other than *do* in English do not impose the same restriction seen in (8.126c) (cf. (8.129) to (8.120c)).

(8.129) Jill {will/has} always not finish(ed) the assignment on time.

If the dummy *do* is considered lighter than the more meaningful auxiliaries, the difference is in the expected direction and could be made to follow formally. Moreover, if we think of functional items moved to a weak head as more susceptible to cliticization than base-generated heads, the difference within Set A between (8.126a), where English allows an intervening adjunct, and (8.126b), where it does not, might be accounted for.

Still, (8.128) is little more than a description at this point, and there appears to be syntactic information crucial to it, both in the need to specify cliticization to an item in Spec for Set A and in the apparent relation of the heads therein to Case assignment (cf. Rizzi 1997:section 8).[34] So for the moment it may be best to leave the distinction between Sets A and B as an observation. Nevertheless, its existence implies that research on constraints on adjunct distribution should take it into account: if the true adjacency of Set A is accounted for at PF, then there need not be any syntactic restrictions on adjunction to the maximal

projections in (8.126a–d), that is, TP and (some version of) VP, realized at Spell-Out or LF.

8.6 Adjuncts and Alternative Subject Positions in Germanic Languages

8.6.1 Introduction

There is a large body of proposals for alternative subject (and object) positions in Germanic languages using the position of adverbs as a diagnostic (e.g., Diesing 1990, Vikner 1995, Bobaljik and Jonas 1996, Alexiadou and Anagnostopoulou 1998, and Svenonius, 2000). Bobaljik and Jonas (1996:217) use the pattern in (8.130) to argue for two positions in Icelandic, the upper one (Spec,AgrSP) primarily for definite subjects and the lower one (Spec,TP) reserved for indefinites.

(8.130) a. Í gær kláruðu (þessar mýs) sennilega (*þessar mýs)
yesterday finished these mice probably these mice
ostinn.
the-cheese
'These mice probably finished the cheese yesterday.'

b. Í gær kláruþu (?margar mýs) sennilega (margar mýs)
yesterday finished many mice probably many mice
ostinn.
the-cheese
'Many mice probably finished the cheese yesterday.'

The argument from pairs like (8.130a–b) depends on the assumption that no adjunct may adjoin to the higher projection. Under assumptions adopted here, though, there can be no AgrP projection, and if the higher subject position is to be Spec,TopP, one must explain why a foregrounded adverb like *sennilega* 'probably' could not appear before a definite subject, adjoined to TopP.

The data involving adverbs in Germanic languages are complex, because there are intricate interactions with verb raising (see Vikner 1995) as well as differences in the information packaging of subjects with respect to topic, definiteness, etc. (Svenonius, 2000). In addition, very little of the literature looks at a sufficiently broad range of adjunct types, making it difficult to

draw any firm conclusions. Nevertheless, in this section, without being able to do justice to this complexity, I suggest that the type of CompRange analysis of topics proposed here can account for the order of subjects and adverbs in Scandinavian languages without positing an extra subject position. (This analysis is a variant of the one in Svenonius 2000, to which it owes much.)

8.6.2 The Analysis

There seems to be a split among the Scandinavian languages, between Danish on the one hand, which is very strict in barring adverbs before definite subjects, and Swedish, Icelandic, and Norwegian on the other, which allow them to varying degrees and with slightly different discourse conditions imposed on the subject. First, examine Danish; as always, matrix clause structures in Scandinavian are V2 clauses, with the verb in Comp. (All Scandinavian data in this subsection are from Svenonius 2000.)

(8.131) a. Næste Eftermiddag laa Stenene endnu urørte
next afternoon lay the-stones still unmoved
'The next afternoon the stones still lay unmoved.'
b. *Næste Eftermiddag laa endnu Stenene urørte
next afternoon lay still the-stones unmoved
'The next afternoon the stones still lay unmoved.'

Here the definite subject *stenene* 'the stones' obligatorily precedes *endnu* 'still'. Compare this with Norwegian in (8.132a–b), where the definite subject can either precede or follow the adverb.

(8.132) a. Så provoserer Salomes mannshunger fortsatt dagens
so provokes Salome's man-hunger still the-day's
publikum.
audience
'Then Salome's hunger for men still provokes today's audiences.'
b. Så provoserer fortsatt Salomes mannshunger dagens
so provokes still Salome's man-hunger the-day's
publikum.
audience
'Then Salome's hunger for men still provokes today's audiences.'

Icelandic and Swedish behave in a similar way to Norwegian, although with discourse nuances; according to Svenonius, both show focus effects in determining the acceptability of subjects following adverbs:

(8.133) a. Har någon student möjligen läst boken? (Swedish)
has any student possibly read the-book
'Has any student possibly read the book?'
b. ??Har möjligen någon student läst broken?
has possibly any student read the-book
c. Har möjligen *någon student* läst boken?
has possibly *any* *student* read the-book

These patterns may be captured – and contrasted with French, English, and Chinese, which do not show this sort of partial ban on presubject adverbs – if we take V2 languages like this as having a different configuration of [+Disc] features in the CompRange. It is widely accepted that the XP that moves to Spec,CP in V2 structures is a topic, in some sense. We might say that, unlike the other languages examined so far in this chapter, the Scandinavian languages spread the realization of topics across Comp and T^0, rather than Top^0 and T^0, and in the absence of Top^0, show more variation in topic features on the former set of nodes. In other words, they collapse Comp and Topic into a Comp where [+Top] obligatorily checks an XP in Spec and blocks the existence of a separate TopP node between Comp and TP (see (8.134); FocP is ignored here).[35]

(8.134) a. English, French (etc.): Comp – Top – T – . . .
[+Top] [+Top] [±C, +Top]
b. Scandinavian: Comp – T – . . .
[+Top] [−C, +Top]

Most crucially, Scandinavian T^0 bears a [+Top] feature that is (following the thrust of Svenonius' suggestion) sensitive to different degrees of definiteness, topicality, and other aspects of information packaging, varying among the languages. When [+Top] is noniterable, it can only apply to subjects in Spec,TP, disallowing adverbials from preceding the subject. This holds for nonfocused Swedish subjects (as in (8.133)) and for "continuing topics" in Norwegian, that is, definite-type subjects. The difference between Danish and the others lies in the Danish T^0 as always hosting a noniterating [+Top].

8.6.3 Conclusion

If the analysis suggested here holds, we gain some insight into how clause-initial adverbs are licensed and also into how V2 languages differ from non-V2 languages. The latter group has the well-known different structural realization of topicality, which now can be seen to correlate with adverb distribution in the CompRange. In particular, in some V2 languages the T^0 node is specified as hosting a noniterating [+Top] (while non-V2 languages require the iterating version), and there is no TopP node separate from CP. This explains why these languages have more restrictions on clause-initial adjuncts.

Finally, if this analysis is correct, it supports the general approach here that links the distribution of clause-initial adjuncts to topic features and again avoids having to posit empty heads like Agr, whose only crucial role is to provide a landing site for an alternate argument position.

8.7 Summary and Conclusion

In this chapter I aimed to explain the types of clause-initial patterns in (8.1) and (8.2) and to elaborate the theoretical mechanisms needed to do this, with relatively little needed in the way of syntactic principles referring specifically to adjuncts. Most important were the distribution of extended projection features like [±C] and [±Disc] (in part to explain the I′-Restriction in French, Danish, and other languages), the effects of Weight theory, and the possibility of multiply adjoined topic(alized) adverbials in clause-initial position (the latter an adjunct-specific syntactic mechanism). A major role in the latter is played by the feature [+Top], which (a) can be either the primary feature of its own TopP projection or a (secondary) checking feature on Tense or higher heads in the CompRange, and (b) can interate, that is, check off several adjoined phrases, rather than be restricted to Spec position.

The I′-Restriction is the phenomenon in which (nonparenthetical) adverbials are ungrammatical adjoined to T′. I proposed in section 8.2 that languages showing this restriction have a [−C] Tense node, which prevents them from licensing nonheads in base structure. Thus, anything adjoined to TP must have moved to adjoin to that position, triggered by [+Top]. Since this movement only occurs (under Last Resort) for this feature to be checked in its checking domain, which is made up of Spec and higher adjoined positions, no movement to T′ is possible. Thus no adverbial may adjoin to T′ in these languages. The complementary pattern in English – of Lite adverbs being possible in TP only when adjoined at the X′ level (as illustrated in

(8.1f) – occurs in languages with [+C] Tense nodes: because a checked [+Top] feature adds weight, a Lite adverb moved to TP-adjoined position will be marked [+Heavy], which is incompatible with [+Lite].

Section 8.3 presented several pieces of evidence that, while topicalized arguments are in Spec,TopP, topic(alized) adjuncts adjoin to either TP or TopP (as well as to higher nodes of the CompRange if they bear [+Top]). Positing this distinction explained why only adjuncts allow multiple-adjunction, why only arguments trigger Comp-trace effects, the fact that only arguments allow long-distance topicalization, and a French/English asymmetry with respect to Comp-trace effects. The success of this account is evidence, in turn, that some [+F] features may iterate.

In section 8.4 we examined a constraint on adjunct topicalization, concluding that the general wide scope requirement on topicalization translates to a scope matching condition for topicalized adjuncts. Evidence for this came from topicalization of manner adverbs, its impossibility with measure adverbs, and the ban on long-distance adjunct topicalization. In section 8.5 I proposed roles for adverbials adjoined to CP and in Spec,FocP (triggering auxiliary-inversion in the latter case), and gave a semantic explanation for why adjunction to a C′ node is impossible. Finally, in section 8.6 I proposed an analysis for the variation among Scandinavian languages' possible positions for adverbials with respect to subjects, without positing multiple, additional projections for the latter. Again, [+Top] played an important role.

The results of this chapter can be taken to support several themes that have been developed throughout this book. First, adverbials are adjoined and are not in Spec positions: the distinctions discussed in section 8.3 are important, and treating them in terms of different sorts of specifiers offers no advantage.

Second, the feature [+Top] plays a significant role in determining adjunct distribution, although it has nothing to do with adjuncts per se; thus there is further evidence that adjunct syntax is determined by devices largely in place for other elements: arguments, clause structure, and the like. (However, to the extent that the iterability of [+Top] checking is wholly motivated by adjunct syntax, this may represent an adjunct-specific syntactic mechanism.)

Third, there is evidence from clause-initial adjunct distribution for three areas of syntactic theory. (a) The proposals given here for the structure of the CompRange support the type of elaboration described in Rizzi 1997, with independent TopP and FocP projections, but reduce the role of TopP in favor of the feature [+Top] on other projections. (b) The importance of Weight theory in syntax also gains support through its ability to explain the restriction on clause-initial Lite adverbs. (c) The primacy of semantic licensing for adjuncts

is also supported: the various positions of adverbials discussed here did not need feature-based licensing but result from semantically based licensing, as laid out in previous chapters, plus various restrictions connected with the distribution and properties of [±C] and [+Top]. Thus the semantically based theory proposed in the preceding pages is able to account for the distribution of adverbials not only in the VP and in the functional projections between verb and subject, but also in clause-initial projections.

9

Conclusions and Prospects

9.1 Overview

I have proposed in this book a theory of the syntax of adverbial adjuncts, specifically of why the various adjunct types have the distribution they do. The account is based on a fairly small number of general and restrictive principles, most of which are independently necessary: principles of phrase structure, of the feature composition of categories, of movement triggers, of weight, of mapping from syntactic structure to semantic representations. Perhaps the most important is the latter. The main explanation for adverbials' hierarchical position – the major influence on their positions in a sentence – is the interplay between lexicosemantic requirements and compositional rules. In large measure, the theory predicts that a given adverbial may occur hierarchically wherever a well-formed semantic representation results.

The prime evidence for this theory is its ability to predict the distribution of a broad range of adjunct classes. Thus in this chapter, after we recap the main principles of the theory, we review its predictions for adverbial distribution and identify which principles are responsible in each case (sections 9.2–9.3). If the theory is successful in its empirical goal, we may then examine the properties of the theory and its implications for syntactic and semantic theory as a whole. Among other things, my proposals here claim that there is very little syntax specific to adverbials, that weight and precedence relations are relevant in syntax, that phrase structure is only partly asymmetric, and that the mapping to semantics plays the major role in determining distribution. These and other conclusions are examined in section 9.4.

Finally, there are many unanswered questions, and several directions that the claims made here point us toward. I examine these further issues in section 9.5, before the final conclusion in section 9.6.

9.2 The Principles of Adverbial Adjunct Distribution

9.2.1 Phrase Structure, Features, and Clause Structure

The scope-based theory of adjunct licensing laid out in previous chapters makes a number of basic assumptions and proposals. These are laid out in this section, with minimal commentary, to be drawn on in subsequent sections.

(9.1) L-syntax (the lexical VP):
- a. Internal arguments of V are in Spec,VP positions.
- b. Verb raises from lowest V position to Pred.
- c. Certain aspects of lexical information are available to syntactic processes within L-syntax.

(9.2) Features and Functional Categories for the Clause:
- a. Sequence of [-Lex] heads (English) (not all heads are present in all clauses):
  Comp – Foc – Top – Tense – Modal – Perf – Prog – Voice – Pred
- b. Category features:
  - (i) Extended projection features: [±Lex], [±C], [±Disc]
  - (ii) Normal values: Tense = [+Disc, +C]; heads below it are [+C, −Disc], those above it are [−C, +Disc], except Comp ([+C]).
- c. Checking features:
  - (i) [+F] features on a phrasal node YP must be checked against [+F] on some head X; checking succeeds iff YP is [−R].
  - (ii) [+F] features are normally not iterable.
  - (iii) C-complex features (e.g., [+S], [+Heavy]) license [+R] on a given phrasal node YP in head-initial languages.

(9.3) Head Movements:
- a. V to Pred
- b. Finite Aux to Tense (English)
- c. Finite V to Tense (Romance) or Comp (Germanic V2 clauses)
- d. Adjunction of second Aux (English)/V (French) to trace of finite Aux

(9.4) Ban on Adjunct Movement:
No movement specific to adjuncts is allowed either in overt or covert syntax.

9.2.2 Nonhierarchical Principles of Linear Order

(9.5) Directionality Principles:
- a. [+F] items are licensed only in F-Dir; otherwise
- b. Languages are parameterized for whether C-Dir is active or inactive:
  - If C-Dir is inactive, then all XPs are [−R].
  - If C-Dir is active, then for any [−F] YP in XP, if X^0 or YP bears a C-complex feature, then YP is [+R].
- c. Two marked options:
  - Exceptional Directionality I (German, Dutch, Hindi, etc.):
  - C-Dir may exceptionally be activated for CP only (permits limited R-movement).
  - Exceptional Directionality II (Mandarin Chinese):
  - A language may have C-Dir active only in lexical projections.

(9.6) Weight Theory:
- (a) Weight is determined by
  - Category (CP > PP > DP > AP > AdvP with complement > AdvP without complement > Adv) (Adv = [+Lite] AdvP, Underlined phrases = [+Heavy], as first approximation)
  - Stress/Focus (more = heavier)
- (b) Endweight Template: In a sequence of postverbal constituents at PF, the preferred order is of increasing weight to the right.
- (c) Related feature licensing:
  - [+Lite] → [−R]
  - Sufficient weight licenses the C-complex feature [+Heavy].

(9.7)
- a. C-complex: content: overtness, tendency toward heaviness, PF conditioning
  - direction: right
- b. F-complex: function: may be covert, tendency toward lightness, LF-conditioning
  - direction: left

(9.8) A grammar is more highly valued to the extent that it is consistent with the patterns of the C- and F-complexes.

(9.9) "Semantic Complement" Principle for "Subjective" Predicationals: "Subjective" Predicational adverbs (all except mental-attitude adverbs) act like heads with respect to Directionality Principles, with the constituent designating their FEO argument acting as if its complement.

(9.10) Structural Condition on Subject-Oriented Interpretation:
The DP (in an A-position) denoting a subject-oriented adverb's agentive argument must c-command the adverb.

9.2.3 Semantic Composition and Lexicosemantic Specifications

(9.11) Basic Mapping from LF to Semantic Representation:
a. An adverbial adjunct combines semantically with its sister constituent.
b. Overt head movement and QR permit interpretation of heads/QPs as if in premovement positions (the former via the Scope Principle; interpretation thus possibly conforms to (9.11a) if premovement position is established by Reconstruction).

(9.12) The FEO Calculus:
a. Any FEO type may be freely converted to any higher FEO type but not to a lower one, except
b. An FEO (sub)type may be converted to another FEO (sub)type as required by lexical items or coercion operators (lowering allowed as a marked option).

Note that the third part of the FEO Calculus given in chapter 2, "(c) Events may be interpreted as SpecEvents within PredP," is now superceded by (9.14); and that the original second part of (9.14), "(b) Event Identification may not apply," is superceded by the effect of (9.19).

(9.13) Scope Principle:
An operator A has scope over an operator B in case A c-commands a member of the chain containing B.

(9.14) Constraint on Event-Internal Adverbial Interpretation:
In the domain of L-syntax, only event-internal modification is possible.

(9.15) Types of Event-Internal Modification:
a. SpecEvents (i.e., events with the special comparison class specified by the Manner Rule): manner adverbials
b. Modification of a core event or some other covert element within the basic event: measure and (indirectly) domain adverbials
c. Modification of the basic event by an expression from a set of "argumental" θ-roles: participant PPs

(9.16) Manner Rule:
A predicational adverb may select an event [F(x, . . .) . . .] denoted by its sister, yielding:

$$[_{E'}\ [_{E}\ F(e)\ \&\ \theta(e,\ x),\ \ldots\ ]\ \&\ P_{ADJ}([_{E}\ F(e)\ \&\ \theta(e,\ x),\ \ldots\ ],\ x)],$$

where the designated relation in P_{ADJ} is [$_{REL}$ manifests], and (if P_{ADJ} maps FEOs to a scale) the comparison class for P_{ADJ} is all events of x F-ing.

(9.17) Core State Accessibility:

$$ADV\ [_{E''}\ CAUSE\ (e'',\ [_{E'}\ BECOME\ (e')\ \&\ Th\ (e',\ [_{E}\ F(e)\ \ldots\ ])])] \rightarrow [_{E'''}$$
$$[CAUSE\ (e''',\ [_{E''}\ BECOME\ (e'')\ \&\ Th\ (e'',\ [_{E'}\ ADV\ [_{E}\ F(e)\ \ldots\ ]])])]$$

(9.18) Event Identification:

$$\lambda e[P(e,\ dp)] + [_{E}\ F(e)\ \&\ \theta 1(e,y),\ \ldots,\ \theta n(e,z)]\ \rightarrow\ [_{E}\ F(e)\ \&$$
$$\theta 1(e,y),\ \ldots,\ \theta n(e,z)\ \&\ P(e,dp)]$$

(9.19) Within L-syntax, internal argumental theta roles are licensed by [+F] features.

9.3 The Distribution of Adjuncts

The basic principles determining the distribution of adjuncts were listed in section 9.2. In this section, I describe their predictions for the range of base positions in each major subclass of adjuncts (thus we ignore adjunction to [−C] categories, above TP; we also do not consider sentences with multiple occurrences of adjuncts).

9.3.1 Predicational Adverbs

9.3.1.1 Manner Adverbs

Manner adverbs occur adjoined to VP or to PredP. In the first case, they are licensed because event-internal modification is allowed (in fact, required by (9.14)) within the domain of L-syntax, the VP, so the Manner Rule (9.16) applies. In head-initial languages like English, only right-adjunction is allowed in VP according to the Directionality Principles (9.5), explaning why adverbials normally do not come between the verb and nominal objects (after the raising of V to Pred). When a manner adverb adjoins to PredP,

the Manner Rule once again applies, since there is no specific structural constraint on its application, and the adverb is preverbal, as required by (9.5). Manner adverbs may not occur any higher than PredP in English because higher positions would put them above auxiliary, negative, or other heads that require (External) events. Since manner modification requires a SpecEvent, a kind of Internal event, semantic composition at these higher points would only be possible by lowering the FEO, a violation of the FEO Calculus. In languages like Chinese, where there is a head above PredP that does not have this effect (*ba*), manner adverbials may in fact adjoin higher, as predicted.

9.3.1.2 Measure Adverbs

Measure adverbs also occur adjoined to VP or PredP. They must modify the core event within the L-syntax VP and can do this directly by adjoining to VP (to the right in head-initial languages, as for manner adverbs). When adjoined to PredP they can take this narrow scope by means of Core State Accessibility (9.17). They cannot (normally) adjoin above PredP for the same reason manner adverbs cannot.

9.3.1.3 Subject-Oriented Adverbs

The adverbs of this class, both agent-oriented and mental-attitude, may adjoin to VP with manner readings, according to the Manner Rule (9.16). When they are adjoined to PredP, a clausal reading is also possible, since (9.16) is not obligatorily above VP. Of course, this is possible as well at any higher point in [+C] projections up to T′, inclusive (for English). (Base-adjunction to TP is impossible because of the condition on subject-oriented interpretations (9.10), by which the subject must c-command the adverbial.) Above PredP clausal readings are obligatory, since manner readings are blocked. The lower positions in this range, such as those below aspectual or modal auxiliaries or negation, may be disfavored or ruled out for clausal readings because of the conflicting semantic requirements of the adverb and these functional heads. In general, predicational adverbs must adjoin to the left in functional projections, according to the principle in (9.9); the major exception to this is the mental-attitude class, which is not "subjective" and therefore may right-adjoin above VP (as discussed in Ernst 2000b).

9.3.1.4 Speaker-Oriented Adverbs

The largest group of speaker-oriented predicational adverbs, those in the epistemic and evaluative subclasses, is characterized by their requirement for a

propositional FEO (on clausal readings). As a result, they cannot adjoin below aspectual auxiliaries, except in those cases where raising of the auxiliary allows the latter's base position to mark its scope. Thus, for finite clauses in English, these adverbs can always follow a finite auxiliary, which raises to Tense, and where a nonfinite auxiliary raises exceptionally (as for *have* with modals) they may follow this second auxiliary as well. Evidentials, such as *clearly*, are the only adverbs of this group that can occur below negation, because only they combine with propositions to (somewhat exceptionally) yield events. Evaluatives and modals combine with propositions to yield propositions that are presupposed to be either true (i.e., a fact) or to have an indeterminate truth-value; thus if they are within the scope of negation an anomaly results. The overall prediction, then, is that these speaker-oriented adverbs generally occur to the left of nonfinite auxiliaries and negation, with the exceptions just noted.

The remaining speaker-oriented subclass, speech-act adverbs, differs in requiring the covert predicate **Express*, either in Comp or exceptionally encoded in a few commonly used exemplars of this class. The latter group thus may occur somewhat lower than those that must take scope over **Express*, as long as they can still take a propositional FEO. Those without lexical encoding of the covert predicate must adjoin to CP.

Speaker-oriented adverbs may have manner readings if their lexical specifications permit it, when adjoined to VP or PredP (to the right and left, respectively), by the mechanisms described in chapter 2. With clausal readings, all of these adverbs must adjoin to PredP or above, to the left (by (9.9)).

9.3.1.5 Exocomparative Adverbs

Adverbs of this class are unspecified for FEO and therefore have a wider range of positions than other predicationals. If they take events they act like subject-oriented adverbs in allowing manner readings and clausal readings among the aspectual auxiliaries and negation (and by the same principles); when taking propositions they occur higher, just like speaker-oriented adverbs (and by the same principles).

9.3.2 Domain Adverbials

Domain adverbials in English divide into two subtypes: (a) the means-domain type, which is purely event-internal and thus has the same distribution as manner adverbs, for the same reasons; and (b) the pure domain type. The latter's distribution hinges on a covert restriction on every predicate, given as UNDER (e,c*) in semantic representations (c* encoding conditions under which the predicate must be interpreted) and which maps to a position within

VP. The actual specification of the value of c* can be contextual or given by various expressions, including domain adverbials, and for purposes of semantic interpretation it does not matter where this specification is in the sentence. Therefore, domain adverbials of the English type (i.e., those not restricted to a framing function, as seems to be the case in some languages) are free to occur anywhere in a clause.

9.3.3 Functional Adverbials

9.3.3.1 Time-Related Adjuncts

Time-related adjuncts divide into loc-time, duration, and aspectual adverbs, all of which require events as their FEO. In principle they may adjoin to any functional projection (either to the left or to the right of the head in head-initial languages, since the Directionality Principles in (9.5) apply as always, but (9.9) does not). Loc-time and duration adverbials do in fact occur fairly easily anywhere from clause-initial position down to PredP, but since most of them are DPs or PPs, they are disfavored in or barred from positions between the subject and verb in head-initial languages. As always, co-occurrence with particular aspects, tenses, or negation may induce semantic clashes that rule out a given sentence, but in general these subclasses occur fairly freely. Aspectual adverbs are more restricted. They are generally possible on either side of finite auxiliaries in English and other languages in which the latter moves to Tense. But when they cooccur with auxiliaries, their stringent aspectual requirements often rule out particular combinations or orders, notably any occurrence after *be*. In this way the normal range of aspectual adverbs ends up being higher in the clause than other functionals.

9.3.3.2 Frequency Adjuncts

This class includes pure frequency adverbs, habituals/generics, and additive *again*. The distribution of these adverbs is essentially the same as time-related adverbials, for the same reasons: they require event FEOs and are not restricted directionally in head-initial languages. Pure frequency adverbials and *again* have relatively few semantic conflicts with auxiliaries or negation and so occur fairly freely in the AuxRange, except when they are DPs or PPs (in which case their occurrence is restricted by Weight theory). Habitual/generic adverbs are constrained by requiring fairly large time intervals, so that in effect they must occur fairly high among the auxiliaries.

For *again*, these remarks apply only to its repetitive reading. For the restitutive reading, which is event-internal, we saw that it must be specially marked,

taking narrow scope over the core state only and disallowing application of Core State Accessibility. Thus restitutive *again* obeys the same principles as measure adverbs and has the same distribution.

9.3.3.3 Clausal Functional Adjuncts (and Related Adverbs)

The syntax of this grab-bag category with purpose, causal, conditional, or concessive (etc.) semantics needs more investigation, but we examined preliminary evidence that these adjuncts occur adjoined anywhere above VP in principle. Once again, this holds for the same reasons as time-related and frequency adjuncts.

9.3.4 Participant PPs

Participant PPs are interpreted by the compositional rule of Event Identification in (9.18), which applies generally to phrases with argumental θ-roles, including selected arguments of V. Thus the constraint in (9.19) has the effect of excluding participant PPs from VP, since they would occupy Spec,VP positions reserved for arguments and therefore prevent the verb from meeting its selectional requirements. As with manner adverbs, PPPs may not occur above PredP, because Event Identification is a subcase of event-internal modification, and any higher position would require their combining with an External event (since it would be above aspect, tense, modality, or negation).

9.3.5 Focusing and Clausal-Degree Adverbs

This group contains adverbs like *even, only*, and *just*, and like *scarcely*, *hardly*, and *almost*. They have relatively few semantic requirements that interact to cause anomalies and therefore can occur just about anywhere in a clause, either taking an event as their FEO or (indirectly) a proposition, where they can coerce an exceptional lowering of the FEO from proposition to event. Many in this group are marked [+Lite], and as a result they cannot occur adjoined to TP (where the increment of weight added by topic interpretation conflicts with [+Lite]) or be right-adjoined to any projection (by the second condition in (9.6c)). Thus this subset is restricted to positions between the subject and verb in head-initial languages.

9.3.6 Schematic Overview

The graphs in (9.20)–(9.22) represent the predicted ranges of adjunct base positions in a clause with respect to V and functional heads (and Spec, in the case of Neg for some languages). Here we ignore Directionality Principles

and Weight theory, so these predictions are for hierarchical position only; we also ignore TopP and FocP, since they do not permit base-generation. The slash lines represent areas of the range where the adjunct in question is very often impossible (or degraded in acceptability) due to a semantic clash induced by the functional heads in that area. Parentheses indicate areas where only a subset of the class in question has base positions.

(9.20) Purely Event-Internal Modification (Predicational and PPP):

	Comp	Tense	Neg	Modal	Asp	Voice	Pred	V
a.							⌊------manner--------⌋	
b.							⌊------measure------⌋	
c.							⌊-rest. *again*-⌋	
d.							⌊--means-domain--⌋	
e.							⌊--PPP--⌋	

(9.21) Event-External Modification (Predicational and Domain):

	Comp	Tense	Neg	Modal	Asp	Voice	Pred	V	
a.		⌊-subj-or--////////////////////////////////⌋							
b.		⌊---spkr-or--////////////////////////////////⌋							(evidential)
c.		⌊-spkr-or---⌋							(modal/evaluative)
d.	⌊--spkr-or--(---------)⌋								(speech-act)
e.	⌊------------------------(pure) domain-------------------⌋								
f.	⌊----------------exocomparative--------------⌋								

(9.22) Event-External Modification (Functional):

	Comp	Tense	Neg	Modal	Asp	Voice	Pred	V
a.	⌊------------------------loc-time-------------------------⌋							
b.		⌊----------------frequency----------------------⌋						
c.		⌊----------------duration-----------------------⌋						
d.		⌊----------------aspectual----------////////////⌋						
e.		⌊(--)-----focusing/clausal-degree-------------⌋						
f.	⌊---------------------(misc. clausal)----------------------⌋							

9.3.7 Review of Phenomena

In chapter 1 a number of phenomena were listed that a theory of adverbial distribution should account for. This list is reprised here as (9.23)–(9.34), with a brief description of how each phenomenon is accounted for with the principles given in section 9.2.

(9.23) Predicational adverbs are mostly rigidly ordered.

By (9.15a) and the FEO Calculus (9.12), manner adverbs are always below clausal predicationals. Among the latter group, the event-taking subject-oriented adverbs are below those of the (proposition-taking) speaker-oriented group, again by the FEO Calculus. Among the speaker-oriented subclasses, speech-act adverbs take a covert predicate requiring the whole expressed proposition in its scope, so they precede all others, and the various requirements for properties of propositions among epistemic and evaluative adverbs likewise strictly determine their order. The major exception to this rigidity is the less restricted exocomparative class, which may precede or follow the other clausal-reading predicationals (except for speech-act adverbs).

(9.24) Nonpredicational adverbials are usually not rigidly ordered.

(9.24) holds because non-predicationals lack the more stringent requirements just described; they are therefore able to occur in different orders.

(9.25) "Subjective" adverbs (most predicationals) cannot adjoin to the right above VP in VO languages.

(9.25) follows from (9.9): these adverbs act like heads for the purposes of the Directionality Principles, with their FEO argument counting as a complement, linearized in the universal C-Dir (rightward with respect to the head). Thus left-adjunction in functional projections is always necessary; in head-initial languages, right-adjunction is possible in VP only.

(9.26) VO languages generally allow postverbal adjuncts; OV languages generally do not.

(9.26) is predicted by the Directionality Principles (see (9.5)), by which head-final languages have an inactive C-Dir, so that F-Dir, universally leftward, forces adjunction of all adjuncts to the left of their heads.

(9.27) There may be restrictions on relatively heavy adjuncts in VO languages between the subject and verb.

(9.27) is predicted by Weight theory in (9.6) and the Directionality Principles, which jointly require [+Heavy] adjuncts to be [+R] (since [+Heavy] is a C-complex feature) and thus to be adjoined to the right of any functional projection (in VO languages, where C-Dir is active).

(9.28) Sentence-initial adjuncts are somewhat more restricted distributionally than postsubject adjuncts.

(9.28) results from three influences of clause-initial projections. First, adverbials adjoined to CP must take elements in Comp in their scope, and this often causes anomalies in semantic representation since either Comp requires the clause to be represented as an object (see chapter 8, section 8.5.3) or contains a speech-act operator. Second, the influence of [+Disc] means that light adverbs may be excluded from presubject position, because it makes the adverbs too heavy, conflicting with [+Lite]. Third, the structural requirement (9.10) forces subject-oriented adverbs to have base positions below subjects' surface positions in Spec,TP.

(9.29) Predicational adverbs typically show two readings (clausal and manner readings) corresponding to higher and lower parts of clausal structure.

(9.29) comes from predicationals having underspecified lexical representations and from event-internal modification (yielding manner readings) being a subcase of the adverb taking an event argument. In the lower part of a clause, manner readings are allowed according to the Manner Rule. Where this rule cannot apply, in the upper part of the clause, the clausal reading results. Since the rule is inapplicable to functionals and PPPs, only predicationals show this dichotomy.

(9.30) Generally, greater distance from V is interpreted as wider scope.

(9.31) The linear order of adjuncts and auxiliary verbs generally reflects scope relationships directly, although adjuncts are occasionally closer to V than this predicts.

Abstracting from head movement and rightward phrasal movements, distance from V exactly correlates with higher position in phrase structure, which then maps directly onto higher scope in LF and semantic representation, accounting for both (9.30) and (9.31).

(9.32) More restrictive lexical semantics for a given adjunct class generally correlates with more restricted distribution.

(9.32) is the result of allowing the presence of a semantic clash to cause ungrammaticality. The greater the lexicosemantic requirements of an adjunct, the more likely such clashes are induced, and therefore there is a correspondingly greater chance that a given adjunct's co-occurrence with another adjunct or some other element has this result.

(9.33) Participant PPs and location-time adjuncts are higher in structure than manner/measure adverbs.

(9.33) comes from two mechanisms. First, location-time phrases are not event-internal, so they cannot occur below manner or measure adverbs because this would require FEO lowering and thus ungrammaticality. Second, even though PPPs involve event-internal modification, they are independently excluded from VP. In head-initial languages PPPs are also usually excluded from positions in the AuxRange, so they normally can only be postverbal, where they are higher than event-internal modifiers. However, this does not hold in head-final languages and Chinese (chapter 6), where weight-theoretic considerations do not apply preverbally; this is as predicted by the theory.

(9.34) Languages may forbid adjuncts between V and O, or between subject and finite V.

The first part of (9.34) is predicted by the Directionality Principles, which bar left-adjunction to VP in VO languages, and the assumption that verbs always raise to Pred. The joint result is that the verb and direct object are always adjacent. The second part of (9.34) (the I′-Restriction) comes from the relevant languages (such as French) having a [−C] TP. This prevents adverbial base positions adjoined to T′ and makes all presubject adjuncts move to their surface position.

9.4 Conclusions

9.4.1 The Main Conclusion

If it is indeed true that the principles detailed in previous chapters correctly account for the range of phenomena discussed here, then the semantically based theory has considerable empirical support. It makes its predictions with a fairly small number of general principles, most of which are necessary in any case to account for nonadjunct syntax, and preserves a certain degree of restrictiveness. The most important claim is thus that there is very little in the syntactic component of Universal Grammar that is specific to the distribution of adverbial adjuncts. Instead, the major factors governing the their distribution are lexicosemantic specifications, principles of semantic composition (including the FEO Calculus and the structural constraint on event-internal modification), Directionality Principles, and Weight theory, all of which

interact with phrase structure theory, familiar head and phrasal movements, and certain parameterizations to account for cross-linguistic variation.

9.4.2 Secondary Conclusions, about the Organization of Grammar

9.4.2.1 Architecture of the Theory I: Major Components

If the theory argued for here is correct, then the determining factors in adverbial syntax are spread across several components of the grammar, divided between hierarchical arrangement and linear order. The hierarchical arrangement of adjuncts seems to come almost exclusively from the interplay of (a) the basic syntactic structure of the clause, along with (b) the lexical semantics of individual adjuncts and the relevant rules for constructing a semantic representation. Linear order, by contrast, is a matter of the hierarchical arrangement plus (c) Directionality Principles (most importantly, the parameterization for head direction represented by whether C-Dir is active or not) and (d) Weight theory. To the extent that L-syntax plays an important role in event-internal modification, we could also say that the lexicon is involved beyond semantic selection properties: one might conceive of the Manner Rule as an essentially lexical rule manifested syntactically, parallel to the "lexical" construction of the causative *slide* from the unaccusative *slide* plus CAUSE. Finally, the familiar movements of syntax, especially the raising of main and auxiliary verbs, and both leftward and rightward A′-movements, produce the effect of additional surface positions for adjuncts beyond the basic ones.

9.4.2.2 Architecture of the Theory II: The Nature of Syntax-Semantics Mapping

If the arrangement of grammatical components discussed in section 9.4.2.1 is correct, then we may draw some conclusions about the nature of syntax-semantics mapping. First, if we assume binary branching, we simply assume a stepwise compositional procedure in which an adjunct always combines with its sister. There are occasional apparent deviations from this, such as cases of head movement of a verb over an adverbial expression (e.g., occurrences of modals raising over negation or epistemic adverbs [handled by the Scope Principle in 9.13]). In such cases, the head enters into semantic representation from its base position.

Second, the proposed theory is based in part on a flexible relationship between specific syntactic nodes and specific semantic elements, such as FEOs. The evidence is fairly strong that we must analyze the multiple positional

possibilities for adverbials as a matter of multiple possible base attachment points, rather than as the result of one base position with an overlay of movements to yield different surface positions. This being so, we cannot ignore, for example, the fact that a proposition-taking modal adverb (e.g., *probably*) and an event-taking agent-oriented adverb (e.g. *stupidly*) may both adjoin to a projection of Tense or to a projection of a modal or aspectual head (both types of Aux). To say that sometimes *probably* can take an event and *stupidly* a proposition is clearly a mistake, since this would make many wrong predictions (e.g., incorrectly allowing *stupidly* to the left of *probably*). The only other conclusion is that a given projection of Tense, Modal, or Aspect may represent either an event or a proposition, in different sentences. In other words, there is no hard and fast, one-to-one matching between particular syntactic projections and specific FEOs. (Note, however, that this does not exclude particular heads requiring a specific FEO, as in the case of modal and aspectual auxiliaries, nor does it disallow operations applying at some particular projection and introducing semantic elements other than FEOs, as for existential closure [Diesing 1992]).

This second conclusion should enable us to sharpen up another issue in syntactic theory: how many and what sorts of empty functional heads does UG allow (or mandate)? If more abstract heads are permitted, it is possible to construct a theory where particular syntactic and semantic objects coincide more directly. Let us return to the case of *probably* and *stupidly*. We could interpret the idea that a given syntactic projection may correspond to more than one FEO by saying that the projection is manifested in two different places in the clause, as (9.35) illustrates (where the projections P-ModP and P-AspP are a ModalP and an AspectP denoting a proposition, and E-ModP and E-AspP are a ModalP and an AspectP denoting an event).

(9.35) [$_{\text{P-MODP}}$ PROB Mod [$_{\text{P-ASPP}}$ PROB Asp [$_{\text{E-MODP}}$ STUPID Mod [$_{\text{E-ASPP}}$ STUPID Asp . . .]]]]

If a language allows head movements, then fewer functional heads may be needed; but if it does not, as for Chinese, an elaborated sequence like this may be necessary. Such structures pose a number of difficulties, which I do not examine here. The point at issue is rather that the theory proposed in this book requires the more flexible mapping of syntax to semantics, and any attempt to uphold the alternative must carefully examine the implications for functional heads and head movement, particularly the extent to which these devices affect the simplicity and restrictiveness of syntactic theory.

9.4.2.3 Architecture of the Theory III: Precedence and the LF/PF Mapping

Many versions of current syntactic theory deny that precedence relations have any role to play except at the most surfacey part of the grammar (the end of PF). In essence, they claim that precedence relations are wholly predictable from hierarchical relations. If the proposals made here are correct, however, precedence relations not only exist but occupy an important place in the grammar. I argued that if precedence relations are permitted in syntax, then important simplifications are possible in movement theory, Feature theory, and locality constraints on selection, or in movement theory and the mapping of syntactic structure to semantic interpretation.

Starting from a given hierarchical structure, two sets of principles govern linear order: Directionality Principles, which are always in force, and Weight theory, which kicks in when phrases are too heavy or too light for their base position in a sentence, or when several items are to the right of V in head-initial languages (at least). The former determines head direction in terms of parameterization for C-Dir and therefore also determines the overall range of possible adjunction points for adjuncts in a given language. Weight theory reduces or adds to this range by moving some adjuncts and blocking others. It also allows rightward movement to some derived adjoined positions (sometimes forced by [+R]). Since [+F] does the same with movements to Spec positions (always leftward as required by the Directionality Principles), a language's possibilities for movement are directly linked to its possibilities for base positions.

Further, the valuation principles represented by C- and F-complexes conceptually unite and represent a constraint on the connections among (a) the range of base positions, (b) permissible movement options, (c) the distribution of features like [±F] and [±R], and (d) morphological weight. Both base positions and landing sites are licensed in part by the syntactic features and semantic interpretation on the LF side of the grammar and by features and weight on the PF side. [+R] in particular represents a link between these two interface levels: it is licensed in part by whether a phrase is a complement or not (ultimately a matter of semantic interpretation), and in part by morphological weight; it is interpreted for linearization at PF.

Finally, I claimed that precedence is also relevant as part of the notion "x-command and precedence," the condition on the binding of anaphors and variables, negative polarity licensing, and weak crossover (i.e., Barss/Lasnik effects). This use of precedence is slightly different from that based on [+R], since the latter is strictly local (between two branches of a binary-branching node, or between the two members of a set on the Bare Phrase Structure view),

while the notion of precedence linked to x-command is long-distance. This obviously is somewhat less attractive theoretically. I claim, however, that a theory invoking precedence in this way is still preferable to the alternative, which is to make other aspects of the theory more complex and less restrictive.

9.4.3 Some Specific Implications

9.4.3.1 Restricted Theories of Functional Projections and Movement

If we allow precedence relations in the grammar, parameterizing them in a traditional way, then right-adjunction of adverbials is possible in head-initial languages. This keeps movement theory simple by avoiding the widespread need for intrapositions, with the corresponding weakening of contraints on movement triggers, empty functional heads, and the locality of selection. Likewise, scope-based licensing for adverbials and thus ranges of base positions (rather than unique positions) for a given subclass obviate the need to posit unnecessary functional heads and head movements.

9.4.3.2 Adverbs as Unreliable Diagnostics

Adverbs have developed into a common tool to detect both the edge of certain projections (such as VP) and the existence of head movement, particularly in the literature on Romance and Germanic languages. The conclusion here must be that the tool is not nearly as effective as has often been thought. As Iatridou (1990) and others have noted, if multiple base positions are possible for an adverb, the possibility for a verb to precede a given adverb provides no evidence for leftward movement of that head over the adverb. Clearly, the same logic renders invalid arguments for category boundaries based on adverbs with multiple positions.

This conclusion does not make the tool completely useless, however. For it to be used successfully, there needs to be good evidence that an adverb *must* or *cannot* occur in a given position. In the case of head movement in English and French, for example, the fixed position of sentential negation provides a valid diagnostic. The same holds for Romance languages that allow main verbs (including participle forms) to precede speaker-oriented predicational adverbs: the licensing conditions for these adverbs forbid base positions to the right of V in base structure. Event-external adverbs can never adjoin to VP, so they can sometimes be used as a test for movement out of this category (as in Diesing 1997, among others). Also, although this case must be handled with somewhat more care, adverbs like *already* and *still*

could provide a test for the edge of AspP, as long as the lower bound on their range is fixed (by semantic clashes with aspectual heads) in the data used as evidence.

9.4.3.3 Phrase Structure as Only Partially Asymmetrical

The work of Kayne (1994) rightly focused attention on the left-right asymmetry in phrase structure and attempted to reduce all apparent cases of right-adjunction to left-adjunction plus movement, so that in terms of phrase structure principles the asymmetry is complete. If the conclusions reached here are correct, however, the asymmetry is in fact only partial. While it is true that (a) all Specs are to the left of their heads, and that (b) all nonheads have leftward base positions in head-final languages, right-adjunction is possible in head-initial languages.

It must be stressed that the Directionality Principles of both F-Dir and C-Dir, and parameterization only for the latter, exactly predict that there *is* asymmetry, but that it is only partial and that it is limited in precisely the way that it is, for elements relating to the C-complex, in only some languages, and with base positions and landing sites correlating in the way that they in fact do. It does not appear that a theory embodying a basic total asymmetry, supplemented by movements, can make the same predictions without undue complications and missed generalizations.

9.4.3.4 Multiple Event Variables

A layered semantic structure, built up out of events and propositions by the FEO Calculus, shows that there is no one, unique event variable, as is often supposed in current theory. In particular, it does not seem possible to say that "the" event variable is bound by Tense (e.g., as in Pollock 1989 and other works). While it is true that one might consider the basic event variable (the argument of the main verb and of the predicates representing θ-roles) to have a privileged status, it is no longer possible to say that there is necessarily a direct relation between this variable and tense, or aspect, or any particular adverb aside from event-internal modifiers.

9.5 Further Issues

9.5.1 Overview

In laying out a theoretical approach to adjunct syntax that covers a sufficient range of data, it has been necessary to ignore many issues. An important one

is the depth of the semantic analyses involved: questions remain, for example, for the correct characterization of aspectual adverbs, for how they and loc-time adjuncts interact with complex tenses, for the semantics of discourse-oriented adverbs taking questions in their scope, for the proper analysis of frequency adverbials, and so on. Such matters could well affect the theory's predictions for adjunct distribution.

However, I focus on more syntactic issues in this section, since they are more relevant to the central question of how much of adjunct distribution is handled by purely syntactic principles. These issues are roughly grouped together in the next five subsections.

9.5.2 Gaps

There are several classes of adjuncts that have not been considered in any detail here. Among them are the "B-class" adverbs, such as *scarcely, hardly*, and *barely*; various discourse-oriented adverbs, such as *however* and *besides*; degree-of-precision adverbs, such as *exactly* or *approximately*; and intensifiers, such as *really* and *just*. The literature on these is relatively scant. There is perhaps more written on the adverbial CPs discussed briefly in chapter 7, that is, concessive, causal, purposive, and conditional clauses, but it must be shown that they can be handled in this theory. The same holds for various, non-participant PPs with a variety of meanings: *out of spite, aside from the main idea, with respect to morphology*, and so on.

Aside from gaps in the coverage of adverb classes, I have ignored some parts of the positional range of some classes. The two most important are probably (a) event-internal (or at least, VP-internal) instances of frequency and duration adverbials, and (b) "higher" occurrences of PPs that are participant PPs in lower positions. As discussed in several works (e.g., Klipple 1991, Maienborn 1998), locative modifiers may have both framing and eventive functions, as in (9.36), where *on the ears* is an argument PP, *in the Andes* is a framing adverbial, and *in front of the church* is eventive.

(9.36) In the Andes, sheep are branded on the ears in front of the church.

The same is true to a lesser extent with benefactives (e.g., Verspoor 1997). A fuller exploration of such PPs' syntax and semantics ought to help flesh out several issues in adjunct syntax.[1]

Finally, there are several syntactic contexts that I have considered very little or not at all. One of these is nonfinite clauses. For an example of the issues raised, consider that the predicational adverb *luckily* is unacceptable

(or severely degraded) before *to* in (9.37a), although the grammaticality of *only* in (9.37c) shows that adjunction to this position is possible in principle, and speakers find a frequency adverb like *always* to be intermediate in grammaticality, (see (9.37b)).

(9.37) a. They were known (*luckily) to (luckily) have escaped any further injury.
b. They were known (?always) to (always) have escaped any further injury.
c. They were known (only) to (only) have escaped any further injury.

This has the flavor of a semantic solution in its gradation according to severity of lexicosemantic restrictions, but it is unclear why this sort of clause would impose a restriction only in initial position. The issue is further clouded by the prescriptive injunction against split infinitives, which leads some speakers to reject the second occurrences of the adverbs in (9.37) and might have an effect in boosting the acceptability of the first occurrence.

A second context largely ignored here is inversion, focus, and cleft constructions, though they were briefly considered in chapter 8. There clearly are constraints on what sort of adverbial can appear in them, investigation of which ought to tell us about differences in adverb classes' semantic interpretation and conditions on movements to Spec position. (9.38) illustrates that while some temporal and (less acceptably) manner adverbs may appear in *it*-clefts, Modal adverbs may not.

(9.38) It was (only) {recently/?quietly/*probably} that she performed that song.

A third and somewhat simpler matter is negative polarity licensing; as is well-known, some adverbs, such as *yet* and *ever*, are negative polarity items (NPIs) (on one of their uses). A full account of adverbial licensing must make reference to this to account for cases like (9.39) in modern standard English.

(9.39) a. *They have arrived yet.
b. *She has ever told him about the robbery.

This is mostly a matter of completeness, since there seems to be nothing about NPI licensing that sheds light on issues special to adjunct licensing.

9.5.3 Arguments versus Adjuncts

It is a fundamental phenomenon in syntax that adjuncts and arguments differ in their syntactic behavior; aside from the fact that only arguments are

normally obligatory, arguments and adjuncts have different positions (within VP, arguments are closer to V, at least in base structure), extraction patterns (arguments move long-distance more easily), scope interpretation (quantified objects more often allow ambiguities; see Aoun and Li 1993 and Ernst 1994a), behavior under focus, and so on. To explain such differences, there must be ways to determine whether an expression is an adjunct or an argument.

In most cases there is no disagreement about a given element's status, but there are some phrases that apparently have both argument and adjunct properties, most notably some participant PPs (Jackendoff 1990b, Verspoor 1997, Wechsler 1997) but also certain others (Ernst 1994a, 1996a, Tenny 1994).[2] It is widely assumed that the nature of the semantic relationship between a phrase and the verb determines its adjunct/argument status, and there is preliminary evidence that certain semantic properties correlate with intermediate status. Thus, because syntactic behavior can be (partially) predicted from semantic factors, it is important to eventually have a better understanding of these properties and how they interact with syntax.

The central assumption about adjunct/argument status is that arguments have a closer semantic relationship to the verb (or other head) than adjuncts do. This is the notion of (cognitive) selection (chapter 2): an argument is semantically obligatory with respect to the specific meaning of the verb; that is, the most prototypical arguments must be part of an event for a verb to be used felicitously (e.g., one cannot hit something without there being an affected theme) in a way that is specific to that verb's meaning. But for many less prototypical arguments the issue is less clear.[3] For example, for *talk* there need not be an addressee, yet in *talk to your brother* the PP is often felt to be an argument; with *detach the antenna* there must be some instrument used, yet in (9.40) a phrase like *with your left hand* is usually taken to be an adjunct.

(9.40) You should detach the antenna with your left hand.

Resultative expressions represent another important case. In (9.41), is *hoarse* an argument or an adjunct, based on the criterion of semantic obligatoriness?

(9.41) Debbie sang her voice hoarse.

(9.42) gives several additional criteria proposed in the literature.

(9.42) a. referentiality (Aoun 1985)
b. individuation (Larson 1990:624)
c. aspectual structure focus (Ernst 1996a, interpreted in terms of Rapoport 1999)

d. affectedness (including change)
e. telicity

(9.42a) has often been used to distinguish the more argument-like, referential adjuncts *where* and *when* from *how* and *why*,[4] and (9.42b) has been invoked as underlying the θ Hierarchy including both arguments and adjuncts. Aspectual structure focus, in (9.42c), might be applied to the Chinese postverbal manner expressions discussed in chapter 6, which show some argument-like behavior. Finally, some combination of aspectual structure focus, affectedness, and telicity could predict that goal, instrumental, and result phrases are more argument-like than (say) manner, temporal, locative, or comitative modifiers, as they generally have the properties in (9.42) to a greater degree.

The usual assumption in P&P syntax is that a phrase's argument status is encoded as representation in a verb's argument structure. This all-or-nothing proposition then translates into a simple difference in position (e.g., Spec vs. adjoined), and – given the primacy of structural configuration – the whole constellation of different syntactic behavior for arguments and adjuncts should follow consistently from this. But, of course, it does not: arguments are sometimes optional; *where* and *when* (but not *how/why*) act like *who* and *what* with respect to Superiority effects, and so on. A proper characterization of factors like those in (9.42a–e) should provide ways to explain why there is not a perfect correspondence between all argument properties and all adjunct properties.

There is a distinction related to the argument/adjunct dichotomy that also deserves mention here. With a focus on adverbial adjuncts, we have looked mostly at items that attach to VPs and the functional projections above them in a clause, and that combine semantically with FEOs; they treat the FEO as a semantic argument of an adjective-like predicate (for predicational adverbs), as a predicate representing a θ-role (for participant PPs), or else as entering into a grab-bag of formal relations including generalized quantifiers, focus-presupposition relations, and so on. We have mostly ignored other items commonly termed "adjuncts" that also adjoin to VPs and clausal functional projections. In particular, depictive secondary predicates and floating quantifiers like *all* or *both* seem to combine with arguments in the clause rather than with FEOs. Thus *standing* in (9.43a) is a predicate on *you*, and *all* in (9.43b) is associated with *the kangaroos*.[5]

(9.43) a. You should eat your bagel standing.
b. The kangaroos are all hopping around.

I do not address these complex topics here, but it seems likely that the syntactic and semantic mechanisms for the two types of modification are rather

different; in fact, in chapte
posed for linking subjects with subject-oriented adverbs, while the connection between the latter and the event was more a semantic matter.[6]

9.5.4 Cross-Linguistic Variation

In chapters 7 and 8 we examined certain cross-linguistic differences in the syntax of adverbial adjuncts. Obviously, there is far more to say on these, and I do no more here than mention a few of the relevant issues.

(a) Although word order typology was considered with respect to adjuncts in this book, there are a number of further issues in adverbial typology: presence or absence of adverbial serial verb constructions, whether adjective forms are normally used also for adverbial expressions, choice of dependent or independent verb forms in adverbial expressions, and so on. (On these and related topics, see Kortmann 1997, Auwera 1998a.)

(b) There are numerous cases of low-level variation in adjunct distribution between languages and dialects. For example, as sketched in Ernst 1995a, northern Mandarin Chinese speakers tend to allow temporal adjuncts to occur lower in structure than do southern speakers. Similarly, there is a growing literature on negation in Romance languages (see Zanuttini 1996, Rowlett 1998 for starters), in which one issue is the syntax of negative adverbs, such as *guère* 'barely,' *jamais* 'never,' *plus* 'any more' in French, which is more restricted in some ways than the syntax of their counterparts in English. In both cases, although the framework advocated here would prefer to see semantically based solutions, it may be that there are some low-level syntactic stipulations at work (e.g., perhaps some Romance negative adverbs are in Spec positions of functional projections below Neg).

(c) Languages may differ according to how they make use of different syntactic categories to realize adverbials. Some have few or no adverbs, and instead use adjective forms that are interpreted adverbially (or, alternatively, if these forms are generally analyzed as being of both categories, then these languages make no morphological distinction between the categories). Some, like Chinese, use VPs or DPs in ways that European languages usually do not (in (9.44a) the use of the aspect marker in *zuo-zhe* 'sitting' is evidence for it being a genuine VP).

(9.44) a. Laoshi hen shao zuo-zhe jiang-ke.
teacher very little sit-ASP lecture
'The teacher seldom lectures sitting down.'
b. Zhangsan yi gulu paqilai-le.
Zhangsan one roll climb-up-PRF
'Zhangsan climbed up with a rolling motion.'

Perhaps the most common difference is between languages with a general use of adverbs or adjectival expressions (as well as PPs) for such notions as manner and domain, and those that generally allow only PPs. English, French, Chinese, and the European languages are of the first sort (see examples in chapter 6), while many if not most West African languages are of the second. Observe the sentences from Hausa in (9.45), with PPs expressing manner.

(9.45) a. Ta dafa abinci da gaggawa. (Paul Newman, p.c.)
she-PRF cook food with haste
'She cooked the food hurriedly.'
b. Tana aiki da hankali.
she-PROG work with care
'She is working carefully.'

This is not to say that such notions cannot be expressed by means of adverbs (e.g., Hausa also allows the adverb *sannu sannu* 'slowly and carefully' in place of the PP in (9.45)), but it is rather to say that in such languages, these cases are exceptions, not the rule.

Presumably, these category-based generalizations are worth capturing formally in some way. In part this would be useful because in languages like English, where both AdvPs and PPs may be used freely, there appear to be differences in their syntax in some cases. For example, as Carlota Smith has pointed out (p.c.), while (9.46a) is not very good (see chapter 2), replacing the adverb *glumly* with the prepositional phrase in (9.46b) improves the sentence markedly.

(9.46) a. ??Glumly, she answered them, despite being overjoyed at the news.
b. In a glum manner, she answered them, despite being overjoyed at the news.

Some of the differences may well be purely a question of weight, as in (9.47), where a (heavy) PP is banned preverbally while a (light) AdvP is fine.

(9.47) a. They had {hastily/*in haste} opened the valve.
b. They had opened the valve {hastily/in haste}.

If the differences are due in part to semantics, however, we would have evidence that the category itself (or at least the presence or absence of a preposition) affects semantic interpretation (contra Parsons 1990:40). That is, while

differences between manner adverbs on one hand and instrumental, locative, and other PPs on the other might be due to the difference between manner semantics and the semantics of instruments, locations, and so forth, the contrasts in (9.46)–(9.47) might be taken to say that a manner PP and a manner AdvP are interpreted according to slightly different compositional rules, with implications for the system proposed here.

9.5.5 PF Issues

In discussions of noncanonical orders in chapters 5 and 8, I made reference to principles relating to PF, and several issues deserve further scrutiny. First, the hierarchy of categories in Weight theory (9.6) is clearly just an approximation. This and other parts of Weight theory appear to do the job of predicting various postverbal orders of adjuncts and arguments, but ideally, such principles should be made more precise and integrated into theories of prosody, focus, and the like.

Second, I claimed that there are fundamentally two types of phrasal A′-movement, one motivated by the checking of [+F] features in Spec positions at LF and one by optimal realization of weight-theoretic conditions, but this was done only with reference to head-initial languages. It needs to be investigated whether leftward "R-movement" retains all the same properties except for direction per se in rigid head-final languages like Japanese and Korean (or whether the change in direction correlates with other differences as well), whether it has any significant connection with Scrambling, and so on.

Third, I only began to speculate about PF-adjacency effects (such as those posited in chapter 8 between Comp and subjects, Chinese *ba* and its object, and so on), where the theory disallows any syntactic ban on adjunction, yet an adverbial phrase cannot occur. If it is indeed true that this is a PF effect, as preliminary evidence indicates, then we must specify its nature, how it is conditioned, and what sort of theoretical principle accounts for it.

Finally, and similarly, I have said very little about the details of parenthetical formation. This is perhaps a bigger problem than it may seem; I have proceeded like almost every other writer on adjuncts and in certain cases simply ignored the sticky business of variation in judgments for adjuncts that are not set off prosodically. Now that the major cases are widely recognized and coming into clearer focus (such as the impossibility of clausal predicationals in postverbal position without being set off), perhaps it will be possible to look at intonation, rhythm, and the like for the more uncertain cases, such as topicalized adverbials.

9.5.6 Issues of PS Theory

The final set of issues is somewhat more theoretically oriented, and perhaps more fundamental, than those discussed already in this section: what further questions are there for phrase structure theory?

In the absence of any coherent theory of adjuncts, the very conception of a Spec position has been somewhat suspect. If the difference between items that occur in Spec and those that are adjoined is not well understood, we cannot make useful predictions about what it means to be in one position or the other. In this book's material I have gone on the assumption that items in Spec are a subset of those licensed by [+F] features, including θ-roles (in VP), case and agreement features, [+Top] and [+*Wh*], and so on, and that what unites these is some grammatical relation with a head that is not purely a semantic one (such that the relevant facts about distribution and other syntactic behaviors cannot be accounted for purely by semantic interpretation) (see Ernst 1991b). Whether this is the correct distinction is open to question, but perhaps the question can be discussed somewhat more coherently as the various properties of adjuncts (as well as [+F], with respect to [+R]) are better understood.

A second issue concerns the set of phrase structural notions that can be used by the rest of the grammar in conditioning syntactic effects. I have attempted to make a strong case that precedence relations play an important role in the grammar. I have also claimed that extended projections do as well – for bounding, licensing of nonheads in terms of [±Disc] and [±C] features, and in concert with precedence, for the Barss/Lasnik effects of anaphor binding, negative polarity licensing, weak crossover, and variable binding. This is obviously a huge issue requiring much discussion; and clearly, in the wake of Kayne's antisymmetry thesis and its proposed ban on right-adjunction, it is one with broad implications.

9.6 Conclusion and a Look Forward

I have proposed that the distribution of adverbials is governed mostly by semantic factors as far as hierarchical attachment is concerned, with Directionality Principles and Weight theory combining with hierarchy to determine the basics of linear order. This assumes no general syntactic restriction on where adjunction is allowed except for those represented by the extended projection features [±C] and [±Disc]. It does assume a major role for individual adverbials' selectional (including scope) properties, dovetailing with compositional rules (characterized in part as the FEO Calculus).

There are many remaining questions of detail, and the major proposals may well turn out to be wrong, though the evidence for them, as it stands now, seems fairly strong. It is my hope most of all that this semantically based theory will stand as a step forward in enabling us to ask coherent and productive questions that could not be asked before, to permit us to see exactly where the proposals are inadequate or incorrect, or to reject them if need be, and thus to make genuine progress toward understanding the syntax of adjuncts.

Notes

Chapter 1. Introduction

1. I intend this discussion to be neutral with respect to Government-Binding (GB) and Minimalist (Chomsky 1995b) approaches to syntax but will continue to use GB terms like *D-Structure, S-Structure,* and *base-generation* with the understanding that they may refer to their equivalents in Minimalist theory. While the latter does not posit a unified level of base structure, as GB does with D-Structure, the aggregate of positions created by Merge plays the same role in MP. There is thus still a legitimate notion of base position: any position where an adjunct may be merged into phrase structure and that possibly allows the resulting sentence to receive a legitimate semantic representation.
2. Earlier works in which this theory has been discussed (e.g., Ernst 1998d, 2000c) may have erroneously given this impression. I plead enthusiasm for the semantically based approach and subsequent inattention to the necessary residue of syntactic mechanisms as the only excuse. Nevertheless, I believe that within current syntactic theory the proposals put forth here line up clearly at one end of the continuum in terms of greater use of semantics and lesser use of syntax.
3. Floating quantifiers and adjunct secondary predicates (depictives), illustrated in (i)–(ii), are adjectivals by this definition yet clearly are attached to some clausal projection rather than to a DP – a typically adverbial property. Because I have relatively little to say about these two groups, I merely take them tentatively as defined in part by their having both prototypical adjectival and adverbial properties.

   (i) They (all) have (all) been practicing the Bruch concerto.

   (ii) They have been cutting their hair wet.

   (Note that I do assume, contra Sportiche 1988 and with Costa 1998, Brisson 2000, and others, that floating quantifiers are adverbs in the sense that they always adjoin to clausal projections and are related to some argument DP representationally, rather than being part of the argument DP in structure before being separated from it. See Bobaljik 1998 for a very useful discussion of the issues involved in this choice.)
4. In my view, the frequently invoked terms *S(entential) adverb* and *VP adverb* are no longer useful or accurate and, in fact, are quite misleading to the extent that they are meant to express a correlation between adjunction to S/VP and a type of meaning.

In some cases, the intended meanings correspond to McConnell-Ginet's Ad-S and Ad-VP or to Jackendoff's speaker-oriented and subject-oriented types, respectively; but in others the intended distinction is between these two as a group ("sentential") and verb modifiers, such as manner or measure adverbs ("VP adverb"). Besides this lack of agreement, the correlation between meaning and adjunction site has never been as close as the terms imply. This was so even before the development of the articulated Infl made up of many functional heads, since "VP adverbs" like *shrewdly* may occur before or after subjects (thus being under S (IP)), while "S adverbs" like *perhaps* sometimes show up after one or even two auxiliaries (under VP). With the proliferation of functional heads between subject and V, the inappropriateness of the terms is even more severe.

5. Travis (1988) proposes a similar theory, but it uses only a small number of licensing heads (thus lumping together many subclasses that the others in this group of theories would separate) and, for alternative positions, invokes not movement rules but principles for feature percolation from heads to relatively distant adverbs.
6. I pay relatively little attention in this book to Scrambling SOV languages like German, where barring adjunction to the projection that hosts Scrambled objects may be necessary in certain cases. The proposals in chapter 8 permit this, namely by taking the relevant projection(s) to have the feature [+Disc]; the latter allows the addition of discourse information to a semantic representation (broadly speaking) but disallows application of more substantive compositional rules. Of course, this approach would require evidence that other explanations are untenable and a more elaborated theory of how [+Disc] works. Thus there may eventually be room to retreat somewhat from the strong position taken here against widespread restrictions on adverbial adjunction.
7. Many people find sequences of two or more adjacent adverbs, as in (1.25), to be awkward (cf. Jackendoff 1972:87), but there seems little reason to handle this fact in syntactic terms. Such examples are found fairly widely in context (see (i)), and the possibility of separating the adverbs by a parenthetical or by an auxiliary verb (see (ii)–(iii)) is evidence for some sort of processing-related explanation (which I henceforth assume). Since the effect seems limited to (or is strongest with) two predicational adverbs, as shown by the fact that (iv) is fine with *merely* and *always*, perhaps the explanation concerns speaker's judgments or evaluations, a typical property of this class.

   (i) Douglass – or his heirs – evidently prudently disposed of most of Assing's letters in his possession as well. (*New York Times Book Review*, Aug. 1, 1999, p. 7)

   (ii) Theo probably – Kim said – cleverly bought flowers.

   (iii) Theo probably has cleverly bought flowers.

   (iv) Theo {merely/always} cleverly buys flowers.

8. I propose in chapter 8 that topicalized adjuncts may adjoin rather than being in Spec; otherwise, movements of this sort are to Spec positions.
9. See Rizzi 1997 for evidence that head-government is independently necessary to account for some ECP (Empty Category Principle) effects.
10. In chapter 8 I propose that, as a marked option, some features may be checked in adjoined positions as well as in Spec. This possibility raises the related issue of

whether multiple Spec positions are possible within a single projection. In adjunct theory, these issues are even more complex than in the current literature, where only arguments in Specs are contemplated. I will leave them aside, however, because they are only just starting to be investigated seriously (see Adger et al. 1999 and references cited there), and there has been even less work done on the properties of attachment sites for various base-generated adjuncts and adjoined, A′-moved items.

11. X excludes Y if no segment of X dominates Y (Chomsky 1986:9).
12. In passing, note that the existence of such cases makes it more difficult to uphold Chomsky's 1986 proposal that adjunction to arguments is barred; at the very least, one would have to distinguish illegitimate adjunction via movement from these legitimate cases of base-adjunction. This is a further difficulty for the adjunction-based theory of barriers that Cinque's proposals avoid.
13. See Ernst 1984 and chapter 4 here for more detailed argumentation that these and certain other adverbs regularly adjoin to DPs, PPs, and CPs. Also see chapter 5 for an account of why this sort of adverb may not adjoin to IP.
14. As far as I am aware, there are no explicit proposals in the literature for a principle determining why a given XP is to be adjoined or in a Spec position, aside from Ernst 1991b. The latter merely makes explicit the common (but rarely articulated) notion that adjoined items are not syntactically licensed, whereas items in Spec have some sort of special grammatical relationship to the head, either being an argument of that head (as for subjects in Spec, VP on the VP-internal subject hypothesis in its original form) or having some featural relationship. I follow this line in this book, but the correct characterization of the two positions remains open for at least two cases: (a) topicalized adjuncts adjoined to clause-initial projections (as proposed in chapter 8) and (b) "multiple specifiers," such as Japanese "double subjects," or subject and object simultaneously attached to one projection, the subject of much recent discussion (see Chomsky 1995b:342 ff., Adger et al. 1999, and the many references therein). If multiple specifiers require a special grammatical relationship to a head, then some theory ought to constrain their number and characteristics of Specs in any given projection. Further exploration of how to properly characterize Spec versus adjoined positions must wait until we have a better understanding both of these phenomena and of adjunct licensing in general.
15. Pollock (1989), Hegarty (1990), and others propose that adverbs are heads that take clausal complements; similarly, Travis (1988), Pollock (1989), Williams (1993), and others have proposed that adverbs may adjoin to heads. The first proposal is to be rejected for many reasons, among them its implicit claim that no head should be able to raise over an adverb (given the Head Movement Constraint [Travis 1984, Chomsky 1986, Baker 1988]); it seems clear that the claim is false, as verbs may raise over adverbs in many cases, such as V-to-I movement, and V-to-Comp movement in English yes-no questions (see chapters 7–8, and Costa 1998, Cinque 1999 for fuller discussions). The second proposal is also problematic, because no current theory comfortably allows a maximal projection to adjoin to a head, yet English adverbs clearly allow at least modifiers in the relevant cases (e.g., *Phil* $[_{AdvP}$ *quite suddenly] had fallen ill*), and some languages allow complements to an adverb in such cases as well. Thus, again, there is no reason to take AdvPs as anything other than normal XP constituents as characterized here, adjoined to VPs, IPs, APs, and so on.

16. I continue, however, to reserve *adjective* for nonadverb members of this class.
17. I tentatively take projections below TP to be [−Disc] but allow for the possibility that this must be revised to allow focus projections and Scrambling positions for specific objects between T and V.
18. Contra Chomsky's tentative suggestion (1995b:325, 333; see chapter 5 for a bit more discussion).
19. The two readings are predicted by the Scope Principle (Ernst 1991a), formulated as in (i).

    (i) The Scope Principle: An operator A has scope over an operator B in case A c-commands a member of the chain containing B.

20. The representations given here would have to be altered slightly in light of proposals made in chapter 7, but this does not affect the point at hand.
21. Note that the point still holds if *not* heads a NegP or is in a lower projection than shown here, between ModP and VP; all that matters is that *could* (a) starts as the head of ModP and moves to Tense and (b) requires an event as its object at SR.

Chapter 2. The Semantics of Predicational Adverbs

1. The class of predicationals corresponds roughly to Greenbaum's (1969) "attitudinal disjuncts" and Ernst's (1986) "quality adverbs." There is a long tradition of taking them as representing covert adjectival predicates, including Jackendoff (1972), Bartsch (1976), Ernst (1984), and Roberts (1987), among many others. I do not assume that PPs with similar meanings, such as *with reluctance* or *in a loud manner,* have precisely the same semantics or syntax. This is an empirical issue still to be resolved, but there is some evidence that manner AdvPs and PPs do behave differently. See chapter 9 for a brief discussion.
2. The potential ambiguity of the adverb when right after a finite auxiliary is often masked by context or the meaning of the lexical items involved.
3. As noted earlier, it is essential that adverbs in sentence-final position like *probably* in (2.11) be read with a smooth intonation contour and not with comma intonation, which will always be indicated here with commas.
4. (2.12a) is acceptable without the auxiliary verbs, or with them but with strong contrastive stress on the adverb; but in this case *tightly* is a topicalized manner adverb, with (2.12b) representing its base sentence. This sort of case will be discussed in chapter 8.
5. Although only English data are given here, these facts hold largely for all other languages that have been examined in depth. These include German (Frey and Pittner 1998), European Portuguese (Costa 1998), French (Laenzlinger 1997), Italian (Cinque 1999), Greek (Alexiadou 1997), Hungarian (Bánik 1998), Dutch (Rijkhoek 1994), Mandarin Chinese (Tang 1990, Xu 1997), Cantonese (Chao and Mui 2000) and Japanese (Fujita 1994).

   I omit discussion of aspect-manner adverbs, such as *slowly* and *abruptly,* since their clausal uses are much more restricted than the others shown here; see section 2.6 for discussion.
6. Despite what is often said in the literature, sentences of the pattern in (2.15b) with agent-oriented adverbs like *cleverly* are acceptable on clausal readings, given the

right sort of context, particularly when the adverb is presupposed (discussed in chapter 3).

7. See Parsons 1990 for an overview of this sort of system, including evidence for event variables (and event-based semantics in general) and discussion of the original proposals starting from Davidson 1967. For further discussion and justification of events as semantic entities, see (inter alia) Parsons 1989, Asher 1993, Zucchi 1993, Rothstein 1995, Casati and Varzi 1996, Higginbotham, Pianesi, and Varzi 2000, and Tenny and Pustejovsky 2000.
8. Predicates will be symbolized by initial capital letters and individuals with small initials, except where a complete spelling will aid exposition. Abbreviations for theta roles include Agt for Agent, Th for Theme, Inst for Instrument, and Exp for Experiencer. Where the theta roles for arguments are irrelevant, basic events will often be abbreviated as [F(e) ...], F being the main predicate.
9. For discussion of propositional variables and anaphora in a DRT framework, see Asher 1993:241ff.
10. Recall that I adopt the syntactician's use of event, equivalent to eventuality in the normal semantic usage; so in (2.26) q(uantized) event corresponds to Swart's event.
11. Thus, schematically, in the representation used here, for any occurrence of an expression of the form in (i), where one event/proposition (FEO) γ is converted to another one α, I note it as in (ii).

    (i) α: $\boxed{\gamma}$

    (ii) $[_{\alpha}\, \gamma]$

    Similarly, where one FEO γ is converted into another one α by a coercion operator C_{xy}, as in Swart 1998 (to be discussed in chapter 7), the DRT-style representation in (iii) is rendered as in (iv).

    (iii) α: C_{xy} $\boxed{\gamma}$

    (iv) $[_{y}\, C_{xy}\, [_{x}\, \gamma]]$

12. A small number of well-defined exceptions may be allowed (particularly in the case of verb movements), but these are relatively few and limited to specific syntactic structures. In chapter 7 the system also refers to times, in order to account for functional adverbials; here our attention is restricted to FEOs.
13. When speaking of events, we are really speaking of event descriptions or events under a particular description (for discussion, see Martin 1978:16ff., Bartsch 1995:3ff., Partee 2000, among others).
14. Only in this way can a proposition be converted to an event, not freely via (2.25a); in fact it appears that this is a marked option even for (2.25b). That is, only a small number of elements allow this lowering of FEO type.
15. Following Kamp and Reyle (1993), Swart (1998), and others, negation is treated here as being an event operator (though it can also be a propositional operator). See Link 1987, Peterson 1989, Moltmann 1991, Asher 1993:52, Bartsch 1995:31, and Higginbotham 2000:73ff. for discussion and justification of negative states.
16. See Peterson 1997:100ff. and Asher 2000 for discussion of the relationships among these three clausal entities.

17. Although there is precedent for saying that subject-oriented adverbs take events (e.g., Wyner 1994), some authors claim that they combine with facts or propositions (e.g., Croft 1984, Parsons 1990). I do not attempt a full defense of the former view here, in part because the success of the entire system developed in this book, including correct predictions about the linear ordering of adverbs and negation, may be taken as an argument in its favor. We may, however, briefly review three further arguments.

    First, subject-oriented adverbs show a much more productive clausal/manner ambiguity than do speaker-oriented adverbs, and this can be accounted for if only subject-oriented adverbs take events, not speaker-oriented adverbs (discussed in more detail in section 2.6). Second, the agent/experiencer subject with subject-oriented adverbs must be able to control whether it engages in an action (or state); it seems implausible to claim that one can control a proposition, while it is normal to control an event. (One may perhaps control whether a proposition obtains or is true, but this is only by means of taking some action, i.e., engaging in an event.) Third, there are several constructions where only subject-oriented adverbs are fully acceptable with infinitive verbs. (i)–(ii) illustrate this point with nonfinite subject clauses and small clause complements of perception verbs, respectively.

    (i) a. To {tactfully/cleverly/willingly} leave early would be good.
        b. *To {fortunately/oddly/unbelievably} leave early would be good.

    (ii) a. We saw them {tactfully/cleverly/willingly} stand aside to let the visitors pass.
         b. *We saw them {fortunately/oddly/unbelievably} stand aside to let the visitors pass.

    Although this is a somewhat complex topic, we can make a tentative conclusion that these embedded clauses represent events (cf. Asher 1993); certainly, in the case of (ii), it makes sense to say that one perceives events, not propositions or facts. If so, we can explain these contrasts.

18. I return to the bracketed relation REL, which I refer to as the *designated relation*. Its formulation, requires sharpening but for now it can capture the differences between clausal and manner readings and give a flavor of how each adverb subclass works semantically. Informally, I often treat schemata like the right side of (2.39) as expansions of ADJ(EVENT).

19. For discussion, see Ernst 1984:32. This notion of control need not involve a conscious decision to enter into an event, as has sometimes been suggested; this is shown by the possibility of using agent-oriented adverbs like *unwittingly* or *heedlessly* (e.g., *She unwittingly/heedlessly didn't open the door*). I am grateful to Carl Ginet for pointing out such examples to me.

20. It may also be that 'manifest' requires overt, *perceptible* properties. This seems true in the case of mental-attitude adverbs (section 2.3.3) and of other types of manner readings. In other instances, however (e.g., *She made the decision oddly*), it seems possible to interpret a manner reading without this. Though this issue clearly bears more research, I ignore the fine-tuning of this and other designated relations in this chapter, because the main concern is with selection and composition.

21. Informally, I often use the form ADJ-ness to represent the property P_{ADJ}; nothing crucial is meant by this choice of the nominal form.

22. This approach assumes a scale of ADJ-ness (e.g. rudeness, wisdom, etc.) onto which an event is mapped, either above or below a point (the contextual norm) representing a normal event. Anything above this point is a rude, wise, intelligent, and so on event, and anything below it is not. For discussion see Kamp 1975, Martin 1978:121 ff., Cresswell 1979, Bierwisch 1989, Higginbotham 1989, Parsons 1990:42, and Kennedy 1999.
23. For previous treatments of manner modification, see Jackendoff 1972, Bartsch 1976, McConnell-Ginet 1982, Pustejovsky 1991, Wyner 1994, Eckardt 1998, and references cited in these works. The formulation in (2.49) does not exclude the possibility of clausal readings in PredP as well; see chapter 6 for discussion of this point and also of how direct reference to specific syntactic projections can be eliminated.
24. It has sometimes been suggested (e.g., by Carlota Smith and James Higginbotham, personal communications) that the clausal and manner readings of agent-oriented adverbs should not be derived from a unitary lexical entry making reference both to an event and an agent, because while the clausal reading imputes some quality to the agent, the manner reading merely ascribes the quality to an action. This, however, begs the question of what it means to ascribe a quality of this sort to an action and points to why we must give due attention to the cognitive selection properties of adverbs: on the most fundamental level, wisdom, stupidity, intelligence, and the like can only be properties of sentient beings. If an action is wise, stupid, or intelligent, it can be so only with respect to the being performing it.

    What the objection seems to be getting at, rather, is whether it is the agent that is more salient (on the clausal reading) or the event (on the manner reading). This genuine difference can be expressed as part of the rule deriving manner readings without denying the role of agents (though I do not pursue such a formulation here). It may even be possible to derive the difference without such a stipulation, based on an elaborated theory of aspectual structure focus (Rapoport 1999; see also Ernst 1996a).
25. In (2.54) the representations for the two adverbs are simplified for the sake of exposition; INTELL needs a second argument (for the agent) and thus eventually is to be expanded as in (2.39), and FREQ must likewise be expanded with two arguments constructed from the event within its scope (see chapter 7 for discussion of frequency adverbials). This does not affect the point at hand.
26. I take negation to be of two types, one taking events into events, the other taking propositions into propositions. A negated event is a state (stative event[uality]); for discussion see (among others) Link 1987, Moltmann 1991, Asher 1993:52, Klein 1994:48ff., and Bartsch 1995:31.
27. Representations with ON for temporal adjuncts are used here only for convenience; see chapter 7 for a fuller treatment.
28. Some M-A adverbs appear to be able to function as agent-oriented adverbs as well, where the basic lexical semantics is appropriate not only as a description of a mental state but as some property to be evaluated. For example, (i) might be taken as a description of a mental state of concentration or as a comment on this as a mental quality. The difference, though very slight, is brought out a bit more by the two paraphrases in (ii)–(iii).

    (i) Sam vigilantly watched for approaching troops.

    (ii) Sam stayed mentally focused while watching for approaching troops.

(iii) Sam showed (the quality) vigilance by watching for approaching troops.

(Cf. also *obstinately*). It should not be surprising that some adverbs have this dual possibility, as the distinction is so small between an assertion that a sentient being experiences some mental state and an assertion (on the basis of some event) that this being shows a quality related to a mental state.

29. Speakers vary in their distaste for the (2.78b)/(2.79b), but all find them significantly worse than (2.78a)/(2.79a). As noted, there are instances where it is not clear that a manner reading requires overt manifestation. I leave the Manner Rule with its designated relation as is, but it may need modification to reflect this variability.
30. As noted, M-A adverbs differ lexically as to the degree to which (a) they can be overtly 'manifested' (e.g., *calmly* more so than *bitterly*) and (b) they prefer state or intentional readings. The acceptability of manner M-A readings also appears to depend on the degree to which the verb they modify denotes events of expression. Thus (i) is more readily acceptable than (ii), though Zoe could perfectly well feel bitterness while building a house.

    (i) Zoe spoke bitterly.

    (ii) Zoe built her house bitterly.

    As always, an appropriate context aids acceptability:

    (iii) Yet he retired bitterly, filled with resentments that he packed into his 1985 memoir, *I Never Played the Game*. (*New York Times,* Oct. 29, 1999, p. D7)

31. For discussions of adjunct secondary predicates, see Williams 1980, Rapoport 1991, Winkler 1997, and references cited therein.
32. This subclass is also sometimes known as pragmatic adverbs, or discourse (-oriented) adverbs. I reserve the latter term for a larger class including speech-act adverbs as well as nonpredicationals, such as *therefore* and *nevertheless*. For further discussion, see Mittwoch 1976.
33. Some writers refer to this class as modal adverbs; I take these to be one of two subdivisions of the epistemic class, evidential adverbs being the other.
34. Since it is not strictly relevant here, I ignore aspects of the lexical semantics of degree-of-precision adverbs; they indicate that their object involves a more or less accurate matching to a contextually specified entity. See Ernst 1984, chapter 3, for discussion. Note that there are genuinely homonymous, manner adverb uses of some of these adverbs, as in *Management intends to deal roughly with the union*.
35. These lexical entries are exactly like manner except in their special optional selection for *E as the predicate to be modified. This clausal reading must be lexically specified as such and not derived by the Manner Rule; this rule is restricted to applying only within PredP, and even if it were not and allowed to apply freely to the FEO speech-act we would wrongly predict the productive occurrence of adverbs like *clearly, pensively,* or *oddly* in (i) as speech-act adverbs (meaning 'Tell me in a clear/pensive/odd manner what you want').

    (i) *{Clearly/Pensively/Oddly}, what do you want?

36. Perhaps *honestly* (and some other adverbs I include in this class) most commonly does not have a speech-act reading in cases like this but is more like an intensifier. Still, such sentences may be interpreted with the more literal reading symbolized in (2.99).

37. For simplicity's sake, I do not represent the speaker explicitly as an argument of the evaluative and epistemic ADJ predicates (as does Jackendoff [1972], for example), but I see no great difficulty in doing so. This argument seems to play no role in determining distribution. I concentrate here on the basic lexical meanings of the adverbs, ignoring their intensifying or emphatic functions; see Greenbaum 1969 and Hoye 1997.
38. I know of no evidentials asserting that it is hard to perceive the truth-value of P and/or to presuppose falsity or uncertain truth-value (and would thus act more like *perhaps* or *possibly*); for example, given their lexical semantics, *unclearly, obscurely, hazily, difficultly* could plausibly have this meaning but do not. (Cf. Zwicky [1970], who notes similar facts with respect to other adverbs with clausal scope.) Thus it seems that evidentials are something of a cross between modals and factive evaluatives in that they take facts, like the latter, but assert a fact about the certitude of a proposition, like the former.
39. Ernst (1987b) suggests an underlying cognitive/pragmatic reason for this formal selection: use of an epistemic adverb as a manner modifier would be felicitous only if there is some question about the truth of the proposition that some event occurred, but the use of a manner modifier always entails the truth of the sentence's proposition. Thus no epistemic manner modifier could ever make a felicitous contribution to a sentence, and most of them would in fact involve a contradiction.
40. Despite this stance, I do not wish to get into philosophical issues about truth. The label *fact* is crucial for adverbial interpretation only in that, for these speaker-oriented adverbs, speakers commit themselves to the truth of the relevant proposition; in Bellert's terms (1977:342), speaker-oriented adverbs represent assertions. As she points out, this accounts for the usual ill-formedness of questions like **Has she surprisingly arrived?* since one cannot felicitously question a proposition that one asserts. See Ernst 1984 for further discussion of this point, including certain cases where this sort of question can (at least marginally) be asked felicitously; for example, in tune-in-next-week contexts where an announcer might say *Will our hero tragically perish in the train wreck*?, of which the interpretation seems to be something like 'Will P happen, such that if it does ADV(P)?' See also Hoye 1997:176 and Ramat and Ricca 1998:224–25 for discussion of factive evaluatives in irrealis contexts.
41. It does seem possible sometimes to use pure evaluatives with a manner reading in context, as in *answer surprisingly* to mean 'answer in a surprising way'; thus possibly the lexical specification can occasionally be overridden in this way.
42. This reference is sometimes overt in the PP complement of the adverb, as, for example, *indistinguishably from his earlier performances, similarly to what Madame President just said*, or *independently of semantics*. (As noted in chapter 1, such phrases are evidence against the occasional claim that adverbs never take complements.)
43. On this approach, exocomparatives like these, with scope over a question operator, take a different speech-act FEO as their object from the speech-act adverbs like *honestly*. The latter are within the scope of the imperative operator and request that the addressee's answer be honest, brief, etc. Exocomparatives instead take the imperative operator in their scope and comment on the speaker's interrogative speech-act. I reluctantly leave aside many interesting issues that this distinction

raises, since current concerns are with the identity of the FEO and the formulation of lexical meanings.

44. When the subject is a plural or mass noun, e* in (2.138) need not be contextually defined but may be (like the first event argument e) an event whose Agent/Theme is one of the referents of the subject; for example, *These machines function similarly* (which roughly means 'The way this machine functions is similar to the way that machine functions').
45. Along with the many references provided in the following works, see, for frequency adverbials, Swart 1993, Moltmann 1997; for focusing adverbs, König 1991, Rooth 1992; for additive adverbs, Stechow 1996, Tenny 2000, Pittner 2000; for "B-class" adverbs, Ernst 1984.
46. Aspect-manner adverbs have rarely if ever been seriously considered as a class; for some earlier discussions, see Thomason and Stalnaker 1973, Cresswell 1985, and Pustejovsky 1991.
47. In a sentence like (i), *slowly* is possible in initial position, in a context where Kirk and Spock materialize out of thin air by being beamed down from the *Enterprise*. This is, however, most likely an instance of a topicalized manner-reading adverb, suggested by (ii), where *there be* does not permit manner readings (see (iii)), even though both (ii) and (iii) could be used to describe the same event.

    (i) Slowly, Kirk and Spock appeared on the lawn.

    (ii) ?*Slowly, there was a search party on the lawn.

    (iii) *There was a search party on the lawn slowly.

    See chapter 8 for further discussion of manner adverb topicalization.
48. Note that another oft-noted ambiguity, shown in (i)–(ii), is not a case of homonymy (despite some writers' claims) but purely a matter of relative scope of the adverb and the QP.

    (i) They slowly tested all the bulbs.

    (ii) They tested all the bulbs slowly.

    In (i) the usual interpretation is that the entire operation of testing the set of bulbs took a long time (even though each individual testing may have been quick), while in (ii), though it is ambiguous, the preferred reading is that each individual bulb-testing was slow.
49. With the exception of the degree-of-precision subtype, which acts like exocomparatives in being relatively unspecified for FEO.
50. In this chapter I have treated manner modification as resulting from (2.49) applying not in the lexicon but as a syntax-semantics mapping rule, in the style of Jackendoff 1972. However, it would still be possible to take (2.49) as a rule applying in the lexicon, given certain assumptions about syntactic representation.
51. See Ernst 2000b for further discussion of semantic properties that characterize Predicational adverbs.

Chapter 3. The Scopal Basis of Adverb Licensing

1. Henceforth all references in this chapter to Cinque refer to Cinque 1999, unless otherwise identified.

2. On these issues, see Stowell 1981, Grimshaw 1990, Hale and Keyser 1993, and references cited there.
3. For further discussion of modularity in the theory of adverb licensing, see Ernst 1984 and Shaer 1998.
4. In current, economy-principle views of syntax (Chomsky 1995b) this is not the imposition of a restriction but rather is expected: movements may only occur when forced. What therefore must be motivated are movement triggers, not restrictions on movement. For discussion and arguments against adjunct-specific movement, see Pollock 1989:379; Cinque, pp. 16ff., 185 n. 13; and Ernst 1991a, 1997b, 1998f. Note that the existence of such arguments rules out the "transportability" solution to multiple adjunct positions, as in Keyser 1968 and Nakajima 1991; transportability is also ruled out on conceptual grounds, given that it was only necessary in a theory using PS rules (or their equivalent), where minimizing numbers of base positions made for a simpler theory (see also discussion in Costa 1997:58–59).
5. See Borsley 1997 for what amounts to a similar point: despite the restrictive nature of Kayne's 1994 Linear Correspondence Axiom (LCA), Borsley shows that it forces the addition of numerous mechanisms to account for the syntax of relative clauses adequately. To the extent that these mechanisms allow things that could otherwise be banned, as seems likely (e.g., movement from an A′ to an A-position), the grammar is made correspondingly less restrictive.
6. I take FI to cover the purely semantic effect of some words' semantic requirements not being met, a part of Semantic Representation (strictly speaking) as opposed to LF. The issue of what uninterpretable means at the syntax-semantic interface, however, is not a simple one. For example, it may turn out to be arbitrary to say that modal adverbs combine with propositions to yield facts, while evidential adverbs combine with propositions to yield events (see section 3.2.5); and in the sense that such arbitrariness belongs in syntax, it is a syntactic phenomenon. If so, we are dealing with a syntactic principle at LF, the level where syntactic principles map surface structures (i.e., as they are at Spell-Out) onto more abstract structures serving as input to Semantic Representations. (In this case, perhaps there must be an LF principle requiring FEOs to be "checked off" as LF representations are mapped onto purely semantic representations.)

   These are not trivial issues, but I leave them aside because all we need to know for present purposes is that explaining adverb distribution in terms of a principle requiring fulfillment of selectional requirements, along with the FEO Calculus, allows us to account more simply for semantic phenomena like entailments, restrictions on predicational adverbs in many *wh*-questions, and so on. Adjunct licensing is semantically based; whether it is more specifically a matter of LF principles or of mapping from LF to purely semantic/cognitive representations or of some mix remains to be worked out, although this is ultimately an important matter.
7. I also postpone discussion of whether postverbal adjuncts in VO languages are right-adjoined. Chapter 4 provides extensive discussion, including evidence that they are indeed right-adjoined, as well as an analysis of the inability of predicationals to right-adjoin when interpreted in their clausal readings.
8. As always, it is important to avoid parenthetical expressions (among which I include sentence-final expressions set off by comma intonation), whose scope and linear order are determined differently.

9. For earlier discussions along the same lines, see Jackendoff 1972 (to which the present analysis owes much), Bellert 1977, Ernst 1984, and Rochette 1990. The analysis presented here is intended to supercede that of Ernst 1998d and 2000a.
10. There is a problem with sentences like (i), which are sometimes seen in print but are not acceptable to all speakers, with a speech-act adverb occurring after negation.

    (i) She hasn't frankly been of much help this time.

    This goes against the predictions of the analysis here. There has been no systematic investigation of this pattern, as far as I know, but it does seem to be restricted to a few commonly used adverbs of this type, such as *frankly* and *however*. One solution would be to say that these are "covert" parenthetical expressions – moved at PF after scope relations have been fixed but lexically marked to be able to dispense with parenthetical intonation. I will tentatively assume this, though it is no more than a stopgap.

    Cinque (p. 123) discusses similar examples in Italian, including some other types of speaker-oriented adverbs. If these represent a productive phenomenon, perhaps the difference between English and Italian is that when negation raises over an adverb English requires wide scope for negation, and Italian does not. See chapter 7 for further discussion.
11. There is some variation in speaker judgments for this sort of sentence. However, the split between those that must be sentence-initial (such as *briefly*) and the others seems consistent across speakers.
12. That instances of "intrinsic" speech-act adverbs like *honestly* may occur to the right of subjects is not a problem on the usual assumption that subjects are interpreted primarily with respect to their base position lower in structure (in PredP). See chapter 6 for further discussion.
13. An alternative explanation for cases like (3.17) is that subject-oriented adverbs must take controllable entities, and propositions are not controllable. I see no obvious reason to choose this explanation over the other, and thus leave it aside for convenience (though it is still necessary to say the subject-oriented adverbs require controllable events).
14. Some speakers accept sentences with the pattern of (3.18b), at least in some cases. On the theory being developed here, this must be handled by saying that these speakers' evaluative adverbs have different selectional properties, taking facts as arguments and yielding nonfacts, that is, propositions with undetermined truth-value. Given the discussion in chapter 2, this is equivalent to saying that these speakers can use evaluatives without committing themselves to the truth of the resulting proposition.
15. In some cases some people do accept the pattern [Modal + *have* + evaluative] shown in (3.20a).
16. I leave aside the legitimate issue of precisely how this is to be done. One might take a "radical pragmatics" line and say that sentences are ungrammatical if their interpretation requires incompatible felicity conditions. Alternatively, one could treat negation as a speaker-oriented adverb for this purpose and assume that these adverbs explicitly encode the relevant speakers' commitments, so that the contradiction becomes purely semantic.

17. Some modal adverbs are allowed in the scope of negation with certain modal verbs, as in *She could not possibly have known*. I assume this to be an exception marked on the adverb, allowing an interpretation along the lines of 'even on the widest set of possibilities', so that *possibly* is a sort of domain modifier of *could*. On this approach, there is no longer a semantic clash, so these sentences are predicted to be grammatical.
18. Note that even though the first clause of the FEO Calculus in (3.7a) disallows this sort of lowering of FEO types (from a kind of proposition to a kind of event), certain lexical items may do so by virtue of (3.7b). Still, this must be considered a marked option, since most adverbs appear to conform to (3.7a).
19. Such sentences with clausal agent-oriented adverbs within the scope of negation are sometimes claimed to be ungrammatical but become acceptable (a) when the event constituted by the adverb and its sister argument is presupposed (as the parenthesis in (3.44b) is intended to facilitate) and (b) in more formal/journalistic styles where more information is often packed into one clause than in casual, spoken styles.
20. It is often incorrectly claimed in the literature that the clausal interpretation is impossible after two auxiliaries (e.g., Cinque, p. 19). Parallel to cases with negation like (3.44), with the right context and in a more formal style, such sentences are indeed possible, even if the clausal reading is disfavored. Adding a second adverb with a clear manner interpretation, as in (i), also facilitates the clausal interpretation for the first adverb.

    (i) The prisoners had been carefully building the enemy's bridges shoddily.

    See also the discussion in Costa 1998:63.
21. As noted in chapter 1, I take a Spec position to be an adjoined position, the sister of X* (X* functions like the single X′ node in traditional X′-structure), licensed by checking a feature on the head. Nothing about the interpretation of subjects (i.e., Theta theory) requires features; but Case assignment does, so a subject PRO that does not move is in Spec,PredP. On null case, see Chomsky 1995b.
22. Possibly PRO is always present, coindexed with the *by*-PP if the latter also appears.
23. There are certain cases where the agent is merely implied, as in (i), but these seem rare.

    (i) The king had threatened to behead the next cook who made him a heavy meal. Wisely, the entree the next day was tuna salad.

    Eckardt (1998) claims that there need not be any structural condition on the location of the agent, but here I side with Wyner (1994, 1998) in taking some condition like (3.54) as necessary and treating (i) by some exceptional mechanism.
24. The acceptability of sentences like *Accordingly, I honestly haven't felt right inviting him* may induce a complication, since it seems that the entity that follows *accordingly* is not the (honest) expression of the speaker's feelings (as expected with the speech-act adverb in the scope of *accordingly*), but rather the fact that the speaker has those feelings. Tentatively, I take this as evidence that either exocomparatives or speech-act adverbs (or both) may sometimes take independent scope rather than nested scope, as in (3.31)–(3.36), for epistemics and evaluatives. More investigation is needed.

25. For reasons discussed in chapter 5, adjuncts may not left-adjoin to a VP in VO languages, so preverbal manner adverbs like those in (3.61) are necessarily adjoined to PredP.
26. Ernst (2000a) claims that there may be two manner adverbs in one sentence, as in (i), despite many writers' contention that this is impossible (e.g., Costa 1997).

    (i) They work slowly skillfully, but are rather clumsy when they try to work fast.

    This is allowed in the framework proposed here, since it is only when the first nonevent-internal modification occurs that manner readings become impossible. These cases seem very rare, however, and surely are subject to heavy restrictions.
27. Some, like Higginbotham 2000, recognize that local licensing requires some sort of "stylistic rearrangement" to allow for adverbs not next to their licensing head, for example, as in *She has frankly disappointed me*, where *frankly* is licensed by C^0 (Higginbotham 2000:60). This mere recognition, however, hides the importance of specifying the details of such alternate positions.
28. It must also be noted that appearance of rigid ordering is sometimes exaggerated by Cinque's assumption of "transitivity," by which, given two obligatory adverb orderings, A > B and B > C, A > C is also taken to be obligatory. As will be demonstrated, this assumption is unwarranted; and in fact, the inapplicability of transitivity underlies a significant argument for the scope-based approach (see section 3.5).
29. Several other writers have raised criticisms of Cinque's analyses, including Frey and Pittner (1998), Haider (1998, 2000), Shaer (1998), and Williams (2000).
30. The arguments developed here have also been made elsewhere, independently; see Costa 1997, Åfarli 1998, and Shaer 1998, among others.
31. See chapter 7 for discussion of a small number of exceptions to this generalization.
32. Cf. the discussion in Cinque, p. 132. Although Cinque is admittedly tentative in his proposals on these points, I do not see any plausible alternative in his version of the Feature theory.
33. Despite its position after three auxiliaries, *wisely* may have a clausal reading in (3.78) (at least for people who accept Modal + *have* as a semantic unit for past tense modality; see chapter 7 for discussion [cf. also Cinque, pp. 213–14]). As noted, taking *getting involved* as referring to iterated events and adding an adverb with a clear manner reading to the end of the sentence, such as *gradually*, facilitate this.
34. Excorporation refers to cases of a head adjoining to a higher head and then continuing upward to land in a yet higher head (see Roberts 1991 for discussion of why only adjunction of heads permits excorporation). Since traces are either copies of a moved item's features or a full but phonologically null copy of it (as for Chomsky 1995b), we cannot plausibly allow one head to adjoin to a trace and then excorporate without also allowing violations of the HMC, as in (i).

    (i) *Have_i Jean could t_i gone?

    One would need an ad hoc distinction between the overt *could* in (i) and a covert copy of (say) *could* in E of (3.77) to bar excorporation in the former case but allow it in the latter. See chapter 7 and Baker 1996 for further discussion.
35. In this chapter I make reference to the semantics of PPP and functional adverbials only in so far as this helps make the syntactic argument. For more complete discussion, see chapters 6 and 7, respectively.

36. Measure adjuncts share some properties with predicational adjuncts, in particular manner adverbs. Since the precise classification does not matter for the arguments developed here, I ignore this issue.
37. In fact, assuming an analysis of quantificational adverbs in terms of generalized quantifiers along the lines of Swart 1993, some sort of focus-presupposition mapping is involved for adverbs that quantify over events (times) as well.
38. For more about the semantics of focusing adverbs, see Rooth 1985, 1992, König 1991, Bonomi and Casalegno 1993, and references cited there.
39. See Swart 1993, Vlach 1993, and Moltmann 1997 for specific analyses of *frequently* and similar quantificational adverbs. Precisely which analysis we use is not important here, as long as it allows for the adverb to take a unique type of argument (e.g., for Swart, a set of eventualities) whose exact identity is determined in part by its immediate c-command domain.
40. Cinque (pp. 92, 204 n. 36, 205 n. 39) suggests that adverbs are permitted in two scope positions, a higher one "quantifying over an event" and a lower one quantifying over "processes and states represented by the verb." It is clear from the literature on quantification (including that of quantified DPs), however, that the scope of a given operator is determined by c-command and that there is no structural limit to the number of scope positions; recall also the discussion in chapter 2 about event layering.
41. Strictly speaking, to maintain the one-to-one licensing principle, it would seem that Cinque's version of Feature theory requires a separate set of heads for *even* in (3.100) from the set for *frequently* in (3.85)–(3.88), and so on for each functional adverb. To avoid such a proliferation of heads, surely this theory could allow a small set of heads (say, the five in (3.96)), each encoding different scope properties, to license any functional adverb and define its scope. On this version, even though the need for a huge number of extra heads is reduced, the theory must weaken the one-to-one dictum and still has the problem of encoding scope information in individual heads rather than by more general mechanisms.
42. The same holds for claims made by Alexiadou (1997) for Greek, Xu (1997) for Chinese; see Xydopoulos (1996) and Ernst (1999a), respectively, for their discussion.
43. In chapter 7 I treat modal auxiliaries as possibly combining with propositions to yield states. This still allows explaining the examples given here, because the sorts of state designated by modals are not controllable.
44. I leave the precise delineation of this class aside, pending a better understanding of its semantics. The phrase types in (3.128) are included in the traditional category of "circumstantials," but not all expressions claimed as part of the latter are PPPs. In particular, temporal, manner, and some (framing or eventive) locative PPs are often taken as circumstantials but behave differently from PPPs (e.g., in terms of scope properties). In fact, I believe that circumstantial may have been a useful notion in traditional grammar, but it will not be so in a more sophisticated theory of adjuncts. A full accounting of the classifying criteria for PPPs and related phrase types will have to wait, however.
45. In fact, it is sometimes unclear whether they are serving as an argument or as an adjunct in certain sentences (see Jackendoff 1990b).
46. The same point holds for yet other types of adjuncts not discussed here, including secondary predicates (depictives) and domain adverbs; see chapter 6 for discussion

of their relatively loose selectional properties and their resulting relative freedom of ordering (with respect to each other as well as manner adverbs and participant PPs).

47. (3.134a) is slightly degraded because a heavy PP is in the AuxRange, that is, the area between the subject and the verb.
48. (3.140) must be read without an intonation break after the second *had*, which indicates the presence of the deletion gap before the adverb instead of after it; see Ernst 1983 and references cited there for discussion.
49. It should be noted that both theories still require some way to rule out coordinated adjuncts whose semantics are too different, as (i)–(ii). Exactly how this is to be done must be left for future research.

    (i) ??They clearly and cleverly arrived after everything had been cleaned up.

    (ii) ??Natasha had previously and amazingly gotten a tattoo.

50. Even if it is true that there are some instances of ordering that cannot be predicted from semantic properties (as Cinque claims [p. 135]), this is not an argument that the entire *system* must be syntactic. No one now claims that every verb's subcategorization frames are listed in their entirety for every verb (i.e., argument structure is assumed to predict subcategorization by means of general principles, with listing necessary only for exceptions to the latter). In the same way, there is no need to list accusative case for direct objects of each individual verb in languages with morphological case; this is taken as the unmarked structural case, to be overridden only for lexically marked exceptions. Thus a few exceptional orderings or syntactic properties of licensing heads can always be listed without disturbing the direct prediction of syntactic patterns from semantics.

Chapter 4. Arguments for Right-Adjunction

1. Any reduced acceptability they show, I assume, is because it is rare for anyone to need to assert the content of four adjuncts simultaneously, so that sentences like (4.3b) involve mentioning backgrounded information that it is more usual, and more felicitous, to omit. See section 4.2.4 for further discussion of pragmatic conditions on sentences with right-adjoined adverbials.
2. Sources for (4.4c), Malagasy: Rackowski 1997:9; for (4.4d), Siswati: Nhlanhla Twala, personal communication; for (4.5b), Korean: Ae-ryung Kim, personal communication; for (4.5c), Hindi: Veneeta Dayal, personal communication; for (4.5d), Turkish: Kural 1997:505 and Murat Kural, personal communication; for (4.5e), Choctaw: Marcia Haag, personal communication.

   I ignore detailed investigation of adverbial distribution in verb-initial languages. Although languages of this group clearly conform to the head-initial pattern (see Craig 1977, Kroeger 1993, and Rackowski 1997, for example), some of them, such as Irish, severely restrict the occurrence of adjuncts in preverbal base positions (see Ernst 1992a for discussion of the Irish data and an analysis consistent with the principles proposed in this chapter).
3. (4.8) actually represents only the "Larsonian" version of the LCH, by which the base order of adjuncts is the same as surface order. On a "Kaynean," or LCA-based, version, A2 and A4 would be reversed. The two versions are discussed extensively in sections 4.4–4.5.

4. For general discussion of these issues, see Jackendoff 1990a, Williams 1993, Pesetsky 1995, Phillips in press, and references therein.
5. I ignore cases like (i)–(ii).

   (i) Robert pruned the apple tree probably carefully. (Rijkhoek 1994:10)

   (ii) She came back purposely quietly.

   Although such examples are occasionally cited as evidence that left-to-right scope is possible for two postverbal adverbials, they are rare and seem always to involve focusing uses of nonfocusing adverbs; see Cinque 1999:30ff. for discussion. These are not to be confused with adverbs that may (more productively) adjoin to DPs or PPs, as discussed in chapter 5 and in Ernst 1984:chapter 3.
6. This provides an explanation for the tendency (noted by Andrews [1983] and Cinque [1999:25, 179 n. 68], where it is considered "mysterious") for leftward adverbials to take wide scope over ones to their right even when ambiguous in principle.
7. As always, this excludes parentheticals and clause-initial or clause-final occurrences that are set off prosodically. The position of such phrases is determined at least in part by additional principles, including movement.
8. This fact has been noted by many authors; for recent discussion in the formal syntactic literature, see Watanabe 1993, Cardinaletti and Starke 1996, Alexiadou 1997:46, 136ff., and Ernst 1999a.
9. In this example constituent negation is used, since sentential negation is often analyzed as the head of a NegP; but there is fairly wide agreement that constituent negation is an adverb adjoined to (or in Spec of) some lower projection.
10. This applies to licensing positions for manner adjuncts in base structure. In a number of languages, such as Irish (Ernst 1992a), Siswati (Nhlanhla Twala, personal communication), and Icelandic (Collins and Thráinnson 1996), obligatory raising of V to a position higher than Pred may result in manner adjuncts always following the verb in surface order. In others, such as Yoruba and Hausa, that manner adverbials are generally PPs rather than AdvPs may restrict them to postverbal position (see the discussion of heaviness in section 4.3.5), while the status of some adjuncts as serial verb constructions (whatever their correct syntactic treatment is) may restrict them to a position before the main verb (for some discussion of these issues in Yoruba, see Bamgbose 1974 and Awobuluyi 1975). Much work remains to be done to see how much the categorial differences between AdvP, PP, and VP affect the distribution of manner adverbials.
11. Some of these phrases, especially the time-related categories like duration (*for three years*) and location-time (*the day before*) may occur preverbally, among auxiliary verbs, in more formal styles and if they are not too "heavy" with respect to the rest of the sentence (see section 4.3.5). Also, certain event-internal modifiers do not occur (or do not occur freely) in preverbal position, as (i)–(ii) illustrate. These cases are discussed in chapter 6, as they have rather different causes from those at issue in the present discussion.

    (i) The employers were (*badly) treating him (badly).

    (ii) They (*perfectly) formed the sphere (perfectly).

12. Of course, we have seen here only a small sample of languages to substantiate these patterns; see Dryer 1992:92–93 for strong preliminary evidence from a much

wider sample. Of course, one must be careful when using data from the functional-typological approach, such as Dryer's, for P&P purposes; only by controlling for assumptions about basic order in the individual works used and by closely verifying precisely what sort of adjuncts figure in the data can one be sure about drawing conclusions valid for formal syntactic theory. Still, familiarity with the cross-linguistic descriptive literature on adverbials strongly leads one to assume that the "adpositions" Dryer refers to are likely to head PPs of the participant class and that the word order correlations between complement and manner-adverb order are as would be expected on the proposals given here.

13. I ignore here the possibility that some languages, albeit seemingly a distinct minority, allow some Spec positions to the right; this has been suggested at least for focus positions (Tuller 1992, Belletti and Shlonsky 1995, Ndayiragije 1999) and for subjects in verb-initial languages (Chung 1990, Aissen 1996). It may be possible to reanalyze such cases as right-adjunctions; if not, it may prove necessary to weaken (4.40a) in an appropriate way.
14. This is important, since one argument against PDH analyses has been that this distinction does not produce a complete mirror image; for example, SOV versus VOS. A PDH analysis that separates F-Dir and C-Dir, with the former being universally leftward and deriving the position of all Specs, makes the correct prediction that SVO is the unmarked type of head-initial language.
15. See Saito and Fukui 1998 for a theory of directionality principles along similar lines, although it is very different in other ways from the proposal made here.
16. [+S] need not actually be a feature in the formal sense, since it is ultimately subject to verification by (4.40) at LF, and whether XP is a complement or not can be "read off" a constituent XP when it is interpreted with a head whose lexical entry specifies XP. However, I continue to use [+S] for convenience. For the purposes of (4.40) it must be assumed that adverbial PPs and AdvPs do not count as [+Lex] YPs. I leave this matter for future fine-tuning.
17. This definition is revised slightly in chapter 8 to accommodate limited cases of multiple adjunction of [+F] phrases to one projection; only one of these phrases is to be defined as Spec. The change does not affect anything in the present discussion.
18. This conception of Spec position as a subcase of adjunctions, with a special grammatical (featural) relation to the head, is not a new idea. See Ernst 1991b, 1993, Hoekstra 1991, Saito and Fukui 1998, and Åfarli 1998.

    Note that the only new feature proposed here is [±R], and it is not completely new in the sense that it is the technical manifestation of directionality and, as such, replaces whatever (usually ignored) actual "instructions" were necessary in traditional versions of PDH to linearize nonheads in PF.
19. Note that "head" here is interpreted as some projection of the lexical head, so that it is the constituent to which an adjunct adjoins; this is normal in conceptions of phrase structure (e.g., Speas 1990, Chomsky 1995a) in which a given node bears no indication of bar-level.
20. The ban on left-adjunction in VP is controversial; see chapter 5 for justification and chapter 6 for discussion of the position of preverbal manner adverbs as adjoined to PredP.
21. Earlier formulations of Directionality Principles (Ernst 1999a, 1999b) had to explicitly mention that adjuncts in functional projections were licensed according to

the union of C-Dir and F-Dir for a given language. The current formulation derives this result from the effect of the C-complex being activated only for complements and/or lexical heads, and thus is both less stipulative and has a more solid conceptual underpinning.

22. This would preserve Inclusiveness (Chomsky 1995b), by which only features introduced in the lexicon are legitimate. Since [±R] is obviously not a lexical feature in the same way that Case, agreement, or focus are (as they all may be morphologically realized), this may be sweeping dirt under the theoretical carpet. However, other indications suggest that Inclusiveness may have to be relaxed in this way, at least where heaviness, focus, and the like are concerned (see Zubizarreta 1998:29ff.) I leave the question aside here.
23. Very briefly, Costa's proposal rules out postverbal clausal predicationals by saying that, starting from a structure with the adverb adjoined to VP, the necessary raising of the (rest of) the VP over the adverb violates the Empty Category Principle (ECP). This solution depends on adopting the framework of Barbiers (1995), which is problematic (as will be seen in section 4.5.3) and, by his own admission, requires several dubious stipulations (Costa 1997:59 n. 18). Ernst's proposal (a) requires positing an FEO Hierarchy that duplicates, in a rather unilluminating way, the independently needed effects of the FEO Calculus (chapter 2), and (b) hinges on the addition of a principle by which such hierarchies are linearized in a strictly left-to-right fashion.
24. It is not quite correct to say that it is predicationals that cannot right-adjoin to functional categories; as shown in Ernst 2000b, it is rather "subjective" adverbs – predicationals excluding mental-attitude adverbs – that show this behavior. Thus slightly more than mere selection for an FEO complement is involved.
25. Note that if, on the one hand, [+S] is a real feature, this proposal requires it to be a legitimate (interpretable) feature at both LF and PF given the view outlined of Directionality Principles as feature co-occurrence restrictions. If, on the other hand, a phrase's complement status can be read off LF or PF structure, then the issue of interpretability does not arise.
26. This must be a [−F] feature, since [+F] features are those that occur on elements in Spec; thus (as mentioned earlier) [+F] features are only a subset, albeit a very important one, of F-complex features.
27. This discussion leaves aside a number of questions, including whether it is proper to treat light adverbs in the same way as weak (or "deficient," for Cardinaletti and Starke [1994, 1996]) pronouns; and, especially, whether it is ultimately correct to link lightness to a structural position (such as Spec) or merely to linear order (as (4.49) does). These are complex issues, which are only beginning to be investigated. See Zribi-Hertz and Mbolatianavalona 1999 for a critique of Cardinaletti and Starke's theory, and support for the approach assumed here in which lightness is a matter of "degrees of deficiency" rather than one of discrete contrasts. For an analysis of French data in a similar spirit to the one advocated here, but in a different formal framework, see Abeillé and Godard 2000.
28. Examples like (4.52a) abound in the literature (e.g., Jackendoff 1977:73, Travis 1988), and it is often claimed that DPs/PPs are impossible in preverbal position; but cases like (4.52b) are actually fairly common, at least in more formal styles, as illustrated in (4.53). For further discussion see Watanabe 1993 (cited in Alexiadou 1997:50 n. 16), Laenzlinger 1996:17, and Cinque 1999:202 n. 29.

29. I ignore here cases like *in fact, of course, at least, in principle*, and so on that occur fairly easily in the area between subject and verb in SVO languages but that may be fixed expressions grammaticized into AdvPs from PPs.
30. This is as it should be; questions of light versus heavy involve a continuum of weight at PF, influenced by many factors (see Wasow 1997), whereas checking of [+F] functional features in Spec would seem to be an all-or-nothing matter. This may be another significant property distinguishing the F- and C-complexes.
31. As discussed in chapter 1, I do not assume here (as in May 1985 and other recent work) that two "segments" of a category permit mutual c-command but rather adopt the earlier definition of c-command by which A c-commands B if the first branching node dominating A also dominates B (Reinhart 1981). See Aoun and Li 1993, Ernst 1991a, 1998a for discussion of more precise mechanisms of scope determination involving references to traces, including the Scope Principle formulated in chapter 1 n. 21. Since traces do not enter into the current discussion, these refinements (which I adopt) are irrelevant at the moment.
32. See also Saito and Fukui 1998 for a very different version of a PDH theory also making the prediction that the distribution of adjuncts is strongly correlated with that of complements.
33. See Jackendoff 1990a, Williams 1993:186, Kuno and Takami 1993:126ff., Pesetsky 1995, and Alexiadou 1997:172 n. 7); in defense, see Larson (1990), who claims that other data, such as from Gapping facts, support the type of constituent structure given in (4.59).
34. These matters of phrase structure and constituency are complicated issues about which much has been written, and it is impossible to do justice to them here; for extensive recent discussion, see Jackendoff 1990a, Larson 1990, Pesetsky 1995, and Phillips in press.
35. Frey and Pittner (1999) propose a similar approach, although it is very speculative, by their own admission.
36. M-command is no longer needed in P&P theory, given that its functions are now taken over by Spec-head agreement (for its original role of assigning case or theta roles to Spec positions) or by x-command. Note also that c-command, as standardly formulated and used, applies to a subset of the configurations needed for x-command, so that the none of the analyses of phenomena currently covered by c-command are adversely affected (except possibly for NPI licensing in head-final languages, which I put aside here). C-command still appears necessary for handling scope-related minimality effects like adverbs' blockage of question-operator raising in Chinese (Ernst 1994a) and similar cases in English (e.g., **How$_i$ did [you leave t_i] [because you were tired]?*, where the *because*-clause blocks raising of *how*), as well as for the proper interpretation of frequency and focusing adverbs.
37. If one adopts the idea of Comp split into several functional projections (Rizzi 1997 and chapter 8 here), then this is the highest of the projections corresponding to the old CP of Chomsky (1986).
38. Given the emerging consensus that Reconstruction should be a matter of deletion of the head of a copy chain at LF (see Ernst 1998a and Safir 1999, among others), one cannot posit application of both anaphor binding and scope interpretation at LF, unless they can be explicitly ordered with deletion of the head copy after binding but before Reconstruction, which is surely something to avoid.

39. Barbiers follows Kayne (1994) in taking Specs to be a type of adjunction; XP* represents the (top segment of the) maximal projection XP.
40. For similar remarks, see Alexiadou (1997:38–39), who cites arguments by Rita Manzini.

Chapter 5. Noncanonical Orders and the Structure of VP

1. As always, I exclude parenthetical expressions, set off by intonational breaks, from consideration.
2. In such structures, the lexical verb starts in the lowest V position, and the higher heads labeled V represent abstract elements like CAUSE, BECOME, and DO, which combine with the lexical verb in L-syntax (following Hale and Keyser [1993], Rapoport [1999]). V ends up in Pred (corresponding to Hale and Keyser's V_1), above the highest internal argument (see Bowers 1993 for discussion of motivation for this move). Subjects are omitted from (5.11), as they are licensed higher, adjoined to PredP (on one version of the "split VP Hypothesis"; cf. Koizumi 1993, Kratzer 1994).

   XP is taken as being in the Spec of VP_2, rather than as being a complement in the position of VP_2, only so that complements are consistently mapped onto base structure as Specs. If positive evidence for taking them as complements (as for Larson 1988b, Hale and Keyser 1993, and others) is found, then linearization principles will have to be slightly more complex. I see nothing crucial in this choice for the theory of adverbial licensing. (I often represent a second internal argument as a structural complement in this chapter's discussions, suppressing the lowest level of VP, since this is a simpler and more familiar representation, and the difference has no effect on anything at issue here.)
3. I do make this assumption, still taking the interpretation of the nonquantificational relationships involved in Barss-Lasnik effects to be conditioned by x-command and precedence (chapter 4).
4. Quantifier scope in cases like these is of course a complex phenomenon; see May 1985, Aoun and Li 1993, Ernst 1998a, Fox 1999, and references therein.
5. Recall that I assume a two-stage theory of Case along the lines of Freidin and Sprouse (1991) and Ernst (1998a), in which Case is assigned to an object under government in its base position (usually, and here, in Spec, VP) and licensed in Spec,PredP by feature checking, at LF in English.
6. Since *out* is a head, it cannot move rightward over *a genius*, nor does it raise (at least overtly) to a position between verb and object.
7. Little hinges on the choice of the label Pred, as opposed to μ (Pesetsky 1989, Johnson 1991), AgrO (Chomsky 1991), Voice (Kratzer 1994, 1996), Event (Travis 1994, in press), *v* (Chomsky 1995b), and Tr (Collins 1997). Each of these works presents interesting proposals, but there is much uncertainty about what the important properties of this node really are; I remain neutral about its properties aside from those specifically claimed here, including that of always attracting V.
8. I follow Bowers (1993) in taking small clauses to be PredPs, but nothing crucial hinges on this decision.
9. The syntax of verb-particle constructions is complex and, in many ways, controversial; I reluctantly leave aside here a number of issues of potential relevance to

adverbial syntax. Aside from the references mentioned in this section, see Kayne 1985, Svenonius 1994, Collins and Thráinnson 1996, and references therein.

10. For related discussion of the "X′-Invisibility Hypothesis," see Epstein et al. 1998.
11. Presumably to solve this problem, Takano (1998) proposes that the intervening adverb needs case, making it an A-element of some sort, but this does not avoid the empirical problem in (5.28) and is highly implausible theoretically, as adverbs of this sort show no evidence of needing case.
12. See Ernst 1984 and the discussion in chapter 3 here for discussion of other types of DP-initial adverbs.
13. The same point holds for certain other structures, depending on the analysis. For example, given what was assumed in (5.20) for small clause complements of *consider* and *make (out)*, left-adjunction of adverbs to V′ wrongly predicts the sentences **I considered her thoughtfully a genius* and **The committee made Fred stupidly a hero*.
14. See chapter 6 here and Ernst 1999a for discussion of why other adjuncts that would be expected to the right of manner expressions in a head-initial language, such as temporal clauses or causal or participant PPs, are barred from right-adjoined positions in Chinese. For general discussion of the data and associated issues here, see Ernst 1989 and Tang 1990.
15. I take the preverbal and postverbal manner adverbials to be the same, both structurally and semantically, in their major properties: they both are composed of an adjectival VP plus a particle *de* and are manner modifiers within PredP. The two *de*'s are probably slightly different items, as they clearly are historically and in related languages, but both act as adverbializers. I assume that their different positions are morphologically conditioned, and the differences in meaning to be encoded lexically in the two items. See Tang 1990, Li 1990, and Ernst 1995b, 1996a for further discussion (though here I assume base-generation in postverbal position rather than the analysis proposed in Ernst 1995b).
16. See chapter 6 for further discussion of this group and also of adverbs like *well* and *hard*, whose similar behavior is accounted for rather by Weight theory.
17. The same argument can be made with respect to (a) *again*, if we make the added assumption that the repetitive reading can be derived when the adverb adjoins to PredP and to (b) Chinese manner adverbials marked with *de*, illustrated in section 5.3.4.
18. Sentences like (i)–(iv) further support this point.

    (i) [T]he flanks of Cerro Rico push naked and lifeless into the skies above southern Bolivia. (*Smithsonian*, Nov. 2000, p. 144)

    (ii) Sometimes when I was free for a while of thinking about the chairman, . . . (Andrew Golden, *Memoirs of a Geisha*, p. 390)

    (iii) The plaintiffs contended that Coke . . . had tried unfairly since the 1990's to keep them out of markets and convenience stores. (*New York Times*, Aug. 6, 2000, Section 3, p. 1)

    (iv) He forced the general at a news conference to read a two-page statement. . . . (*New York Times*, Jan. 8, 2001, p. A13)

    In all of these cases, a subcategorized PP or infinitival clause occurs to the right of at least one adjunct, the latter being a secondary predicate in (i), a duration PP

in (ii), a manner AdvP plus a temporal PP in (iii), and a locative PP in (iv). All of these involve a heavy phrase that cannot occur preverbally, unlike *Maria looked lovingly at her daughter* (for example), where the adverb would also be acceptable preverbally. Therefore, if (i)–(iv) are to be derived simply by V raising over the adjunct, the movement must be obligatory (conditioned either by the nature of the intervening adjunct, or else by some version of Weight theory like that advocated in this chapter). This in turn makes the wrong prediction that (v) ought to be ungrammatical as a variant of (iii), since V raised obligatorily over the PP *since the 1990's* but did not raise over the AdvP *unfairly.*

(v) The plaintiffs contended that Coke had unfairly tried since the 1990's to keep them out of markets and convenience stores.

Of course, this problem could be solved in turn by positing an intermediate landing site between the preverbal base positions of *unfairly* and *since the 1990's*, but now we face the problem, discussed in chapter 3, of a proliferation of empty categories. The complexity of the mechanisms required to solve these problems leads one to consider either rightward movement or the alternate, leftward movement analysis considered in section 5.6.

19. I omit full discussion of justification for rightward Heavy Shifts; the main argument for it was, until very recently, that given the traditional assumptions about base positions and constituency, positing rightward movements was the obvious, simplest solution. It is only the recent prospect of simplifying phrase structure theory via LCH theories that has allowed stronger arguments against rightward movement. There do remain other arguments for movement; for example, those discussed in Pesetsky (1995:chapter 7) and this chapter should be taken as further evidence. Many of the problems for the movement analysis are obviated if the proposals here are correct.
20. (5.61b) is phrased in terms of rightward direction and thus for the moment only applies to head-initial languages. It eventually needs to be revised to reflect movement of heavy items in head-final languages, which seems to have somewhat different properties.
21. See Oehrle 1976, Stowell 1981:107 ff., Kayne 1985, Hawkins 1990, Rochemont & Culicover 1990, 1997, Cardinaletti and Starke 1994, Korzen 1996, and Wasow 1997.
22. See the sample contrast in (i), where speakers prefer the longer AdvP *previously* to the shorter PP *before then*, in informal styles.

    (i) a. They had previously gone home.
        b. ?They had before then gone home.

23. I intend this factor to include considerations of new/old information; as is well-known, new information tends to go to the right, where it is focused at least to some degree (see Birner and Ward 1996 and Rochemont 1998).
24. In (5.61a) AdvPs are distinguished according to the presence or absence of a complement, but this is probably a separate issue within Weight theory (and perhaps more discrete than a continuous); even shorter AdvPs with complements (as in (i)) are better than longer AdvPs without complements (cf. (ii)).

    (i) ??Hubert has luckily for him found his beloved cloudberries.

    (ii) Hubert has extremely unfortunately missed the last box of cloudberries.

(As usual with such sentences, speakers differ in absolute judgments but consistently prefer (ii) to (i).) I continue to treat these "Edge Effects" (as Haider [2000] calls them) as part of 5.61 for convenience, but the issue is not settled. (See Hawkins 1990 and Haider 2000.)

25. Since the main concern here is with adverbials, I sidestep discussion of the recent controversy about this extraposition in SOV languages; see Bayer 1997, Büring and Hartmann 1997a, Haider 1997, Mahajan 1997, and references there. There surely must be additional constraints on rightward movement (perhaps some of them language-specific); thus even if languages like these do not display Heavy Shift of the kind seen in English (Kayne 1994:73), this does not necessarily constitute an argument against rightward movement.
26. See also Ernst in press for discussion of a similar correct prediction for Mandarin Chinese, a different sort of mixed word order-type language, and Baker 1996:506 for the German/Dutch type.
27. See also Belletti and Shlonsky 1995 for similar data from Italian and Hebrew, and Korzen 1996 for French. Note that limited PP-preposing, as proposed by Belletti and Shlonsky, would be compatible with the current framework given a FocusP fairly low in structure, as they propose.
28. Cf. Zubizarreta's "P-Movement" (Zubizarreta 1998) and Pesetsky 1995:255; also Guéron 1980 and Truckenbrodt 1995.
29. I ignore the issue here of why indirect objects in V – DP – DP double object sentences do not move rightward; see den Dikken 1992 and Pesetsky 1995:259.
30. Note that such nondiscrete, preference principles are expected for a PF condition, relating to the C-complex.
31. I consider it possible for particles that are "defective" PPs, as in (5.21), to move rightward over short AdvPs, on the strength of examples like (5.6) and (5.23); but such cases are relatively rare.
32. I ignore here the Larsonian version of the LCH, by which the surface order of postverbal adjuncts is its actual base order, since chapter 4 presented evidence that this approach cannot easily handle constituency facts and scope relationships (see also Rochemont and Culicover 1997:287–88 for criticism specifically with respect to extraposition). If right-adjunction is to be denied, it seems clear that the Kaynean version of the LCH is closer to being empirically adequate than the Larsonian.
33. The derivation would essentially be the same if the base order were *again* V DP *with a knife*; the instrumental PP would be part of (VP in) XP. Other derivations are possible. It also does not affect the point at hand if V first raises out of YP.
34. Recall that the extended VP is the complement of Tense. Extended projections are discussed in more detail in chapter 8.
35. Evidence for this constituent structure comes from (among other sources) VP-ellipsis tests as illustrated in (i).

    (i) She planned to open once again all those boxes with a knife, but she did so _ with a chisel.

36. In neither Kayne 1994:72f nor Rochemont and Culicover 1997:347ff., the two LCH analyses of Heavy NP Shift I am aware of, is a trigger for this second movement proposed.

37. Since intraposition represents a movement across an earlier movement to Spec (of the heavy DP), something about these movements or landing sites must deactivate any condition on crossing movements (such as Relativized Minimality [Rizzi 1990] or the Minimal Link Condition [Chomsky 1995b]). Therefore, the two approaches are equally complex on this score, as both theories must distinguish crossing and noncrossing types of movement.
38. The thrust of LCH theories seems rather to be to move light items leftward into relatively high Spec positions and to leave heavy items in base positions (e.g., Cardinaletti and Starke 1994, Alexiadou 1998). It is unclear to me how this could be extended to the full range of cases including Heavy-Shifted complements.
39. See also Baltin 1983, Culicover and Rochemont 1990, Rochemont and Culicover 1990, Müller 1995, and Pesetsky 1995 for discussion. See Müller 1995:214 for similar evidence from German.
40. See Huang 1982, and Chomsky 1986 for early discussions of CED effects.
41. This is standard in frameworks making use of both AgrS-P and Tense (e.g., Pollock [1989], Chomsky [1991], and their inheritors), including those who assume MoodP (e.g., Pollock 1997). I follow the view advocated by Iatridou (1990), Bouchard (1995), Chomsky (1995b), and many others in taking morphological agreement to be mediated by heads primarily dedicated to other functions, thus denying the existence of AgrP.
42. There may be other types of AuxP, such as PassiveP, and those listed might perhaps be split up into subtypes (e.g., PerfP and ProgP within AspP). Other projections might be justified as well, such as EventP if this is separate from PredP, and BaP (for the *ba*-construction) in Chinese. The only crucial claim made here about any of these eventually proven to exist is that they have properties characteristic of the extended VP.
43. See McCloskey 1999 for a very similar proposal for RM in Modern Irish, including the notions of bounding constrained by extended projections and of prosodic conditioning for RM; cf. Kayne 2000 for a reply to McCloskey.
44. Rightward extraction out of CP in complex DPs or adjuncts is still barred, for the same reason: CP is always a barrier to rightward movement.
45. (5.111) also predicts that phrases moving rightward out of subjects should not be able adjoin higher than IP. This seems to be true, although the evidence is not especially strong; see Rochemont and Culicover 1997:280ff. for discussion.
46. See Culicover 1996 for a critique of the PUB; even if it is correct that A′-movement landing sites cannot be distinguished structurally as Müller and Sternefeld claim, the PUB can still be retained, as long as the types of movement are distinguishable in some other way.
47. If sentences like (5.107a–b) are instead not cases of extraposition out of subjects and adjuncts, but rather are results of base-generation plus an interpretive mechanism like the Complement Principle of Culicover & Rochement (1990), then either theory can handle them relatively easily as cases of nonmovement. I leave this option aside for the moment; see Müller 1997 for discussion of certain problems for the Complement Principle.
48. Several writers, such as Costa (1997) and Frey (2000), have invoked the "freezing effect," by which extraction from right-moved phrases is supposedly blocked, to argue that the PPs in cases like (i)–(ii) are not always moved to the right.

(i) John looked {carefully/yesterday} at the pictures of Miró.

(ii) Which painter did John look {carefully/*yesterday} at the pictures of?

This is used as an argument to support the analyses discussed in chapter 4, by which the only movement is V raising over the manner adverb *carefully,* the ungrammaticality of (ii) with *yesterday* follows if the latter is generated to the right of the PP.

There are two reasons to reject the generalization on which the argument is based. First, as Costa (1997:35) notes, it does not apply to clausal complements (see (iii)).

(iii) What did Peter say yesterday that he had seen?

Although he claims that this should not affect the argument, I believe it does, because it undermines the strength of the generalization that right-moved phrases are frozen: actually, only PPs and DPs are. Thus the most natural formal implementation, treating these extraposed phrases as adjuncts subject to CED effects, is not easily workable because an exception must be made for moved complement CPs. Second, there are PPs that do permit extraction even when they occur to the right of temporal adjuncts; (iv)–(vi) are no worse than (ii) with *carefully*.

(iv) Who were they prattling on for so long about?

(v) What were they messing around all day with?

Taken together, these facts suggest that we should explore prosodic and/or discourse-informational accounts of freezing phenomena, rather than condition them on whether a phrase is or is not in a base position.

This conclusion may apply as well to one salient difference between leftward and rightward movement: leftward movement permits preposition-stranding (in languages that allow it at all), while rightward movement does not, as (vi)–(vii) illustrate.

(vi) Who$_i$ did Karen mail the letter to t_i quickly?

(vii) *Karen mailed the letter to t_i quickly [all the stockholders who had complained$_i$.

See Culicover and Rochement 1990:135, Kayne 1994:73, and Pesetsky 1995:256ff.

49. It might also explain why Scrambling is more common in SOV languages than in head-initial ones (if this is indeed true; both Yiddish [Diesing 1997] and Russian [Müller and Sternefeld 1993] may be head-initial Scrambling languages): only in the former do the two movement types potentially have the same landing site.

Chapter 6. Event-Internal Adjuncts

1. It may also be that frequency and duration adverbials have event-internal uses, but these are largely ignored here.
2. Also, though I do not explicitly contrast this analysis with a feature-based alternative, it should be clear, by analogy to the arguments in chapter 3, that a theory licensing adverbs with respect to a rigidly ordered series of functional heads cannot account easily for the data.
3. Repetitive *again* has the same distribution as PPPs within PredP. The impossibility for manner and measure adverbs to adjoin to PredP to the right of V is covered by

the formulation of Directionality Principles in chapter 4; for evidence that domain adverbs do adjoin there, see Ernst 2000b.

4. For recent treatments of adverbs that invoke this idea in some form, see Frey and Pittner 1998, Haider 2000, Tenny 2000, and Travis 2000.
5. See Ernst 2000c for a brief discussion of this contextual variable c*; see also Fintel 1994 and Maienborn 1998 for similar uses of restrictions on quantified NP's and topic times, respectively.
6. In (6.15b) I take *physically* to adjoin to VP and to combine with an event e to yield an event e′.
7. Thus the core state for *darken* is (BE) DARK; for *roll* in the causative *roll the ball,* it is represented by the unaccusative *roll* (= BE ROLLING); for *thin* in *thin the gravy,* it is BE THIN. See Tenny in press for further discussion.
8. For further discussion of these adverbs' semantics, see Swart 1993 and Moltmann 1997. I do not discuss *almost* and *nearly* in this chapter, since they need not involve event-internal modification; I follow Tenny 2000 in taking them to be vague, so that event-internal modification readings may result in the right contexts.
9. I refer here to locatives that are neither selected arguments of V (or, in some treatments, adjuncts that give the end-state location of a moving theme) nor framing adverbials that typically occur sentence-initially. Maienborn (1998) discusses and analyzes these three types.
10. I remain neutral here about the precise version of Hale and Keyser's program about how much of the interpretation of arguments depends on the L-syntax structure and how much is inherent in the main verb. The final answer does not affect adverbial syntax, as far as I can see, except perhaps for subcategorized adjuncts. For discussion, see Hale and Keyser 1993, 1999, Ritter and Rosen 1998, Rapoport 1999, and Fodor and Lepore 1999.
11. This precludes the analysis of ditransitives in Ernst 1998a:130, where a functional projection intervenes between separate VP projections for each argument: given the Directionality Principles, the existence of such a projection makes the wrong prediction for adverbs interspersed among complements. Though it is possible to reconcile adverbial distribution and the QP-scope concerns that motivated that analysis of ditransitives, I leave the question aside here.
12. In the following discussion, I ignore possibilities for the complement of Pred aside from VP. It is also not important for present purposes whether the Hale and Keyser structures are followed strictly or whether a VP is always present, with such verbs as *shelve* or *darken* already entered into syntactic structures as Vs and with no syntactic derivation from N or A (cf. Rapoport 1999).
13. See Rapoport 1999:section 2, for discussion. As noted, the difference in details between the proposals of Hale and Keyser, Rapoport, and others in this tradition do not appear to matter for present purposes.
14. This holds even if the entity doing the sliding is sentient; thus *The apprentice slid Joe over* likewise forbids an interpretation where Joe is careful.
15. These preferences appear to be related to processing considerations, not syntactic principles. See Kurtzman and MacDonald 1993, Klein 1994:145f., and Thompson 1999:149–50.
16. Alexiadou 1997 posits a unique postverbal base position for manner adverbs, with a rule optionally moving them to preverbal position as long as they are not too

heavy. In the framework developed in this book, such an analysis is of course unavailable, since it posits an adverb-specific movement rule; the latter is in any case an extra complication not required on the scope-based analysis with multiple base positions. For a further critique of Alexiadou's analysis, see Pittner 1999: 410–11.

17. Recall that this holds for normal intonation; clausal-reading predicational adverbs may occur postverbally only if set off by comma intonation.
18. For independent reasons, the equivalent sentences in Chinese (though they conform superficially to the pattern shown in English and French) do not provide good evidence for the point at hand.
19. It is likely that other, language-specific factors may further condition the position of manner adverbs with respect to V in head-initial languages. For example, in Chinese aspectual considerations seem to be involved, with the VP-adjoined, postverbal *de*-expressions (see (6.37)) having a tighter connection to aspectual structure than preverbal, PredP-adjoined instances (see Ernst 1996a). This does not alter the fact that both are manner readings, with the same fundamental interpretation. The same point holds for *slowly,* with differing readings in sentences like (i)–(ii) (see Thomason and Stalnaker 1973, Rochette 1990, and Cinque 1999:20, for earlier discussion).

    (i) He has been slowly testing some bulbs.

    (ii) He has been testing some bulbs slowly.

    Given a proper formulation of events made up of iterated subevents and assuming that quantified DPs like *some bulbs* may have alternative positions with respect to the adverb at LF, the difference in interpretation is purely a matter of scope: *slowly* in (i) takes scope over the whole event of multiple tests, while in (ii) it takes scope over subevents of tests of individual bulbs. *Slowly* is not "homophonous," nor is there a need to ascribe this difference in reading to any special property of its two possible positions. The case of *quickly* is somewhat different; see Dik 1975, van Voorst 1993, and Higginbotham 2000.
20. Such an analysis would be plausible, given that in many languages, such as German, an adjectival form does double duty for adverbs (see examples n. 21). One would have to say that, while this possibility is exploited generally for some languages, it is used only for individually marked words in English.
21. See Bowers 1993 also for parallel data from French, and Eckardt 1998 for German data, where the phenomenon shows up as a ban on these adverbs occurring before the direct object. All German speakers I have consulted find that the sentences Eckardt stars, such as (ii) (cf. (i)), are not completely ungrammatical, sometimes only slightly awkward.

    (i) . . . weil Olga die Sonate perfekt spielte
    because Olga the sonata perfectly played
    '. . . because Olga played the sonata perfectly'

    (ii) *. . . weil Olga perfekt die Sonate spielte
    because Olga perfectly the sonata played
    '. . . because Olga perfectly played the sonata'

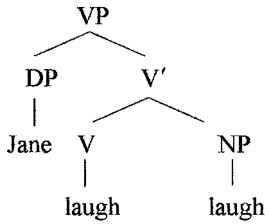
22. As far as I know, the passive facts were first discussed by Blight (1998). Speakers vary as to the acceptability of DegPrf adverbs in these passive and less-transitive active sentences, but in all cases there is a definite contrast between these relatively acceptable cases and the disfavored active sentences with adverbs in preverbal position. The analysis suggested here is also supported by (i)–(ii), both with verbs low in transitivity.

    (i) Mr. Clinton beautifully articulated a grievance, and then engineered a compromise. (Scott Simon, NPR, Dec. 9, 2000)

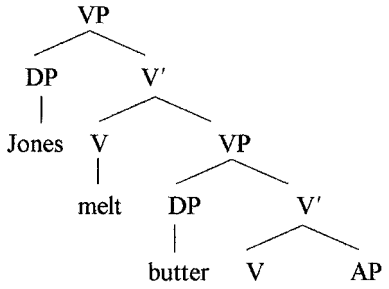
    (ii) [The painting] perfectly evokes the then-popular view of the East as a languorous Eden. . . . (*Smithsonian,* Sept. 2000, p. 61)

23. This proposal fits well in the framework of Rapoport 1999 and Erteschik-Shir and Rapoport 2000, which allows abstract complements of V, such as a noun *laugh* in (i) (Rapoport 1999:2, with category labels changed for clarity); this noun eventually incorporates with V. Similarly, one might treat the result-state represented by AP in (ii) (Erteschik-Shir and Rapoport 2000:658 (14)), denoting a melted-state, as the locus of transitivity proposed here.

(i)



(ii)



We may assume that the lowest elements in such structures (result-states and direct objects) encode transitivity, which is in accord with Rapoport's notion of *aspectual structure focus*, by which some part of these structures is foregrounded in its role of determining the aspectual type of the predicate. Thus for highly transitive verbs the locus of transitivity is in the lower part of the structure and receives aspectual structure focus (as in (ii)), while for cases of low transitivity the aspectual focus is on the verb (as in (i)).

24. In a related matter, it has occasionally been claimed that some adverbs are "object-oriented," requiring predication of the complement of V; for example, Laenzlinger (1997:53), gives (i)–(ii) in French (his (26a–b), with corrections).

(i) Mike Tyson frappa mortellement ??(son adversaire).
Mike Tyson hit fatally his adversary
'Mike Tyson hit his adversary fatally.'

(ii) Jean mangea entièrement *(la pomme).
Jean ate entirely the apple
'Jean ate up the apple entirely.'

The claim is that there must be an object for such adverbs to be licensed. However, there are abundant counterexamples to this claim, for example, the intransitive sentences in (iii)–(iv).

(iii) Elle saignait mortellement.
'She bled fatally.'

(iv) a. Ça cloche entièrement.
'That clashes entirely.'
b. Il s'est entièrement trompé.
he self-is entirely fooled
'He is entirely wrong.'

Investigation of a range of examples shows that the relevant generalization is rather that the predicate must be sufficiently telic (have a sufficiently salient result/endpoint); this does not necessarily require an object. Note especially that these "result-oriented" adverbs do not have to occur postverbally, as might seem natural and as has sometimes been claimed (see the examples in (v)).

(v) a. They had (safely) arrived (safely).
b. Kim (fatally) shot Sandy (fatally).
c. The lobbyists (fruitlessly) worked on the senators for a month (fruitlessly).
d. Bob (successfully) negotiated a new contract (successfully).

Thus, though it might be true that there is a connection between the ability of a verb to take a manner adverbial and its ability to subcategorize for an affected object (Adger and Tsoulas 2000, citing Harris 1968), this is not a syntactic matter but a semantic one. This point is further supported by examples like (vi), showing that even highly intransitive verbs like *resemble* and *cost* may take manner modification. The ungrammaticality of (vii), Adger and Tsoulas' (3), is due to a lexicosemantic clash, as *wholeheartedly* requires that some agent control the event in question, which is impossible for the subject of *cost,* a theme.

(vi) John resembled Sue {oddly/precisely}.

(vii) *The slave cost 600 denarii wholeheartedly.

Again, once sufficient attention is paid to the semantics of the adverbs and verbs involved, many purported syntactic generalizations are less solid than originally thought.

25. Other adverbs that behave largely like *completely* are *totally, fully, entirely*, and *utterly*; see Ernst 1984:192ff. See also Ernst 1984:171ff., 181ff. for discussion of the *slightly* and *very much* types.
26. The top node of (6.72) is intended to represent not ternary branching but two possible binary branchings, each in one direction. Here I note CAUSE + BECOME as simply CAUSE for simplicity, and simply BECAUSE where it occurs alone, as with unaccusatives.
27. Given the variation among speakers with respect to the acceptability of preverbal versus postverbal positions for measure adverbs, the current theory must say that speakers differ as to whether a lexical item permits or blocks application of (6.30). In the latter case, only postverbal position is possible, just as for restitutive *again*. In the former case, the measure adverb can occur either before or after the verb.

    This is, of course, no less arbitrary than a theory that allows an equivalent variation in features licensing adverbs with respect to functional heads. The implicit claim of the theory proposed here, however, is that the overall grammar is simpler and more explanatory if this sort of stipulation is lodged in the semantic part of the grammar.
28. It is important that the interpretation of means-domain adverbs not involve Event Identification, as for PPPs, since the former occur adjoined to VP, and PPPs must adjoin above VP. Still, their apparent similarity to instrumental PPPs raises the issue of why there should be such a significant compositional difference; perhaps there is some difference associated with a preposition like *with*.
29. Note that the wide-scope manner adverb makes use of a comparison class defined by the predicate P, not by the combination of P and the narrow scope adverb. I leave aside the adjustments necessary to account for this in the manner semantics proposed earlier.
30. Although PPPs permute freely in principle, there certainly are contextual and lexical factors that favor or forbid one or the other order in particular cases, an issue I ignore here. Also, locatives as a class may occur not only adjoined to PredP but in higher positions, similar to temporal phrases (see Hegarty 1990, Fujita 1994). This may have to do with their greater ability than other PPPs to serve as topic or framing expressions (see Maienborn 1998). Note that although temporal expressions are often lumped in with PPPs (often as "circumstantials"), it is clear that they do not occur as low in structure as PPPs, presumably because reference to time is not event-internal. See Frey 2000:113f. and chapter 7 here for further discussion of this point. On circumstantials as a class, see Gosselin 1990, Nilsen 1998, Cinque 1999:28, and references cited there.
31. Many authors (e.g., den Dikken [1992]) claim that manner adverbs may not precede particles, giving examples like (i).

    (i) *She moved cleverly in.

    (6.107)–(6.109), though, show that when the particle is heavy enough and the adverb light enough, this order is indeed possible (albeit often only in formal styles). This adds evidence that this sort of word order alternation is indeed primarily conditioned by Weight theory, which, if the thrust of the arguments in chapter 5 is correct, ought to be correlated with rightward movement.
32. A fifth type, the causal expression in (i), is irrelevant here because no one, to my knowledge, has any idea of how to account for its exceptional, postverbal

occurrence. Such expressions are more normal preverbally, as shown, but are acceptable after the verb as well. (See Tang 1990 for further discussion.)

(i) Guorong (yinwei lei) jiu huiqu-le (?yinwei lei)
Guorong because tired then went-back-PRF because tired
'Guorong went back because he was tired.'

33. The discussion in this subsection is given in greater depth in Ernst 1996a, 1999a. The formal analyses given here are intended to supercede the ones given there.
34. I ignore here a number of issues that are irrelevant to the concerns of the moment. One is the adjunct/argument status of resultatives; though they are most often taken as arguments (especially in the literature on Chinese), this is not rooted in a coherent theory of the adjunct/argument distinction. If we take arguments as expressions that are compatible with the argument structure of the verb (i.e., basic V in L-syntax; this corresponds to the more traditional notion of being selected by V), since results are not usually selected by Chinese verbs, resultatives should be adjuncts (e.g., *ku-de yanjing dou hong* 'cried so much (one's) eyes got red'). This is to say not that they are definitely adjuncts but merely that the issue will remain unclear until a coherent theory of the distinction is established. (The conclusions reached here are unaffected by the choice.) Another issue is whether the IP in the resultative always has a PRO subject, controlled by the Ba-DP if there is one and by the subject otherwise (Huang 1989, 1997b), or whether the Ba-DP may start as the overt subject of the resultative IP and then raise to its surface position. See also Goodall 1989 and the discussion in Sybesma 1999:chapter 6.
35. More accurately, it is like DegPrf adverbs in supplying a (resultative) end-state not present in the lexical structure of V; for example, (i) shows a resultative with the activity verb *ku* 'cry'.

(i) Xiaohai ku de women dou shangxin.
child cry DE we all very-sad
'The child cried so much we were very sad.'

If the analysis of DegPrf adverbs suggested in section 6.3 is on the right track, we must assume that their "evaluated state" is represented differently from the resulting state for Chinese resultatives like (i), which is always linked to the lower part of the Low Range and thus always postverbal. As noted, I remain neutral on the question of whether resultatives of this sort are arguments (as most of the literature on Chinese syntax assumes; e.g., Sybesma 1999) or adjuncts (as the standard application of criteria such as obligatory selection by V would require). In any case, even if they are adjuncts in Chinese, linear order facts are accounted for by analyzing them as being parallel to DegPrf adverbs and restitutive *again*.

36. Some locative and goal PPs occur postverbally in Chinese:

(i) Xiao Huang ba pingzi fang zai shitou shang.
Xiao Huang BA bottle put at rock on
'Xiao Huang put the bottle on the rock.'

(ii) Ta dasuan fei dao Bali (qu).
s/he plan fly to Paris go
'S/he plans to fly to Paris.'

However, these are generally accepted as selected arguments (see Li 1990, Tang 1990, Mulder and Sybesma 1992) or as result expressions in a postverbal projection dedicated to result interpretation (Sybesma 1999).

37. Stroik (1996:chapter 2) argues that temporal and locative adverbials are generated lower in structure than those expressing manner and reason readings. His arguments are subtle and would require too long a discussion to do them justice here, but I believe they do not go through because they are primarily based on differences of semantic interpretation that are best handled directly, in semantic representation, rather than by positing different syntactic positions (see Szabolci and Zwarts 1993 for discussion).
38. For further discussion of the intermediate adjunct/argument status of such phrases, see Wechsler 1997 and Verspoor 1997:chapter 3.
39. Voice is realized as the passive *be* in English, *bei* in Chinese, and their equivalents in other languages, but it is different from the Voice node of Kratzer 1996, which is responsible for licensing Agents in Spec, VoiceP. As shown in (6.127), this role belongs to Pred in the current system.
40. See Huang 1982, Cheng 1986, Tsao 1987, Li 1990, Tang 1990, Sybesma 1992, 1999, Rhys 1996, Liu 1997, among many others, for exhaustive discussion.
41. I put aside here several troublesome questions, among them: how a perfective verb marked by *-le* can check this inflection in the Aspect node (raising though several functional heads in apparent violation of the Head Movement Constraint, if feature checking works as in Ernst 1995b); and why adverbs may not adjoin between *ba* and the following object DP. (Recall that the theory being developed here disallows simply stipulating a ban on adjunction to BaP.) On the latter point, see speculations in chapter 8. I also assume that the CAUSE element is in Pred, as discussed earlier, rather than in the *ba*-head (as for Gu 1998 and Sybesma 1999), although this appears to have no direct effect on adjunct distribution.
42. Agent-oriented adverbials in Chinese do not occur easily after either *ba* or *bei*. While (i) is ambiguous between a clausal and manner reading for *hen congming de* 'intelligently', in (ii)–(iii) the latter can only have a manner reading.

    (i) Ta hen congming de huida-le jizhe de wenti
    s/he very intelligent DE answer-PRF reporter of question
    'S/he intelligently answered the reporter's question.'

    (ii) Ta ba jizhe de wenti hen congming de huida-le.
    s/he BA reporter of question very intelligent DE answer-PRF
    'S/he intelligently answered the reporter's question.'

    (iii) Jizhe de wenti bei ta hen congming de huida-le.
    reporter of question PASS s/he very intelligent DE answer-PRF
    'The reporter's question was intelligently answered by her/him.'

    This is not easily predicted by the theory proposed here; the adverbial in (ii) should allow a clausal reading as well. That it does not in (ii) could be a consequence of a general decline in clausal readings' acceptability as the adverb is placed deeper in the sentence. However, I have no good formal account of why there should be such a decline, nor of why it seems more severe in Chinese than in English.

43. Any theory that delimits the Low Range by specifically naming a particular maximal projection would have to either (a) mention PredP for English but BaP for Chinese, adding a complication or (b) designate the projection as (say) 'the complement of Voice', which, redundantly, represents a restatement of one effect of independently required principles of semantic composition.

Chapter 7. Adjunct Licensing in the Aux Range

1. In chapter 8 I develop one additional mechanism, parameterization for the distribution of the feature [+C], which helps account for variation in adverb distribution between French and English, among other languages.
2. Although all languages appear to have a way to express notions of time, it is not clear that they all have a grammatical projection Tense; thus 'Tense' in (7.2) might instead be 'Finite', since it seems that languages without Tense at least have some notion of finiteness (see Ernst 1994b with respect to Chinese).
3. I ignore the possibility of double modals in some English dialects; see Battistella 1995 for discussion.
4. See Richards 1999, Adger et al. 1999, and references there for discussion of these issues.
5. See Emonds 1976 and Pollock 1989 for basic discussion. I lay aside a number of issues, such as how the movement is triggered and how the cross-linguistic differences can be captured; for further discussion, see Chomsky 1991, Pollock 1997, Roberts 1998, and Lasnik 1999: chapter 5.
6. See Binnick (1991) and his references for discussion of the major competitor to Reichenbachian theory, in which tenses are represented by unitary tense operators, and Ogihara (1996:43ff.) and (Kamp and Reyle 1993:491ff.) for their discussion of its attendant problems.
7. This is Hornstein's (1990) version; see also those of Ogihara (1996), which differs only slightly; Vikner (1985), which is adopted by Cinque (1999); and Kamp and Reyle (1993).
8. See Kamp and Reyle 1993:514ff. for discussion relevant to treating states as overlapping times.
9. Besides the issue of the relationship of tense to PERF, I also ignore other questions, such as the possibility of several different readings of the perfect and the treatment of the "present perfect puzzle" (i.e., why **She has left yesterday* is bad). An ultimate, final account of adverbial distribution in the AuxRange will need answers to them. In this chapter's discussion I sometimes use the term *event-time* but make no further claim about how event time is to be represented formally, beyond the abut relation shown in (7.19) (by which event-time, the temporal location of e, must precede reference-time, the temporal location of s). This is sufficient for the cases we examine.
10. I leave aside how this is to implemented technically; see Enç 1986 and 1987 for one possibility employing syntactic indices.
11. This effect is automatic where dynamic events are concerned, given that both tense and temporal adverbials place an event e within some time interval t; any subsequent tense or adverbial introduces another interval t' and (by means of the statement $[e \subseteq t']$) locates t within t'. However, it may be necessary to impose the nesting constraint in a different way for states. I leave this issue aside in this discussion.

12. The semantics of PROG requires intensional semantics and involves some (other) well-known problems and puzzles; for discussion, see Parsons 1989, Kamp and Reyle 1993, Vlach 1993, Michaelis 1998, Swart 1998, Zucchi 1999, and the voluminous references they cite. None of these issues are crucial for the analyses in this chapter.
13. It may be that some such stipulations are necessary in addition to the auxiliaries, but (crucially for the scope-based theory) if so these should be rare exceptions. See Tenny 2000 for a theory of limited, systematic fixing of specific syntactic points for particular types of adverbial interpretation, setting up the broad zones discussed in chapters 1–2.
14. A full analysis of all the functional subclasses is impossible, since much of the required semantic background is either controversial or not well-understood, and the syntactic complexities of some subclasses (e.g., negation) require a book of their own. I merely aim to provide fairly well worked-out analyses of some classes as evidence for the scope-based theory and to sketch out the others well enough to suggest the same sort of treatment for them. For English sentential negation, I assume (following Ernst [1992b]) that *not* is an adverb in the Spec of the highest AuxP, whose head Aux moves to Tense.
15. The analysis in section 7.4.2.2 does not emphasize the difference in mapping temporal adverbials to reference-time versus event-time (as in Hornstein 1990), or as external versus internal to the "verb constellation" (as in Smith 1991:chapter 5). This mapping is intended as following normally from the event layering and semantics of tense and aspect proposed here; for example, a loc-time adjunct below a perfective operator will (in effect) map to event-time, since it can only locate the event whose end-state is at reference-time. Thus the proposals made here are in principle compatible with Hornstein's, Smith's, and others like them.
16. Kamp and Reyle refer to this reference-time as a temporal perspective point. I actually take past perfect sentences like these to have a slightly different representation, involving states rather than dynamic events, as in (7.54), but the point will hold just as well in the alternative representation.
17. English and the Romance languages also provide such evidence, but it is much less clear, due to (a) weight-theoretic effects keeping many loc-time adjuncts to peripheral positions in a sentence and (b) the greater incidence of head movements with respect to Chinese.
18. Still, there *are* syntactic issues: it must be explained (a) how this "reverse scope" is possible at all, given the normal syntactic order of clausal heads where a modal precedes *have*, and (b) why the latter may have this exceptional interpretation. The answer to both questions involves the raising of *have* to the modal head; this is addressed in section 7.6.
19. I treat modals as representing stative predicates: states of knowledge for epistemic modality (just as for the verb *know*, for example), states of ability, permission, etc. for deontic modality, and so on. Thus they yield events, not propositions, and this permits time-related adjuncts to work uniformly as operators on events, since they may have scope over modals. Clearly, there are important issues raised by this choice, but recall that the FEO Calculus always permits free conversion of events into propositions if no anomalies result; thus the state of it being possible that Bill is leaving, in *Bill may be leaving*, can be converted to the proposition that it is possible that Bill is leaving. In any case, as far as I can see, adjunct distribution can still

be accounted for in the theory advocated here if modals are treated as representing propositions. I return to this issue in section 7.5.3.

20. Recall that this follows from an exceptional parameterization of Chinese for Directionality Principles, by which it acts like a head-initial language within VP but like a head-final language in functional projections as far as adjuncts are concerned.
21. For extensive discussion of Chinese D/F modification, see Ernst 1987a, 1996b, Li 1990, Tang 1990, Soh 1998, and Sybesma 1999.
22. This does not hold true of loc-time modifiers for all speakers of Chinese; northern speakers accept sentences like (7.70b), while southern speakers tend to reject them (see Ernst 1995a).
23. See Klein 1994, Rothstein 1995, Bonomi 1997, Giorgi and Pianesi 1997, Michaelis 1998, Swart 1999, and Thompson 1999.
24. Despite some claims (e.g., Giorgi and Pianesi 1997:88), it does not seem to be true that Italian, or Romance languages in general, disallow reference-time loc-time modification from postverbal position, parallel to the English cases in (7.71)–(7.72). Thus, for example, French allows it in sentences like (i), where either of the bracketed expressions may take scope over negation; (ii) supplies an Italian example.

    (i) Elle n'a pas dit ça {hier/ quand il est entré}.
    she Neg-has not said that yesterday/ when he came in
    'She didn't say that {yesterday/when he came in}.'

    (ii) Ho mangiato abbastanza adesso. (Giorgi and Pianesi 1997:88)
    (I) have eaten enough now
    'I have eaten enough now.'

    Giorgi and Pianesi take (ii) as ungrammatical if *adesso* 'now' marks reference-time, saying that the sentence is allowed with this interpretation only if *adesso* is right-dislocated. Though it is true that *adesso* is normally read with low tone here, low tone by itself is not a mark of right-dislocation, which requires comma intonation (cf. the discussion of parallel English cases in chapter 4). In particular, notice that clausal predicational adverbs, such as the epistemic adverb *probabilmente* 'probably', cannot occur with just low tone as does *adesso*, but require more of a pause before the adverb (just as in English):

    (iii) Ho mangiato abbastanza *(,) probabilmente.
    (I) have eaten enough probably
    'I have eaten enough *(,) probably.'

    As shown earlier, clausal predicationals like these never adjoin to the right above VP. Thus the contrast between (ii) with low tone but no pause and (iii) with pause indicates that only (iii) should be taken as an instance of right-dislocation. I therefore take the temporal adverb in (ii) as right-adjoined fairly high in structure, above the base position of the auxiliary, just as in English.
25. Thompson (1999:149) explains why this reading is often disfavored.
26. ITER represents an operator with a value something like '[$\forall'$ [if $e' \subseteq e$ & e' is on a Wednesday, then [D(e') ...]]]'. I omit more detailed consideration in the interest of staying closer to issues of syntax-semantics mapping; for discussion, see Kamp and Reyle 1993:635ff., Rothstein 1995, Bonomi 1997, and Swart 1998.

27. I avoid the question of representing *already* with simple past tense (e.g., *Jackie already left*). For discussion, see Michaelis 1998:172ff. and references cited there.
28. Alternatively, one might say that the progressive operator cannot apply to the state created from *already* plus the basic event, since PROG does not apply to states (as shown by the ungrammaticality of sentences like **She was knowing the answer*).
29. The sentence in (i) is predicted to be ungrammatical on the explanation given here, though it is actually far better – speakers generally accept it (at least marginally) in the right context, where one presupposes that Carol is doing something at the moment (speech-time), and the issue is figuring out what.

    (i) Carol could be already buying mangoes.

    That this special context is necessary suggests that some special mechanism is at work, permitting the adverb to take scope over *be* despite the normal syntax-semantics mapping to the contrary. This must be different from simple raising of the aspectual auxiliary as we have posited for *have*, as shown by (ii)–(iii):

    (ii) Carol will be {already/cleverly/*probably} buying mangoes.

    (iii) Carol will have {already/cleverly/probably} bought mangoes.

    Event-taking adjuncts like *already* and *cleverly* are fine in both sentences, but the proposition-taking modal adverb *probably* is acceptable after a second auxiliary only with *have*; moreover, as noted, (iii) is more widely acceptable by speakers without a special presupposition. Therefore, in such configurations I take *have* to raise in syntax (allowing any adverb to take scope over it by the Scope Principle), while *be* involves something more purely semantic and more specifically related to the composition of event FEOs.

    There is much investigation to be done to work out details like these, but the differences shown here still suggest that aside from limited verb raising, the distributional differences among these are at base a matter of semantic (in)compatibilities, not of more purely syntactic principles.
30. Recall that an adverb after the finite auxiliary in English may always take scope over the auxiliary, in principle, by virtue of the Scope Principle. This is why (7.103) represents (7.102a) regardless of the position of *still*.
31. Alternatively, as suggested in note 28, (7.105) is ill-formed because PROG cannot combine with states.
32. It is crucial that *ba* is a functional head that assigns (or checks) Case on the following object and cannot raise; this is in fact the most common assumption in the Chinese syntactic literature on *ba* (see the references given in chapter 6). Its immobility rules out a Cinquean approach in which *ba* would raise through multiple functional heads to a position high in clause structure, above the adverb.
33. See Swart 1993: chapter 3, for extensive discussion, including p. 185 for formal definitions of individual frequency adverbs.
34. See Rooth 1992, 1996, Bonomi and Casalegno 1993, and references there for focusers; Ernst 1984: chapter 4, and pp. 281ff. for comments on "B-class" clausal-degree adverbs; and Tenny 2000 and Rapp and von Stechow 2000 for *almost/nearly*.
35. See also those in chapter 2, where this freedom was the basis of an argument against the feature-based, Spec-head account of adjunct licensing.

36. There is much work to be done to chart the intricacies of preverbal functional adverb order; for Chinese, see Alleton 1972, Tang 1990, and Tsai 1995, and for a sampling of work on various West African languages, see Awobuluyi 1975, Stewart 1996, and Schaefer and Egbokhare 2000.
37. We have spent relatively little time here establishing the precise lower bound of the ranges of loc-time, frequency, and duration adverbials, although it was assumed that the latter two may be event-internal and thus may sometimes occur within PredP. To my knowledge, there has been no reliable research done on this question, and I reluctantly leave it open.
38. Cinque's (1999) hierararchy predicts (correctly) that the deictic loc-time adverbs *once* and futurate *then* necessarily precede *still*. This follows directly from the semantically based approach here because *once* can only refer to past times and thus cannot refer to the time of an event modified by *still*. The same holds of *then* if it refers to a unique future time. But *then* does not have to do this; it may be within the scope of *still* in a sentence like *She still arrives then*, where *then* refers anaphorically to some repeated event-time in a way parallel to (7.141c)'s *on Fridays* (e.g., Fridays), and in such sentences *then* may refer to a future repeated time (e.g., *She will still arrive then*). The only real constraint on the co-occurrence of *still* and *then* is that when the latter has narrow scope and cannot denote a unique interval, a fact that falls out directly from the adverbs' semantics as described for (7.141).
39. There is more to be said about such cases, as (i) shows.

    (i) ?{Briefly/For a year} he still loved her (and then he found he did not care any more).

    (i) should be acceptable if we adopt the view that *still* maps its event onto reference-time but merely presupposes that the event persists from a previous time; thus the duration phrase provides the length of the reference-time interval (in this case, presumably starting at, say, two lovers' breakup). It is not clear why it should not be perfect, but I have no insightful suggestion to make.
40. Pairs with loc-time adjuncts in the AuxRange are sometimes hard to find in English due to weight constraints. On the theory assumed here, placing them in sentence-final position, as in (i), allows adjunction at the same point as in (7.186b). This point can also be made in Chinese, where the effect of weight is absent, as in (ii).

    (i) George deliberately had gone back to abstract painting at that time.

    (ii) a. Guorong neige shihou guyi zhuan-hui chouxiang hua.
    Guorong that time purposely turn-back abstract painting
    'Guorong at that time purposely went back to abstract painting.'

    b. Guorong guyi neige shihou zhuan-hui chouxiang hua.
    Guorong purposely that time turn-back abstract painting
    'Guorong purposely at that time went back to abstract painting.'

41. Similar examples are found in other languages; though (i)–(iii) are acceptable (from French, Italian, and Chinese, respectively), not all patterns seem to be allowed in all languages.

    (i) L'affaire Lewinsky sera toujours malheureusement une tache sur
    the affair Lewinsky will-be always unfortunately a stain on
    la mandat de Clinton.
    the term of Clinton

(ii) L'affare Lewinsky sarà sempre sfortunatamente una macchia
the affair Lewinsky will-be always unfortunately a stain
nelle presidenza di Clinton.
on-the presidency of Clinton

(iii) Zhe-jian shi hui laoshi hen buxing de genzhe ta yi-beizi.
this-CL matter will always very unfortunate DE follow him one-life
'This matter will always unfortunately follow him his whole life.'

42. This does not pose a problem for the idea of "cyclicity" in the FEO Calculus, that is, the prohibition on returning to a lower FEO type after having raised to a higher one (especially, the ban on going from propositions to events). I take this prohibition to apply (a) to "free" changes of FEO and (b) as the default value for adverbs and covert operators. Certainly, verbs may convert propositions into events: this is precisely the function of verbs like *believe* and *know*. We must then say that some adverbs act like verbs in this regard.
43. The equivalent of (7.198a) is also grammatical for some German speakers, as shown in (i) (Karin Pittner, personal communication).

(i) Sie kommt noch immer wahrscheinlich nicht.
she comes still probably not
'She still probably isn't coming.'

44. Compare (i), which is fine, with *haoxiang* 'apparently'. The contrast between (7.199b) and (i) provides further support for the coercion approach advocated here, since *haoxiang* is an evidential adverb, which takes a proposition to yield a (stative) event; it should, and does, easily allow modification by *yizhi* 'continually, always'. The contrast between (7.199b) and (i) follows neatly if evaluatives like *xingkui* 'luckily' (as well as modals like *dagai* 'probably') always yield propositions; functionals like *yizhi* normally take events but under limited conditions, in some languages, may convert propositions to events by coercion.

(i) Xiao Li yizhi haoxiang yuanyi gongzuo.
Xiao Li always apparently willing work
'Xiao Li is always apparently willing to work.'

45. Recall that this must be so because there are many instances of adverbs, including relatively low adjuncts like agent-oriented adverbs, that can sometimes occur to the left of the highest possible auxiliary; in Cinque's system, the highest possible surface position of the adverb represents that base position, and verbs raise over it to derive alternative surface orders.
46. In Laenzlinger's usage, "aspectual" adverbs include frequency adverbs like *souvent* 'often'.
47. Laenzlinger (1993a) cites the French/Italian pair *Marie a révélé probablement le secret/*Maria ha rivelato probabilmente il segreto* 'Mary has probably revealed the secret'; if this pattern holds of clausal predicational adverbs in general, it indicates that Italian does not allow this sort of movement.
48. The data discussed in this chapter and in chapter 2 indicate that only *have* raises in this way, not *be*. Presumably, this difference is related to Modal + *have* combinations not being strictly compositional, while Modal + *be* combinations are.
49. This sort of data supports the approach adopted in this book, by which there is no LF movement of modal or aspectual operators (such as is assumed by Lenci and

Bertinetto 2000:263, for example). Rather, scope relationships not directly represented by surface linear order are claimed to result from overt movements and the Scope Principle.

Chapter 8. Adjuncts in Clause-Initial Projections

1. For example, it would seem an equally (if not more) plausible argument to require that all arguments of V be strictly licensed within the projection of V in its base position, without shells, as in pre-Larsonian (Larson 1988b) syntactic theory embodied in the θ-Criterion of Chomsky (1981). However, this assumption about structure has been abandoned in the last decade.
2. See Ernst 1992b, and chapter 2, for arguments that English Neg is in Spec position; See also Bobaljik 1995. See Ernst 1995b for discussion of Neg in Spec in Chinese.
3. For other discussions of this issue, see Zwart 1997:97, Costa 1998:26ff., and Alexiadou and Anagnostopoulou 1998:502ff.
4. Bouchard states that this is "presumably because T, the Moment of Speech, is defined with respect to the speaker, and such an element cannot be modified" (1995:416).
5. French does allow Clitic Left-Dislocation (see Cinque 1990 and Anagnostopolou, Riemsdijk, and Zwarts 1997 for extensive discussion), as in (i), which corresponds more closely to English topicalization than the structure in (8.17) dose.

   (i) Jean, je l'ai vu.
   Jean I him-have seen
   'Jean, I've seen.'

   Belletti's argument is still well-formed, however, since English topicalization and focalization have the same syntactic form. See Rizzi 1997 and Laenzlinger 1997.
6. This argument assumes that the different discourse values of adverbial positions are not (purely) a matter of surface order but rather are triggered by hierarchical positions, probably as realized by adjunction to different projections.
7. This ignores the possibility of [+C] CPs, to which I return; IP and CP can be distinguished by means of other features where necessary.
8. There are a number of ways this could be implemented technically. For concreteness, I assume that there is a syntactic condition on semantic interpretation by which noncomplements are "visible" only to heads bearing certain features. Given only two environments for interpretation – the head-complement configuration and the head-adjunct configuration (in the broad sense including the Spec-head relation) – interpretation in the former case is always possible by virtue of the head's lexical entry, which specifically selects its complements. For the latter the head must bear a feature, either [+F] for licensing items in Spec or [+C] for licensing adjuncts.
9. It is sometimes stated in the literature that the position following the finite verb is less marked than that preceding it. This difference in markedness has occasionally led authors to state incorrectly that adverbs are ungrammatical before the finite verb in English (e.g., Giorgi and Pianesi 1997); but they plainly are permitted there.
10. Interpreted strictly, (8.33c) could be taken to ban any such projection without a filled Spec (containing some item to be checked by the relevant feature). For the

moment I assume a weaker interpretation in which *if* an item appears in the Spec position of a [+Disc] category, then it must be checked with respect to the feature in question.

11. Thus X* is the equivalent of the unique X′ node in a more traditional phrase structure theory (or, if there are adjunctions, the equivalent of the highest of iterated X′ nodes). It must not be thought that the designation of one X* node and the definition of Spec constitute an extra complication of phrase structure theory. Together, they are what (a) distinguish Specs from (other) adjunctions and (b) restrict Specs to one per projection. As such they are equivalent to Chomsky's (a) distinction between node labels for Specs versus adjunctions (1995a:248) plus (b) some added mechanism, unspecified for Chomsky, to restrict the number of Spec positions, whether to one or to a larger number.
12. Some authors have more recently assumed the possibility of more than one specifier in a given projection (see Chomsky [1995b:342 ff., Adger et al. [1999], Richards [1999], and Boskovic [1999] for extensive discussion and further references). This view raises a number of interesting issues for adjunct syntax but seems neither to be especially supported nor disconfirmed by adjunct distribution data.
13. The definition of checking domain given by Chomsky (1995b:177 ff.), allows for four positions in this domain for a head H: the specifier of H and positions adjoined to H, HP, and the specifier of H. I ignore the case of head movement here (so (8.37) makes no mention of items adjoined to heads), taking feature checking between adjoined heads to result from a separate (though related) mechanism governed partly by lexical principles. Following Speas (1990) and Chomsky (1995b), I assume (a) that each selection from the lexicon is accompanied by an index n, which distinguishes it from other possible tokens of X in the same syntactic representation, and (b) that X has no label for bar-level, that is, in (8.37) X_n is in effect a maximal projection.
14. In support of the idea that TPs are [+Disc] is the oft-noted fact that all subjects have at least mild topic properties (see Chafe 1976, Lambrecht 1994, Bosch and van der Sandt 1999, and references cited there). Specifically, even in languages that allow ambiguity between subject and object quantified NPs, as for English in (i) (where *everyone* takes wide scope for a distributive reading or narrow scope for a collective reading), there is a preference for wide scope.

    (i) Everyone ordered a sushi platter.

    Given the usual identification of topichood with wide scope, this may be linked to the topichood of the subject NP.
15. Thus it is also explained why adjunction to an X′ node is possible, but movement to an X′ node is never possible.
16. See also Cinque (1999:110); there is some variation in these judgments, for both Italian and English.
17. I assume that [+Top] is a strong feature, thus requiring over movement. However, it is at least possible that topics could be moved covertly as well (at LF), for example, if we find that doing so advantageously represents topic chains in terms of the same topic element in sentence-initial position at LF for each sentence in the chain. For discussion, see Tsao 1977, Li and Thompson 1981, Shi 1992, and references cited there.

18. This is an oversimplification. As Culicover (1996) points out, drawing on Baltin (1982), some people accept double topicalization of arguments:

    (i) To that man, liberty we would never grant.

    (ii) Bill knew that to Jeannette, a necklace such as that I would find very difficult if not impossible to give. (Peter Culicover, personal communication).

    However, even for those who allow topicalization this freely, there appear to be much more stringent limits on such cases than there are on multiple adjunct topicalization, in a way that an analysis where both adjuncts and arguments adjoin (with the differences being a matter of processing considerations; see Culicover 1996:454, for example) is not clearly able to explain. On the present analysis, it would at least be possible to account for sentences like (i)–(ii) by saying that speakers who allow this freer topicalization permit marginal instances of Scrambling, if the latter involves adjunction in this instance (as for Grewendorf and Sabel 1999, for example). Clearly there is more to say here, but I tentatively adopt the latter suggestion.

    The same explanation may be applied to cases of argument topicalization to pre-*wh*-position in questions, again allowed by a relatively small number of English speakers:

    (iii) (*)To Mary, why would you give any money?

    (iv) (*)On that table, what did you put?

    Since these are apparently rejected by most speakers, I take them as exceptional and not as a challenge to the generalization that only one A′-moved argument landing site, that is, Spec position, is allowed per projection.

19. It is conceivable that some semantic difference between arguments and adjuncts might be made to account for these contrasts. However, while admitting a possible failure of imagination, it is hard to see how such a difference should be connected (in any principled way) to the number of occurrences in adjoined positions within one projection.

20. This may be overruled by PF-related, Weight-theory features allowing heavy objects to move rightward to adjoined positions; even here, though, this is disfavored with respect to rightward movement of adjuncts. Similarly, if Grewendorf and Sabel (1999) are correct that the Scrambling of arguments in at least some languages involves feature checking in adjoined positions, Scrambling features may override the "proper movement" requirement as well.

21. See Nakajima 1991 for discussion of this contrast in a somewhat different framework.

    Peter Culicover (personal communication) points out that some long-distance adjunct extractions are more acceptable, as in (i)–(ii) (where the sentence-initial adjuncts are construed with the embedded clause).

    (i) ?As quiet as a mouse I saw him creep into the room and steal the cookies.

    (ii) ??Without even blinking an eye they said he had eased the violin out of the case.

    Although these sentences are allowed by some people, only a small number permits (ii), though (i) is a bit more widely accepted. It seems likely that their increased

acceptability for some people is related to their being less prototypically adverbial than *carefully* (it may be, in fact, that depictives like that in (i) are adjuncts but not adverbials, given the definitions in chapter 1). If so, such cases can be handled by saying that the scope constraint introduced in section 8.4 is weaker as the moved item is less prototypically adverbial, an explanation I tentatively adopt. Obviously, this matter bears more investigation.

22. McCloskey (1996:75) adopts this same structural analysis to explain patterns of Heavy NP Preposing in Modern Irish. To that extent that it is indeed correct for this language, the analysis gains further support.
23. Although it is plausible to suggest, as Rizzi does, that an AgrP is projected above any XP marked [+Agr], this cannot be done universally: if the [+Agr]FinP in these sentences were immediately dominated by an AgrP, the account of topicalization with Comp-trace effects would not work. Thus the addition of AgrP in (8.75) is stipulative, not derived from a general mechanism.
24. Emonds (1976) and McCawley (1982, 1987) are notable exceptions. For discussion relating specifically to adverbials, see Alexiadou (1997:168–71) and Shaer (2000:272).
25. There is an acceptable version of (8.82) with *those* stressed, but on the analysis argued for here, this is an instance of focalization rather than of topicalization; the sentence is fine because the focalized argument is in Spec,FocP and therefore need not be set off as a parenthetical expression. Also, in these data speakers vary in the extent to which they accept heavy phrases without their being set off prosodically (thus, some people accept (8.83) with the *unless*-clause). This is to be expected, as the scale of weight is a continuum and its manifestation clearly varies among speakers.
26. Here I follow the strategy of Maienborn (1998), who uses the operator TR to restrict event times (parallel to Fintel's (1994) use of an operator DR for restricting the domain of quantified nominal expressions; cf. also the contextual restriction [CR] in chapter 6 for domain adverbs). For present purposes it is not particularly important how a topic(alized) expression is represented, as long as there can be some wide scope operator that restricts the domain of events represented by the sentence.

    I am assuming that these operators (once their semantics and pragmatics are hashed out more fully) represent the scene-setting or framing function of topics; I assume also that this function makes an expression salient (Gundel 1976, Lambrecht 1994). This seems to be distinct from a second property of topics, that of *aboutness* (Lambrecht 1994:161; Portner and Yabushita 1998). Aboutness is usually thought of in terms of objects (entities), as in Portner and Yabushita's (1998) file-card theory, in which (essentially) a topic NP is entered on a file card as given, available information. Aboutness overlaps with scene-setting but is not the same. See Lambrecht 1994, Bosch and van der Sandt 1999 and references given there.
27. Thanks are due to Peter Culicover for pointing this out.
28. Laenzlinger (1997:86–88) proposes another account, in which Quantifier adverbs (including measure adverbs) are licensed by the Adv-Criterion (like the *wh*-Criterion of May [1985] or the Neg-Criterion of Haegeman and Zanuttini [1991]), which can only be satisfied by the head of a chain. By contrast, Qualifier adverbs (including manner adverbs) are subject to checking theory, where "quasi-morphological" features may be satisfied at any point in a chain. Thus manner adverbs have their

features checked at the appropriate point in a clause and afterward are free to topicalize, while measure adverbs are not. This account, although attractive in many ways, does not seem to make the right predictions with adjuncts like *often, still,* or *twice,* which certainly seem quantificational, yet may be topicalized:

(i) {Often/Still/Twice}, he planned/was planning to leave early.

In addition, it requires feature mechanisms that we are rejecting here and a bifurcation of licensing mechanisms that the scope-based account makes unnecessary.

29. At this point I have no ready explanation, other than stipulation, for why only adjoined items are subject to the constraint. One may consider that the noniterable features like [+Foc] and [+*wh*], which are checked only in Spec positions, are more grammaticized, for example, being more likely to be overtly realized. If so, then perhaps more purely semantic constraints like this one need not apply to them.
30. Even though *wh*-movement across an adverb is sometimes less than acceptable, this is not a syntactic fact but a semantic one. See Bellert 1977 and Ernst 1984:292–93.
31. Both the Scope Matching and Relativized Minimality approaches to data like these must make some distinction between *wh*-/focus movement and topicalization, but this does not by itself constitute an argument for either approach.
32. See Rizzi 1997:section 10 and Laenzlinger 1997:chapter 2 for similar treatments. I ignore for the moment the fact that the inverted verb and complementizer in French in (8.109) are mutually exclusive (**Peut-être qu'irons-nous au théatre ce soir*).
33. Judgments differ for (8.123), where a minority of speakers find (a) acceptable.
34. As an illustration of the complexity of the issue, consider the German examples (i)–(ii), given by Haider (2000:n.6; his (a)–(b)).

    (i) . . . dass unter solchen Umständen man/er keine Wahl hat.
    '. . . that under such circumstances one/he no choice has.'
    (ii) . . . dass (*leider/*heute/*sorfältig) man/er Sätze analysierte.
    '. . . that (unfortunately/today/carefully) one/he sentences analyzed.'

    Compare these with (8.119) in the context of frequent claims (e.g., in Laenzlinger 1997) that this pattern in (8.126a) holds in German. Haider notes that only the frame adverbial in (i) is possible here and that the adverbials in (ii) are ruled out because they cannot function as frame adverbials. Presumably, one could analyze these observations by saying that a [+Disc] functional projection allows only adverbials with this function. A much fuller investigation of such cases is required to sort out such data, including a wide range of adjunct types and functions, and the prosodic facts involved.
35. In (8.134a) [+Top] is iterable, and T is [+C] for English but [−C] for French. In (8.134b) [+Top] varies as to whether it is iterable.

Chapter 9. Conclusions and Prospects

1. There is one such issue that it has already resolved, that of the contrast in (i), first noted by Lebeaux (1988).

    (i) a. On Ben_i's birthday he_i took it easy.
    b. For Mary_i's valor she_i was awarded a purple heart.
    c. *In Ben_i's office he_i lay on his desk.
    d. *With Mary_i's computer she_i began to write a book of poetry.

Speas (1990:48ff.) uses the contrast to argue that some adjuncts are present in D-Structure and others are added in the course of a derivation. On this account, the sentence-initial PPs in (a)–(b) are not present at D-Structure and do not reconstruct to their original position c-commanded by the subject; as a result the sentences violate Binding Principle C. By contrast, those in (a)–(b) are inserted in sentence-initial position and do not reconstruct, so no such violation occurs. As Frey (2000:116) points out, however, on the sort of framework he adopts (as for the one in this book) the PPs in (a)–(b) can be base-generated sentence-initially, with no need for two points of insertion into a derivation. The same holds for locatives with framing functions, as in (ii):

(ii) In the CEOs_i' offices they_i often play golf.

For further discussion, see Chametzky 1996:107ff. and Epstein 1998:55ff.

2. For an overview of such issues, see Ramat and Ricca 1994.
3. Discussions of this point are scattered liberally throughout the literature, though few say more than that the problem exists. For a sampling, see Jackendoff 1990b, Pesetsky 1995:185; Neeleman 1997, and Klipple 1993.
4. It may seem to be odd that so little has been said here about adjunct *wh* movement. However, I do not believe that there is much to say, other than to give the proper formulations of barriers and to explore the semantic factors that determine whether a given phrase is an adjunct, an argument, or has properties of both. Only a more coherent theory of this distinction than we have now will allow solving the outstanding problems relating to adjunct *wh*-movement.
5. For discussion of floating quantifiers with respect to their status as adverbs, see Bobaljik 1995, 1998 (especially), Costa 1998, Cinque 1999, Brisson 2000, and references cited in McCloskey 2000:59. For secondary predicates, see Winkler 1997, Dölling 2000:45, and references cited there.
6. If this is true, it may constitute an argument in principle against the approach of Frey and Pittner (1998), where basic positions for various adjunct classes are determined (at least largely) by c-command relationships to base positions for arguments.

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