The Scopal Basis of Adverb Licensing

Thomas Ernst
Rutgers University

The Scopal Basis of Adverb Licensing

Thomas Ernst

Rutgers University

1. Introduction.[1]

I will argue in this paper that the most important determinant of adverb licensing is an adverb's scope requirements, encoded as lexical properties and verified at LF, rather than syntactic feature-licensing, as in recent work by Cinque (to appear). In particular, I will argue that, if we use feature licensing, we miss important, overarching generalizations about adverb distribution that are captured directly by the scope-based approach.

(1) Tense - Aux - π - V

I will assume a basic clausal structure including the heads shown in 1. Aux may iterate, each Aux projection being headed by one of several auxiliary verbs in English (Modal, *have*, or *be*), the first of which moves to Tense. π is an abstract functional projection which has been identified variously in recent years as Pred (Bowers (1993)), Tr (Collins (1997)), and *v* (Chomsky (1995)), and to which the main V obligatorily raises in English.

2. A Scope-Based Theory of Adjunct Licensing.

My version of the Scope theory is based on three ideas, given in 2:

(2) a. Adjuncts can be divided into major types according to whether and how they take scope;
b. Adjuncts' scope requirements include selection for type of covert argument or variable;

---

[1]In the preparation of this material I was helped by input from Guglielmo Cinque, Dan Finer, Jane Grimshaw, Ken Safir, Barbara Partee, Ben Shaer, Manfred Krifka, and Sally McConnell-Ginet, all of whom I thank. The usual disclaimers apply.

Pius N. Tamanji and Kiyomi Kusumoto (eds.) NELS 28, 127-142

c. Unsuccessful licensing of an adjunct largely results from these requirements going unfulfilled and the adjunct therefore being uninterpretable.

There are three broad classes of adjuncts relevant here. First, Participant adjuncts are largely realized by PP's, and add participants to an Event beyond the arguments of the predicate (which are also participants in the Event). Examples are given in 3:

(3) a. Instrumentals: *with a shoe*
b. Benefactives: *for anyone listening*
c. Locatives: *on the ledge*
d. Goal: *to the shore*
e. Source: *from my informants*

Following Parsons (1990), I maintain that they have no scope requirements, but instead, just like arguments, serve as relations between participants and events. They do so independently of one another and therefore can combine with a predicate in an unordered way. 5 illustrates this for 4, where 'e' is an event variable, and where the order of composition of the relations Agent, Theme, and Inst(rument) is irrelevant to the logical form:

(4) George opened the bottle with his teeth.
(5) $\exists$e [Open (e) & Agent (e,George) & Theme (e,bottle) & Inst (e,his teeth)]

Participant adjuncts normally occur in πP, but above the level of postverbal manner adverbs. We can ensure the licensing of participant adjuncts within πP if π is the locus of the event variable represented in 5, and these adjuncts can only be interpreted if they are local with respect to this head.

Second, Functional adjuncts perform a variety of operations on several different types of c-commanded semantic objects. Examples are given in 6:

(6) a. Negative: *not*
b. Focusing: *even, also, just*
c. Iterative: *again, repeatedly, over and over*
d. Frequency: *occasionally, twice, always*
e. "B-class" adverbs: *barely, scarcely, hardly* (Ernst (1984), 215ff.)
f. Degree-of-precision: *precisely, roughly, approximately*

Functional adjuncts largely involve either focus-presupposition structure or quantification of some sort, either over events or with respect to completion, intensity, or (for 6e-f) closeness to some defined point.[2] In doing so, they may single out different types of entities. For example, in 7a-c, assertions are made about Carol, buying, and junk food (respectively):

[2]In fact, if analyses of quantificational adverbs in terms of generalized quantifiers along the lines of de Swart (1993) are correct, some sort of focus-presupposition mapping is involved for adverbs that quantify over events (iterative and frequency adverbs) as well.

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

The type of object focused is relatively unrestricted.[3] I will take functional adjuncts as being licensed, in principle, in any projection. 8-10 show that they can indeed occur in a wide variety of positions:

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

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

(10) a. Occasionally they could have been passed over for pormotions.
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.

Third, Predicational adjuncts like those listed in 11 represent covert adjectival predicates that take clausal entities as their arguments:[4]

(11)

a. Speech-Act: *frankly, honestly, simply, briefly*	
b. Modal: *probably, maybe, surely, necessarily, possibly*	
c. Evidential: *clearly, apparently, obviously*	Speaker-Oriented
d. Evaluative: *luckily, amazingly, oddly, curiously, ideally*	(Ad-S)
e. Exocomparative: *similarly, otherwise, equivalently, differently*	
f. Agent-Oriented: *politely, stupidly, cleverly, graciously, rudely*	Subject-Oriented
g. Mental-Attitude: *happily, willingly, sadly, anxiously*	(Ad-VP)
h. Domain: *linguistically, politically, mathematically*	"Verb-Oriented"
i. Manner: *loudly, tightly, jerkily, blindingly*	(Ad-V)

[3]For discussion of focusing adverbs, see Rooth (1992), König (1991), and references there.

[4]It is important to note that the adverbs in 11 are listed according to their non-manner readings, if they have one. As detailed in McConnell-Ginet (1982), Ernst (1984), Ernst (1986), Wyner (1994), and other work, there is a systematic relationship between (most types of) Speech-Act, Ad-S and Ad-VP readings on one hand, and manner readings on the other. Thus, for example, *briefly*, *oddly*, and *rudely* are listed for their clausal readings but also can function as manner adverbs.

I will refer to these clausal entities as *Fact/Event Objects* or FEO's; they are listed in 12 and play a crucial role in the analysis, particularly in serving as arguments of the adjectival predicates.

(12) Fact/Event Objects:
SPEECH ACT > FACT > PROPOSITION > EVENT > SPECIFIED EVENTS

In 12, each FEO to the left includes those to its right, so that (for example) a Proposition includes some Event, and a Fact is a Proposition plus a truth value. Each FEO correlates with some syntactic constituent, though this constituent will not necessarily be the same one in all cases.

13 shows the types of FEO's that different subclasses of Predicational Adverbs require as arguments, along with the usual associated syntactic category and the label given to this type by Jackendoff (1990) and McConnell-Ginet (1982). For example, in 14-15 *luckily*, represented as the predicate LUCKY, takes as its argument the Fact represented by the rest of the sentence:

(13)

FEO	Syntactic Category	Adverb	Type (McC-G; Jackendoff)
(a) SP-ACT/FACT/PROP	Complement of T	Ad-S	Speaker-Oriented
(b) EVENT	πP	Ad-VP	Subject-Oriented
(c) SPECIFIED EVENT	VP, πP	Ad-V	Manner

(14) Luckily, the horse threw a shoe.
(15) LUCKY [$_{FACT}$ (Threw (horse, shoe))]

Importantly, the correlation of syntactic category with FEO in 13 is not stipulated, but is derived from the selectional properties of the items involved. As semantic elements are composed, at any point the FEO may be lifted to the next highest type; but, crucially, selectional properties of heads and adjuncts must always be satisfied. For example, a πP may represent a basic event composed of the predicate and its arguments, and any manner or participant adjuncts within πP; so a πP like *left* in 16 may have its type lifted from Event to Fact, allowing the evaluative adverb *unfortunately* to modify it, or to Proposition as in 17, so that the modal adverb *probably* can do so:

(16) Eddie unfortunately [$_{FACT}$ [$_{EVENT}$ left]]
(17) Eddie probably [$_{PROP}$ [$_{EVENT}$ left]]

It does not matter whether the adverbs in 16-17 are adjoined to πP, Infl', or some empty-headed functional projection between these two positions, since no element between the adverb and the verb has any semantic effect on the lifting of FEO type, and the requirement that the adverb immediately c-command a constituent representing the correct type is met.

An auxiliary verb may require a particular FEO, as in 18, where the progressive *be* creates a more complex Event out of a simpler Event; similarly, in 19 an epistemic modal requires a Proposition, and thus in effect forces raising of the FEO for the constituent it c-commands:

(18) Eddie [$_{EVENT}$ be [$_{EVENT}$ leaving]]
(19) Eddie must [$_{PROP}$ [$_{EVENT}$ be [$_{EVENT}$ leaving]]]

I will illustrate this system by means of five classes of Predicational adverbs. Manner adverbs may occur adjoined toVP or πP, as illustrated in 20:[5]

(20) a. She has been [$_{VP}$ talking about her sister loudly].
b. She has been [$_{\pi P}$ loudly talking about her sister].

When a predicational adverb has a manner reading, it selects as its argument a Specified Event, represented syntactically by VP or πP. Without going into detail here, a Specified Event can be understood roughly as a Manner (see Ernst (in preparation)). They are in effect limited to πP/VP, because any element above them has semantic requirements that can only be met if the FEO is lifted to a higher type: these elements include aspectual auxiliaries, modals, epistemic adverbs, Tense, and negation. Thus no adverb outside πP can have a manner reading (except for cases of movement, e.g.Topicalization), and all Predicational adverbs inside it must have manner readings.

Agent-Oriented adverbs like *bravely*, *cleverly*, or *tactfully* take Events as one of their arguments. Lexically, they evaluate an agent, almost always the surface subject, as having some quality like bravery, intelligence, tact, and so on, with respect to an event. In 22, for example, the agent *she* is judged tactful because she answered them, as compared to other things she might have done (such as not answering, throwing a tantrum, and so on); this is represented in 23:

(22) She tactfully [$_{\pi P}$ answered them].
(23) TACTFUL (she, [$_{EVENT}$ Answered (she,them)])

Evaluative adverbs select Facts, not Events, as their arguments. Facts are higher than Events on the hierarchy in 12, predicting that these adverbs should be able to occur anywhere to the left of the verb in principle, but not to the right of manner or Agent-Oriented adverbs, since these two select Specified Events and Events, respectively; nor may Evaluatives occur to the right of an aspectual auxiliary (which requires an Event). These predictions are borne out, as illustrated in 24a-d:

(24) a. Karen unfortunately ate cake spiked with whiskey.
b. Karen has unfortunately eaten cake spiked with whiskey.

---

[5]The distinction between occurrences in VP and πP is not important here; what is important is that manner adverbs, by being licensed in both projections, can be either preverbal or postverbal in English and similar languages. See Ernst (in preparation) for discussion.

c. *Karen has been unfortunately eating cake spiked with whiskey.
d. *Karen must have unfortunately been eating cake spiked with whiskey.[6]

In 24a, [eat cake spiked with whiskey] may represent an Event; it is possible to lift this FEO to Fact, as there are no elements whose scope requirements are violated by doing so. The same holds in 24b, with *has* raised intoTense over the adverb; [has eaten cake spiked with whiskey] represents an Event raised to Fact, and *unfortunately* again can take a Fact argument. But in 24c-d *unfortunately* is forced to take an Event, since both *be* in (c) and *have* (which this time has not raised) in (d) require Events. This forces an illegitimate semantic representation, so these two sentences are ruled out.

Epistemic adverbs represent the speaker's judgment about the degree of truth of the Proposition they take as their one argument. As with other predicationals described above, they may occur in any preverbal position, as restricted by the scope requirements of other preverbal elements.

(25) a. Walter probably built a model of the Eiffel tower.
b. Walter probably has built a model of the Eiffel tower.
c. Walter probably has been building a model of the Eiffel tower.
d. Walter has probably been building a model of the Eiffel tower.
e. *?Walter has been probably building a model of the Eiffel tower.
f. *?Walter must have probably built a model of the Eiffel tower.

In 25a-d *probably* can properly take a Proposition as its argument (in 25d *has* has raised over the adverb). But 25e-f are ill-formed because *probably* is forced to take an Event as an argument. 26 shows predicational adverbs of two different types cooccurring, and the contrast is predicted: they cannot simultaneously satisfy their scope requirements in 26b, since *perhaps* needs a Proposition, and if [agree to go] is raised to Proposition, *cleverly* cannot take an Event, as it must:

(26) a. Carol perhaps will cleverly agree to go.
b. ?*Carol cleverly will perhaps agree to go.

Speech Act adverbs select an operator corresponding to a "performative verb", such as SAY or ORDER, and they function like a manner adverb in modifying it. On this view it may well be that Speech Act is not really an FEO in the way that the others on the hierarchy are, but I will treat it that way provisionally since the scope mechanisms appear to work in the same way. For example, 28 means "I say quite frankly that the fund has not been performing up to expectations":

(27) Briefly, this is the plan.

---

[6]There is variation among speakers as to judgments for 25c-d; some people find them mildly odd, others unacceptable, still others completely acceptable. I take this as variation in speakers' ability to take [modal + *have*] as a complex representation of a tensed modal (in which case the present approach predicts acceptability), rather than modal plus aspect.

(28) The fund has quite frankly not been performing up to expectations.

Speech-Act adverbs occur felicitously adjoined to CP in questions, as in 29a. On the common assumption that question operators are in Comp, the Scope theory correctly predicts the pattern in 29, because *honestly* must c-command Comp, and does so only in the first of these three sentences:

(29) a. Honestly, why did you make this decision?
b. *Why did honestly you make this decision?
c. *Why did you honestly make this decision? (Marginally OK as Manner *honestly*)

3. Outline of the Feature-Based Theory.

I now turn to the Feature theory. Its distinguishing characteristic is that adjuncts are licensed by a featural relationship to heads, and I will focus on the version argued for in Cinque (to appear), in which this relationship is necessarily between a head and its Spec position, and adverb order is determined by a rigid ordering of functional heads in UG; this is illustrated in 30, where each adverb is in the Spec of the head above and to its right:

(30) $Mood_{Sp.Act}$ - $Mood_{Eval}$ - $Mood_{Evid}$ - $Mood_{Epist}$ - T - ... - Asp_{Hab} - Asp_{Rep} - Asp_{Freq} -
frankly fortunately allegedly probably then usually again often
$Asp_{Celerative}$- ... - $Asp_{SgCompletive}$ - $Asp_{PlCompletive}$ - Voice - $Asp_{Celerative}$ - $Asp_{SgCompletive}$ - Asp_{Rep} - ...
quickly completely tutto well fast completely again

On the feature theory the ordering of adverbs results from the order of functional heads in UG, plus features linking a specific class of adverbs to each head; there is relatively little more to say about adverb ordering. However, two important assumptions must be noted. First, there must be some sort of semantic relationship between the head and the adjunct it licenses; for example, some sort of Modal head licenses *probably*, *maybe*, and similar adverbs, Aspect licenses *for an hour* or *frequently*, Tense licenses *then*, etc. Without such a connection it is hard to see how the theory could be justified as more than a list of positions, since the correlations between heads and licensing features would largely be arbitrary. Second, this 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. This is central to Cinque's account, and allows him the argument from restrictiveness, as in 31 (Cinque (to appear), chapter 1):

(31) "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 [AdvP] 'base generation'."

4. Multiple positions for one adverb.

The first argument for the Scope theory is based on the patterns shown in 32-35. Adverbs with manner readings, as in 32, occur anywhere from the immediately preverbal

position rightward, excluding positions marked by comma intonation:[7]

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

(33) (Wisely,) they (wisely) will (wisely) have (wisely) declined (*wisely [nonmanner reading]).

(34) (Perhaps) Jo (perhaps) will (perhaps) have (?perhaps) bought stock options (*perhaps).

(35) a. (Frankly,) I (frankly) have (frankly) been (*frankly) sorely tested (*frankly).
b. Frankly, what sort of a player (*frankly) is (*frankly) she (*frankly)?

Agent-Oriented adverbs (in 33) occur in the immediately preverbal position and anywhere to the left of this. Epistemic and Evaluative adverbs occur in a subset of the range for Agent-Oriented adverbs: that is, in the position immediately after the first Aux and to the left of this, and also, for some people and for sentences with Modal + *have*, in the position to the right of *have*. Finally, Speech-Act adverbs, shown in 35, have the same basic distribution as do Epistemics and Evaluatives, but in questions like 35b occur only to the left of Comp. These patterns are schematized in 36:

(36)

a. Ad-V (e.g. Manner):			NP		Infl		Aux	√	V	√	XP	√
b. Ad-VP (e.g. Agt-Oriented):		√	NP	√	Infl	√	Aux	√	V		XP	
c. Ad-S (e.g. Epistemic):		√	NP	√	Infl	√	Aux	?	V		XP	
d. Speech-Act:	√	Comp	√	NP	√	Infl	√	Aux		V		XP

The Scope theory accounts for these patterns by saying that, in general, predicational adverbs must immediately c-command a constituent corresponding to an FEO of the type required by that adverb. Aspectual and modal auxiliaries likewise must c-command the appropriate FEO, and thus, in effect, may force a change of FEO during the semantic composition of a sentence. All scope-taking items must satisfy their scope requirements. This correctly predicts 36, as described in 37:

(37) A Predicational adverb may occur in a range of positions starting from the lowest (rightmost)position where it can c-command its required FEO, and upward (leftward) from there in a contiguous range, unless something forces the FEO to change.

Manner adverbs require a Specified Event, which is available in VP/πP but not above this, since either the first auxiliary verb or Tense requires lifting the FEO to Event. Agent-Oriented adverbs require Events, and so occur adjoined to πP or above, in principle. Epistemic and Evaluative adverbs may not occur to the right of Aux, since the aspectual

[7] I ignore the position between V and a direct object in English, since the ungrammaticality of adverbs there can be accounted for independently; see Johnson (1993), Ernst (in preparation) for discussion. See also the latter for consideration of why the postverbal occurrences of adverbs in 33-35 are ungrammatical.

auxiliaries in Aux require Events. Finally, the same general result holds for Speech-Act adverbs: if placed to the right of any (modal or aspectual) auxiliary at DS, they would be forced to take an Event or Proposition, violating their requirements.

Feature theory, as noted above, is restricted to a local mechanism where heads license an adjunct in Spec position. In order to get the patterns seen above in 32-35, adverb types must be licensed by at least the heads shown in 38:

(38) Ad-V (Manner): π, V
Ad-VP (Agent-Oriented): π, Aux (=Voice, Prog, Perf, Mod), T
Ad-S (Epistemic/Evaluative/Sp.-Act): Aux1, T, Comp

On the Feature theory, these sets of heads do not form natural groupings, and it is an accident that they form a contiguous range of heads in a clause. But the Scope theory does characterize them, in effect, as natural classes – specifically, all those which can c-command the adverb's required FEO in some instance – and predicts that their positions are contiguous.

One way for the Feature theory to avoid this problem is to assume a unique base position for a given adverb, and either move it to the other positions, or move heads over the adverb. In 32-33, for example, we could assume the rightmost grammatical position as basic, and allow free movement to the other positions, assuming that movement is always upward. If so, we must account for why *elegantly* only moves as far as immediate preverbal position, while Agent-Oriented *wisely* appears to move as far as it wants to. In current Principles and Parameters theory, this requires movement triggers. But if all movement is "morphologically" triggered by a case, focus, or similar features (Chomsky 1995), positing such features is implausible here, if the theory of movement triggers is to have any real content. More seriously, the movement approach requires principles to determine both the distribution of base-licensing features, and the range of heads bearing movement-triggering features, which is clearly inferior to an analysis where only one set of base positions needs licensing.

Alternatively, if heads can move over an adverb, in cases like 39 one would say that all the auxiliaries start below the adverb and optionally raise. 39c shows how the two positions in 39b are derived, where *were* optionally raises over *wisely*:

(39) a. They (wisely) will (wisely) have (wisely) been (wisely) declining her invitation.
b. They (wisely) were (wisely) examined by a specialist.
c. They were$_i$ wisely t$_i$ examined by a specialist.

In simple cases like 39b this is unproblematic, but as a general account this solution entails enormous complications in the syntax of auxiliaries and negation. English auxiliaries are rigidly ordered as in 40, and sentential negation always occurs after the first of these in any given sentence:

(40) Modal - Have - PROG - PASS

To get the patterns in 39 we must allow movement of each of the four auxiliaries at one time

or another, and thus need the structure in 41, at minimum, where any Aux can move as high as position A as long as no other Aux is to its left:

(41) A B C wisely D E F G
Tense Modal Have PROG PASS

But this array vastly and needlessly complicates the treatment of English negation. If we assume *not* to be immediately after position A, and that the first Aux moves to A, as is standard, we account for negated sentences without adverbs. But we also make incorrect predictions, namely that negation always precedes Agent-Oriented adverbs. 42 shows that *wisely* may precede negation; to get these sentences, we would need to posit a position for Neg as low as after position D in 41, but of course this would wrongly predict the grammaticality of sentential negation in cases like 43:

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

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

Further, there are problems with conditioning raising of the auxiliaries: for example, in 42b, to get *wisely* before *will,* Modal must not raise; but in negated sentences it must raise, as 44 shows:

(44) *Kim not will go home.

It is unclear how all these facts could be handled in a principled way. Given these and other complications necessary for an auxiliary-movement account of 39a, a head-movement approach to multiple adverb positions does not seem promising.

The other way to account for cases of multiple positions is to claim, as required by 31, that each position represents a different licensing relation, with a different interpretation for the adverb. If so, true cases of multiple positions for one adverb are impossible; each occurrence is slightly different. But there are two major difficulties faced by this approach. First, we should find that each adverb occurrence is genuinely different semantically from each other one, but in many cases this is not so. In both 45-46 there seem to be no meaning differences among the sentences in 45 and 46, and this is not an isolated or marginal phenomenon; many more such examples can be provided.

(45) a. They may always have been picked by hand.
b. They may have always been picked by hand.

(46) a. Kira fixed the hinge in the basement with a screwdriver for her brother.
b. Kira fixed the hinge with a screwdriver for her brother in the basement.
c. Kira fixed the hinge with a screwdriver in the basement for her brother.
d. Kira fixed the hinge in the basement for her brother with a screwdriver.

Second, where there are apparent meaning differences, one may say that a head contributes some semantic nuance to the adverb. However, this theory does not predict that the range of positions for each adverb is contiguous, because it treats each head in isolation from the others.[8] Recall that feature theories, if they are to have any hope of generality, must assume a semantic link between adverbs in Spec and their licensing heads. Consider 47, a section of 30:

(47) $Mood_{Sp.Act}$ - $Mood_{Evid}$ - $Mood_{Epist}$ - T - ... - Asp_{Hab} - Asp_{Rep} - Asp_{Freq} - ... - $Asp_{SgCompletive}$
frankly allegedly probably then usually again often completely

(48) a. Albert often then would sit down and write for hours.
b. Pablo had then/again frankly not lived up to expectations.
c. Sue (wisely/frankly) had often been (wisely/*frankly) trying to befriend them.
d. Sue (wisely/frankly) had been once again (wisely/*frankly) trying to befriend them.

How might one motivate the licensing of all of these adverbs by the heads in 47? 48a shows that *often* may occur before Tense, so there should be an Asp_{Freq} head (even if subtly different from the one in 47, by 31) among the Mood heads. 48b shows that *frankly* may occur after Tense and Asp, so there should be a $Mood_{Sp.Act}$ among the Asp heads. For 48c-d there must additionally be one head for *wisely*, say `Agent', above *often/again*, and another one (but not $Mood_{Sp.Act}$), somehow semantically different from the first, below *again*:

(49) $Mood_{Sp.Act}$ - $Mood_{Evid}$ - $Mood_{Epist}$ - **Asp_{Freq}** - **$Agent_1$** - T - ... - Asp_{Hab} - Asp_{Rep} - **$Mood_{Sp.Act}$** - **$Agent_2$** - Asp_{Freq} - **$Agent_3$** - $Asp_{SgCompletive}$ - ...

But when this is multiplied by the many other such cases requiring yet other heads, the analysis becomes little more than a list of possible adverb positions. More important, with the interpolation of node types there is nothing to predict that adverbs occur in contiguous ranges of positions. In other words, the Feature theory may claim that each occurrence of *often* or *wisely* is different, but this is no help in predicting ranges of positions that a **type** of head, such as Asp, Mood, or Agent, and its associated adverbs, may occupy. Any added generalizations will most likely duplicate the principles of the Scope theory. If so, the feature mechanisms become redundant.

To summarize, the Scope theory appears to handle multiple adverb positions generally and straightforwardly. It says that adverbs with scope requirements may occur wherever the 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 another element's scope requirement. This correctly predicts that ranges of positions will generally be contiguous, and that the ranges will be bounded wherever there are necessarily changes of FEO, such as between V and auxiliary verbs, with Specified Events below and Events

[8] I ignore here postverbal positions in English and other SVO languages. If UG disallows right-adjunction of adverbs, then such positions represent discontinuity, with some positions for a given adverb preverbal (and contiguous) and some postverbal. I argue in Ernst (in preparation), though, that right adjunction is allowed; thus the range of positions is contiguous, **hierarchically**.

above. The Feature theory makes wrong predictions by claiming that all differences of word order correlate with meaning differences; it must add complex machinery to predict the possible range of licensing heads, on either movement or nonmovement analyses, and in doing so still misses a significant generalization about the semantic basis of adverbial distribution. I conclude that the Scope theory is superior in accounting for multiple positions of adverbs.

5. Restrictions on the Range of Adverb Positions.

The second argument for the Scope Theory over the Feature theory is based on sentences like 50 (cf. 26) and 29, which show that the range of positions for a given adverb may be restricted when it occurs with another adverb or other element: often, only one order is possible, as shown in the (c) sentences. The question is: why do the restrictions in 50c and 29c hold?

(50) a. Gina (probably/tactfully) has (probably/tactfully) suggested that we leave.
b. Gina probably has tactfully suggested that we leave.
c. *Gina tactfully has probably suggested that we leave.

In the Scope theory (essentially following Jackendoff (1972)) one of the two orders results in an anomalous interpretation, since the occurrence of one scopal element requires a particular FEO at a specific point in the structure, which prevents the other element from fulfilling its own scope requirements. 51b-c represent 50b-c:

(51) b. PROBABLE [$_{PROP}$ TACTFUL (Gina, [$_{EVENT}$ Suggest (Gina, we leave)])]
c. *TACTFUL (Gina, [$_{PROP/FACT}$ PROBABLE [$_{PROP}$ Suggest (Gina, we leave)]])

On the Scope theory 51c can be ruled out as an illegitimate representation, since the argument of PROBABLE must be a Proposition, and the second argument of TACTFUL must therefore be a Proposition or a Fact, but TACTFUL cannot take a Proposition or a Fact as its argument. The representation for the reverse order of adverbs (see 51b) is legitimate, since TACTFUL may take an EVENT as its argument, with this Event being part of the Proposition taken as the argument of PROBABLE. 29 works similarly: assuming that declaratives are the unmarked speech-act type, *honestly* can occur as low as adjoined to AuxP (see 36d). But in 29c, with a question operator in Comp, it must be adjoined above Comp.

On the Feature theory cases like 50 result from the head which licenses the higher adverb occuring above the one licensing the lower adverb. But if so the problem we noted earlier for auxiliary and negation ordering becomes even worse, since a base structure like 52 is now needed (53 shows a case where three auxilaries must have raised over the lower adverb into B-D), again assuming *not* to be positioned after A.

(52) A luckily B C D wisely E F G H
Tense Modal Have PROG PASS

(53) Al (quite) luckily would have been wisely engaged in working hard when the boss arrived.

(54) Al (quite) luckily has seemingly been wisely engaged in working hard when the boss arrives.
(55) Bill seemingly has been wisely engaged in working hard when the boss arrives.

54 complicates the picture still further, requiring a base position for *seemingly* between B and D in 52. But given 55, *seemingly* must be above B, so there must yet another head position between A and B, worsening the problems noted above for an account of negation and of auxiliary movements.

For 29, feature theory must resort to obligatory movement of *honestly* to a position above Comp. However, it is hard to see what the motivation for this should be; perhaps the most plausible one, movement "to get the right scope", does not seem to hold at S-structure in English, and would have to be blocked at LF for 29c (besides, there is evidence that this is not a legitimate motivation for adverb-movement in any case; cf. Ernst (to appear)). Again, the rigid head-order approach of the Feature theory forces ad hoc stipulations.

Finally, the Feature theory must account for parallel phemomena for Adj-Adj order:

(56) a. a probable tactful response
b. *a tactful probable response

(57) a. an odd bright light
b. *a bright odd light

56 shows once again that an Agent-Oriented type of expression may not take scope over a modal expression, which the Scope theory explains by assuming that the FEO hierarchy also operates in NP's (though perhaps only those headed by a semantically appropriate type of noun). The Feature theory must assume a sequence of functional heads in NP's paralleling 30; but if so, it must then be explained why no overt modal or aspectual (etc.) heads occur in NP's (e.g. **the clear must solution*). Again, this theory requires stipulations and or complications that the Scope theory avoids.

We have seen that sometimes an adverb's range is restricted when it cooccurs with another element. The Feature theory cannot account for this without greatly complicating the analysis of negation and head-movement, making stipulations about adverb-movements, and claiming the existence of functional heads which are obligatorily empty only in NP. The Scope theory avoids all of this, uniformly taking such cases as violations of scope requirements of one or the other item.

6. Permutability of Different Adjunct Classes.

The third argument for the Scope theory over the Feature theory is based on the behavior of different classes of adjuncts. The basic fact is that Scope-taking adjuncts (Predicationals and Functionals) do not permute freely in general (and when they do, they show meaning differences), while Participant adjuncts do permute freely. This follows neatly on the Scope theory but must be stipulated on the Feature theory.

58-59 show the type of restriction on cooccurring Predicational adverbs that we saw earlier:

(58) a. Gina has probably tactfully suggested that we leave.
b. *Gina has tactfully probably suggested that we leave.

(59) 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!

60-61 illustrate that when at least one of the two adverbs is a Functional adverb, both orders are generally allowed, with clear meaning differences; 62 shows for sequences of Participant adjuncts that all orders are possible, with no difference in meaning. How can this three-way distinction be handled?

(60) a. They also often bought melons.
b. They often also bought melons.

(61) a. The speaker never intentionally strays from the topic.
b. The speaker intentionally never strays from the topic.

(62) 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.

On the Scope theory, the differing scope requirements of the three classes of adjuncts predict the contrasts. Predicational adjuncts require FEO's as their semantic arguments, and when this requirement is not fulfilled, as in the (b) versions of 58-59, 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 avoiding the anomalies that are often induced when Predicational adverbs cooccur); others, such as Focusing adverbs, have freedom to operate on many different semantic entities (as long as this is appropriate to focus/presupposition structure). So in sentences with a Functional adverb as one of two cooccurring adverbs, both orders result in well-formed readings, but they differ according to the scope each adverb takes. 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, so nothing restricts their relative order.

The Feature theory cannot easily and generally explain why these classes differ in the way that they do: why does this group allow free permutation and that one disallow it, and not the other way around? Consider the contrast between Participant and Predicational adjuncts (similar remarks could be made for Functional adjuncts); Cinque (to appear) carefully notes the semantic and syntactic differences between them, and tentatively proposes that the former are generated in the Spec of *v*, i.e. heads of "shell" VP's. To account for free

ordering, either it must be stipulated that the *v*-adjunct relation is **not** one-to-one, allowing any of the adjuncts to occur with any of the *v*'s (but violating 31); or else each *v* is semantically different, but their ordering is not fixed (thus constituting an exception to rigid ordering of functional heads). Moreover, in neither case is it clear why the different semantics of Participant adjuncts motivates this particular stipulation – why shouldn't heads like Mod and Asp instead be permutable, while a string of semantically different *v*'s be rigidly ordered?

Thus, the Scope theory needs no stipulations, and derives the degrees of permutability directly from the differing semantic requirements of each class. The Feature theory not only must posit exceptions to two restrictive principles, but also cannot motivate them without (in essence) duplicating the mechanisms of the Scope theory.

7. Summary and Conclusion.

I have presented the outlines of a scope-based theory of adverb licensing, making crucial reference to the semantic requirements of adjuncts of different classes, and to a hierarchy of Fact/Event Objects (FEO's). Adjuncts can be divided into those which do not have scope requirements (Participant adjuncts), those which have tight requirements, for a particular FEO (Predicational adjuncts), and those whose scope requirements are are somewhat looser (Functional adjuncts). The main claim is that these requirements must be met at LF, and that adjuncts are licensed, largely, in all and only those positions where the requirements can be met.

I outlined three arguments for this approach over the Feature theory. First, the Scope theory accounts for multiple positions of a given adverb straightforwardly. Feature theories cannot do so without many stipulations and/or redundancies; more informally, they miss the generalizations about how this range of positions can be predicted from the adverb's selectional properties. Second, the Scope theory predicts restrictions on the range of an adverb's positions directly, on the basis of semantic anomalies they (do or do not) induce. Feature theories handle such cases only at the cost of more stipulations in conditioning head-movements, adverb-movements, and the overtness of functional heads in different environments. Finally, the Scope theory predicts adjunct classes' different degrees of permutability directly on the basis of their semantic requirements, while the Feature theory, again, cannot do so without exceptions and stipulations. On the basis of these arguments, the conclusion is that the Scope theory of adverb licensing is to be preferred, since it captures these facts more directly and simply than the Feature theory.

References

Bowers, John. 1993. The Syntax of Predication. *Linguistic Inquiry* 24 (4):591-656.
Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
Cinque, Guglielmo. to appear. *Adverbs and Functional Heads: a Cross-Linguistic Perspective*. Oxford: Oxford University Press.
Collins, Chris. 1997. *Local Economy*. Cambridge, MA: MIT Press.

de Swart, Henriette. 1993. *Adverbs of Quantification: A Generalized Quantifier Approach*. New York: Garland.

Ernst, Thomas. 1984. *Towards an Integrated Theory of Adverb Position in English*. Bloomington, IN: IULC.

Ernst, Thomas. 1986. Manner Adverbs and the Sentence/Predicate Distinction. Columbus, OH: The Ohio State University.

Ernst, Thomas. in preparation. *The Syntax of Adjuncts*.

Ernst, Thomas. to appear. Case and the Parameterization of Scope Ambiguities. *NLLT*.

Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1990. *Semantic Structures*. Cambridge: MIT Press.

Johnson, Kyle. 1993. Object Positions. *Natural Language and Linguistic Theory* 9:577-636.

König, Ekkehard. 1991. *The Meaning of Focus Particles*. London: Routledge.

McConnell-Ginet, Sally. 1982. Adverbs and Logical Form: A Linguistically Realistic Theory. *Language* 58 (1):144-184.

Parsons, Terence. 1990. *Events in the Semantic of English*. Cambridge, MA: MIT Press.

Rooth, Mats. 1992. A Theory of Focus Interpretation. *Natural Language Semantics* 1:75-116.

Wyner, Adam. 1994. Boolean Event Lattices and Thematic Roles in the Syntax and Semantics of Adverbial Modification. Ph.D. dissertation, Cornell University, Ithaca, NY.

Department of Linguistics
Rutgers University
New Brunswick, NJ 08903

ternst@rci.rutgers.edu