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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.

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(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 fea-
tures 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 for-
mal grammar, there must be specific principles to account for those positions.

It is important to remember that base positions are not fixed by phrase struc-
ture 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 "focus-
          ing" 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 argu-
ment, 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 struc-
tures, for example (more work is needed to subclassify this large group than
for the others). Some subclasses must be cross-classified; for example, do-
main 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. Ulti-
mately, the most revealing classification will likely involve a small set of fea-
tures 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	[PROPOSITION	[EVENT	[EVENT-INTERNAL V]]]]
	CP	IP	VP?	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 gener-
ally organized into "fields" or "zones," represented approximately in (1.12).
Manner and measure adverbs occur in the lowest of these, roughly corre-
sponding 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"; sim-
ilarly, *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 ef-
fects 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 crosscut-
ting classification (although there is a connection between semantics and