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THE SYNTAX OF ADVERBS

IN ENGLISH

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Abstract

In this thesis I use the Principles and Parameters model of generative grammar to explain the surface distribution of adverbs in English. Using the current parameters and principles assumed for UG plus the rule of move α, I explain the distribution of both sentential and VP-adverbs.

I propose that adverbs are predicates subcategorizing for their arguments at D-S. Like other predicates in English, adverbs are generated on the right of their subjects. Certain adverbs subcategorize for two arguments while other adverbs subcategorize for one argument. The selectional restrictions of the adverb are satisfied at S-S. Like other predicates, it is the maximal projection (AdvP) that governs its subject(s). Government is an m-command relationship.

The AdvP can move to the left, either through substitution to an empty X' adjunction site or through adjunction to an XP. The maximal projection of the subject forms a barrier out of which the AdvP can not move. Maximal projections, except AgrP, are barriers. In English, the AdvP can not move if the adverb is subcategorized for by the verb.

This thesis also compares the explanatory powers of my approach to recent syntactic approaches by Iatridou, Travis and Zagona. I also relate my findings to the semantic approaches by Jackendoff, Bellert and Rochette.

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Chapter 1. Introduction

1.1 Introduction

The purpose of this study is to look at the syntax of adverbs. There is no consistent treatment of adverbs within generative grammar. No agreement currently exists as to where adverbs are generated and whether they move. To account for the S-S distribution of adverbs, some studies mark adverbs with a [+ transportable] feature allowing them to move, others allow "scrambling", and others freely generate adverbs in their S-S positions.

The current theoretical model upon which this thesis is based is the Principles and Parameters model of generative grammar. Principles and parameters of universal grammar (UG) govern the representations of the individual grammars. In syntax the focus of the representations is the sentence. X-bar theory accounts for the syntactic projection of lexical information. A parameter such as head position will partly determine the actual configuration of the projection. Thus a head-initial parameter results in an XP structure with the X^0 first, followed by its complement YP. Another parameter is the position of subjects relative to their predicates. English is subject-initial which means that the subject comes first with its predicate on its right.

There are principles that apply at different levels of the grammar. Three relevant principles for this thesis are the Projection Principle, the Principle of Full

Interpretation (PFI) and the Empty Category Principle (ECP). The projection principle requires the lexical information to be represented at all levels of the grammar (i.e., D-S, S-S and LF). The PFI requires that all elements be licensed either by predication or subcategorization. The ECP is relevant for traces left after an element moves. I use Rizzi's formulation (1990: 87) of the ECP where a nonpronominal empty category must be properly governed, i.e., governed by a head in the intermediate projection. Traces must satisfy the ECP and be antecedent governed according to Rizzi (1990: 92).

There is also a rule in UG, move α. It is the trace of this moved element that must satisfy the ECP. There are two types of movement, substitution and adjunction.

The principles make reference to the terms c-command, m-command and government. Rizzi's antecedent government refers to c-command, while his head government refers to m-command. C-command is distinguished from m-command as indicated in the following definitions.

A c-commands B if A does not dominate B and B does not dominate A,
and the first branching node that dominates A dominates B.

A m-commands B if A does not dominate B and B does not dominate A,
and every X^{max} that dominates A dominates B.

The terms c-command and m-command are still applicable when movement by adjunction takes place. When a YP adjoins to an XP under XP, the XP is not considered to dominate the YP.

$$[_{XP}\ [_{YP}\ \cdots\ ]\ [_{X'}\ \cdots\ ]\ ]$$

A general definition of government that will be used to cover both head government (to satisfy ECP) and government by a maximal projection (to satisfy predication) is the following.

A governs B iff A is a governor that α-commands B

(where a governor is X^0 or XP, and α is c or m)

X is [±N, ±V], Agr or T,

no barrier intervenes and relativized minimality is respected

In this thesis these parameters and principles will be seen to play a crucial role in accounting for the S-S distribution of adverbs and, by implication, the lack of overgenerated and vacuous adverbs.

Because Jackendoff's study (1972) forms the basis for several subsequent articles that attempt to account for adverb positioning in sentences, I will look at what Jackendoff said about adverbs in this introductory chapter. Although many studies focus on one type of adverb, for example, pre-verbal, sentential, manner, etc., he deals with adverbs generated in all sentence positions[1]. In his book on semantics in generative grammar he groups adverbs into syntactic classes according to the possible positions they could occupy in a sentence, and into semantic classes according to the projection rule that reflects the predicate structure of the

[1]This is not quite correct as he does not deal with the positions in which adverbs modify adjectives as in *a carefully concealed weapon* nor in which adverbs modify NPs as in *Hardly a mouse was stirring.*

adverb. This projection rule referred to the syntactic position that the adverb could appear in (i.e., the node it was dominated by), and to the arguments that the adverb took for the semantic interpretation. Adverbs under the S node have a feature [+transportable] as an option to account for various possible positions. Adverbs under the VP node are generated in the position in which they occur in surface structure and do not move. Some adverbs could be subcategorized for by the verb.

Bellert (1977) and Rochette (1990a, 1990b) attempted to account for the positioning of adverbs via a semantic explanation. Both based their explanations on Jackendoff's classification of adverbs. Although Jackendoff could not account for the positioning of some of his classes of adverbs and there is the problem with the semantic interpretation having to refer to syntactic positions, neither Bellert's nor Rochette's analyses answer these problems.

Grimshaw (1979), by separating syntax (subcategorization) from semantics (semantic type of complement selected), was able to explain the occurrence of patterns of certain complements after particular verbs. The subcategorization of verbs operating at D-S determined the possible complement categories such as CP, IP, NP, PP. The selectional restrictions of verbs operating at S-S determined the possible semantic categories such as proposition, question, exclamation[2]. For example, in (1) the verb *amaze* subcategorizes for CP at D-S and selects an exclamation at S-S. (1a) satisfies both restrictions but (1b), which satisfies the subcategorization but not the selectional restrictions, is unacceptable.

[2]Note that Grimshaw does not use the terms D-S and S-S. She refers to the syntactic level and semantic level. I have interpreted these as the D-S and S-S respectively.

(1) a. It's *amazing* what a fool he is (Grimshaw 4a)

b. *It's *amazing* whether he is a fool (her 7a)

Ideally, by separating the syntax of adverbs from the semantics, the positioning of adverbs can be explained. I review Bellert and Rochette in this introductory chapter to see what part of an adverb's position is related to the semantic restrictions, and what can be accounted for by syntax. Neither author clearly separates semantics from syntax.

1.2 Jackendoff

In Jackendoff (1972) adverbials (adverbs, prepositional phrases, modals) form a separate category. The syntax of adverbs is different from that of other adverbials (in terms of phrase structure rules and transformations) and is distinct from the semantic function of adverbs (in terms of the lexicon with lexical rules and selectional restrictions). The lexical part of the meaning is derived in D-S while the selectional restrictions apply later. For example, the ungrammaticality of (2) is explained as a violation of selectional restrictions of the adverb.

(2) *John knew the answer *terribly* (Jackendoff p. 48)

The syntax generates the category adverb in D-S in the clause in which it appears in S-S[3]. The selectional restrictions of the adverb then apply at S-S. Jackendoff's focus, being the semantic interpretation of adverbials, is on the S-S position of adverbials. Surface similarities exist among adverbs in terms of the combinations of positions they can occur in, that is, initial and/or auxiliary and/or final. Jackendoff uses these surface similarities of possible positions to classify adverbs into a small number of classes. These are listed in Table 1.1[4]. Note that this classification is based on syntactic distribution and not on semantic similarities such as adverbs of Degree, Time, and so forth.

(i) Adverbs in **initial** and **aux** positions have as an argument the speaker as in (3a) or an NP subject (*John*) in the sentence as in (3b).

(3) a. *Happily*(,) John won the game (his 3.46)

b. *Carefully*(,) John spilled the beans (his 3.50)

These adverbs can follow as well as precede the first auxiliary as in (4).

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[3]Note that Jackendoff does not use the terms D-S and S-S. He has adverbs generated in the base which in our terminology is D-S. Selectional restrictions apply at the semantic level which I have equated with the S-S since he describes the projection rules as involving surface structure considerations.

[4]As already mentioned in note 1, these positions do not include modifiers of adjectives and NPs. One other omission needs mentioning. "Time" adverbs such *today* and *yesterday* which occur in initial or final position are missing from the table. Note the acceptability of the sentences: *Today I have eaten*, **I today have eaten*, **I have today eaten* and *I have eaten today*. Jackendoff (1972: section 3.12) does refer to time expressions and locatives being in the VP and he writes that they can optionally occupy initial position as shown in the following base rule (p. 106). $S \rightarrow NP - Aux - VP - \left(\left\{ \begin{array}{c} Adv \\ PP \\ S \end{array} \right\} * \right)$, the final nodes perhaps being designated in the base as transportable, S designating parentheticals.

Table 1.1: Jackendoff's Classification of Adverbs*

Class I	initial	aux	final	cleverly clumsily carefully carelessly happily truthfully specifically frankly
Class II	initial	aux	final	quickly slowly reluctantly quietly sadly indolently frequently immediately often soon
Class III	initial	aux		evidently probably unbelievably certainly understandably unfortunately naturally apparently
Class IV		aux	final	completely easily purposefully tremendously altogether handily badly mortally totally
Class V			final	hard well lengthwise more less indoors slow before early downstairs fast home terribly
Class VI		aux		merely simply truly utterly virtually hardly scarcely

*Jackendoff refers to only Class V adverbs as *non-ly adverbs.*
He refers to Class I as undergoing meaning changes depending upon the position of the adverb.
He refers to Class II as having no discernible change in meaning.

(4) a. George *probably* has read the book (his 3.118)

b. George has *probably* been finishing his carrots (his 3.120)

Similarly other sentence adverbials that have the speaker or the subject as an argument occur in **initial** or **aux** positions as shown in (5). In (5a) the speaker is an argument of the adverbial PP; in (5b) the subject is an argument of the adverbial clause; and in (5c) the speaker is an argument of the modal[5].

(5) a. *In my opinion*, Bill has ruined ... (his 3.53)

b. *By going to Cincinnati*, Bill has ruined ... (his 3.53)

c. Max *may* leave soon (his 3.261)

In main clauses these adverbs can occur in **initial** or **aux** positions, but in subordinate clauses they can only occur in **aux** position as shown in (6).

(6) a. ?George says that *evidently* Bob has disappeared (his 3.81)

b. George says that Bob has *evidently* disappeared (his 3.82)

[5]The meaning of the epistemic modal *may* is 'possibility.' The root meaning is 'permission' which has the subject as its argument. Jackendoff has epistemic modals select the speaker as an argument as do some adverbs in initial and aux positions. Jackendoff points out that whereas epistemic modals are similar to speaker oriented adverbs, root modals do not exactly correspond to subject oriented adverbs. Root modals do not uniformly select the subject as an argument as in *Flowers may be picked by visitors.* With subject oriented adverbs, the adverb cannot select an NP other than derived subject or an anomaly results as in **Some flowers carefully have been picked by Bill* (Jackendoff 3.282).

Some adverbs can appear only in **aux** position as in (7). But these adverbs can occur before any auxiliary or verb as in (8).

(7) Albert is *merely* being a fool

(8) John { *merely* will have been / will *merely* have been / ?will have *merely* been / will have been *merely* } beaten by Bill (his 3.14)

The adverb is base generated in **aux** position and is optionally preposed to **initial** position when it has a [+transportable] feature in its lexical representation. These *-ly* adverbs[6] are generated to the left of the lexical head as, for example, in Jackendoff's schema in (9)[7].

(9) $\bar{V}$ (=VP) → (Adv) - V - Complement (his 3.57)

---

[6]These include Jackendoff's classes I, II, III and VI as listed in Table 1.1, i.e., all adverbs except non-*ly* adverbs and *-ly* adverbs occurring only in final position.

[7]Jackendoff combines (9) with the base rule for generating adjectives together in the following schema.

$$\begin{bmatrix} \bar{X} \\ \alpha verb \end{bmatrix} \rightarrow \begin{bmatrix} Y \\ \alpha adverb \end{bmatrix} - X - complement$$

This schema allows Jackendoff to generate both adverbs and adjectives. X refers to the syntactic features common to verbs and to nouns; Y refers to syntactic features common to adverbs and adjectives; [± verb] distinguishes verbs from nouns, [± adverb] distinguishes adverbs from adjectives, and α ranges over + and -.

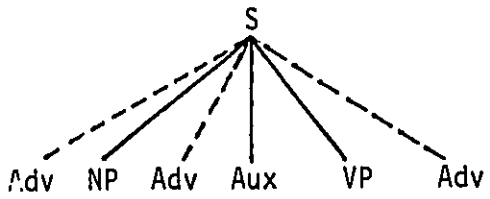

Figure 1

Adverbs generated in **aux**[8] are dominated by S and are sisters to the NP subject and VP. The three positions–**initial**, **aux** and **final** with a pause–are sisters to the NP and VP as shown in Figure 1. An adverb marked [+transportable] can freely move as long as it maintains the sister relationship. Since aspectual *have* and *be* are daughters of VP, the adverb can be transported to between the first two auxiliaries, still maintaining sisterhood to VP and NP.

(ii) The *-ly* adverbs in **aux** and **final** positions[9] are base generated in these VP positions as sisters to the verb. They can occur before the verb as in (11a) and in final position as in (11b), but not between a verb and its object.

(11) a. George will be *completely* ruined by the tornado (his 3.121)

b. John drives his car *carelessly*

[8]What he means by aux position is in front of tense, which is his aux node with modals and tense.

[9]These adverbs include classes I, II and IV as in Table 1.1.

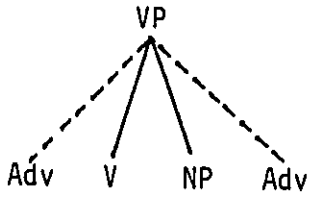

Figure 2

There is no adverb movement rule in VP. Rather adverbs dominated by VP are generated as in Figure 2 and shown in (12).

$$(12) VP \rightarrow (have - en)(be - ing)(Adv) - V - (NP) - \left(\left\{ \begin{array}{c} Adv \\ PP \end{array} \right\} * \right) \text{ (his p. 106)}$$

Since adverbs under VP do not move you never find them between auxiliaries as in (13).

(13) a. *George will *completely* be ruined by the tornado (his 3.120)

b. *John will have *rapidly* been finishing the job

(iii) Adverbs in **final** only position are subcategorized for by the verb. These are non-*ly* adverbs[10] which he calls intransitive prepositions as shown in (14). For intransitive prepositions there is the phrase structure rule $PP \rightarrow P(NP)$.

[10]These are class V adverbs as listed in Table 1.1.

(14) Johnny ran *downstairs* (his 3.61)

Some *-ly* adverbs can be strictly subcategorized for and then they can only appear in **final** position as in (15)[11]. Verbs such as *word*, *pay* and *dress* would have an adverb position in their subcategorization frames.

(15) a. The job paid us *handsomely* (his 3.67)

b. *The job *handsomely* paid us (his 3.74)

In summary, according to Jackendoff, adverbs are base generated (i) in **aux** position under the S node and transportable, (ii) under the VP node, and (iii) as part of a verb's subcategorization. In terms of semantics, adverbs have projection rules. There are 5 possible semantic structures for adverbs. These are described in terms of projection rules which state the selectional restrictions of adverbs. They are read off at S-S. Class I and II adverbs can have any of the $P_{speaker}$, $P_{subject}$ or P_{manner} projection rules as described below, while class III adverbs have the $P_{speaker}$ rule.

1. "$P_{speaker}$: If F_1 is a daughter of S, embed the reading of S (including any members of F to the right of F_1) as an argument to the reading of F_1." (F = Adv, PP, S, modal). The paraphrase in (16b) indicates that the speaker is selected as an argument.

[11]When not subcategorized for by the verb, the *-ly* adverbs can appear in aux as in *They handsomely rewarded him.*

(16) a. *Evidently* Frank is avoiding us

b. It is evident (to me) that Frank is avoiding us

2. "$P_{subject}$: If Adv_1 is a daughter of S, embed the reading of S (including any members of F to the right of Adv_1) as one argument to Adv_1, and embed the derived subject of S as the second argument to Adv_1." The paraphrase in (17b) shows the arguments of the adverb *carefully* in (17a).

(17) a. *Carefully* John spilled the beans

b. John was careful to spill the beans

3. "P_{manner}: If $\left\{ \begin{array}{c} Adv \\ PP \end{array} \right\}$ is dominated by VP, attach its semantic markers to the reading of the verb without changing the functional structure." These adverbs describe Manner, Degree, or Time and are attached as additional modifiers as in (18).

(18) a. Dave speaks *eloquently*

b. The manner in which Dave speaks is eloquent

4. P_{merely} is the projection rule about which Jackendoff is uncertain. He is not sure what the selectional restrictions would be that do not allow the adverb to appear in other than **aux** position.

5. P_{root} is the projection rule for root modals. Jackendoff does not state what this projection rule is.

Note that these projection rules do not include strictly subcategorized non *-ly* adverbs that are considered intransitive prepositions as in (14), repeated here as (19). For strictly subcategorized *-ly* adverbs as in (15a), repeated here as (20), Jackendoff is not sure whether they have a separate projection rule or whether the P_{manner} rule applies but some other part of grammar requires arguments of verbs to be postverbal.

(19) Johnny ran *downstairs*

(20) The job paid us *handsomely*

Note that *-ly* adverbs that appear in **initial** and **aux** or **aux** and **final** positions can have more than one projection rule. Thus adverbs listed in classes I and II in Table 1.1 have 2 projection rules–either $P_{speaker}$ or $P_{subject}$ and P_{manner}. Jackendoff has projection rules using syntactic structures to assign part of the semantic interpretation of a sentence. These rules must specify what node they apply to. For example, $P_{speaker}$ and $P_{subject}$ refer to the adverb being directly dominated by the S node, and P_{manner} refers to VP dominating the adverb.

Jackendoff mentions some interesting cooccurrence restrictions of adverbs that he feels have semantic explanations. First, $P_{speaker}$ adverbs do not occur in questions as in (21a) nor in sentences involving preposing and inversion as in (21d), though they can occur in rhetorical tag questions as in (21b). Similarly epistemic modals (speaker-oriented with the interpretation of 'possibility') can not

be in questions as in (21c)–only the root modal interpretation of 'permission' is possible[12].

(21) a. *Did Frank *probably* beat all his opponents? (his 3.160)

b. Frank *probably* beat all his opponents, didn't he? (his 3.169)

c. *May* Max leave? (his 3.263)

d. ??*Never* has Bill *apparently* seen anything to compare with that (his 3.178)

Second, two sentential adverbs can not be adjacent as in (22a). In (22) *evidently* is a $P_{speaker}$ adverb and *carefully* is a $P_{subject}$ adverb. Nor can a sentence contain 2 adverbs of the same semantic class (that is, having the same projection rule) as in (23a) where both *evidently* and *probably* are $P_{speaker}$ adverbs or in (23b) where both *carefully* and *quickly* are $P_{subject}$ adverbs. Two speaker-oriented adverbs may be acceptable as in (23c)[13].

(22) a. **Evidently carefully* John left the room (his 3.182)

b. *Evidently* John *carefully* has left the room (his 3.183)

(23) a. **Evidently* John *probably* left (his 3.187)

b. **Carefully*, Max *quickly* was climbing the ... (his 3.201)

c. *Happily*, Max has *evidently* been trying to decide ... (his 3.193)

[12]Jackendoff suggests that inversion has a semantic effect which is incompatible with the semantic effects of $P_{speaker}$ adverbs.

[13]Note the conflicting evidence he gives in (23a) and (23c) for $P_{speaker}$ adverbs. I show in the final two chapters why you can have two $P_{speaker}$ but not two $P_{subject}$ adverbs.

However, if adverbials of the same semantic class are generated differently syntactically as in (24), they can occur in either order and adjacent[14] . In (24a) the epistemic meaning of the modal (speaker-oriented) and the $P_{speaker}$ adverb can occur in either order. Similarly in (24b), the root meaning of the modal (subject-oriented) and the $P_{subject}$ adverb can occur adjacent and in either order.

(24) a. John { will *evidently* / *evidently* will } open the door (his 3.272)

b. John { may *quietly* / *quietly* may } leave the room

When a sentence contains a $P_{speaker}$ and a $P_{subject}$ adverb, the $P_{speaker}$ must precede the $P_{subject}$ adverb as shown in (25a) and (b). This is also true for speaker-oriented PPs as in (25c) and (d) and for speaker-oriented modals (epistemic reading) as in (25e).

(25) a. *Probably*, Max *carefully* was climbing ... (his 3.195)

b. **Carefully*, Max *probably* was climbing ... (his 3.198)

c. *Of course*, Max *carefully* was climbing the wall (his 3.208)

d. **Carefully*, Max was, *of course*, climbing the wall (his 3.198)

e. David *may quietly* have left the room

[14]Jackendoff only mentioned $P_{speaker}$ adverbials as in (24a). But the same applies to subject-oriented adverbials as in (24b) where *may* can have the root meaning of 'permission' which is subject-oriented.

Jackendoff's explanation for the ordering restrictions is semantic. The projection rules must mention left to right ordering so that the sentence to the right of the adverb is embedded as an argument. If $P_{subject}$ were to precede $P_{speaker}$ then the speaker adverb would erroneously be part of the subject adverb's reading.

Syntax however does seem to play an important role as two adverbials of the same semantic class can cooccur if they are generated differently syntactically as in (24a) where a speaker-oriented modal and a speaker-oriented adverb can appear in either order, and as in (24b) where a subject-oriented modal (root meaning) and a subject-oriented adverb can both appear.

In order to explain S-adverbs referring to the surface subject and VP-adverbs referring to the thematic agent for active and passive sentences, Jackendoff has S-adverbs projection rules applying at S-S and VP-adverbs projection rules applying in D-S. For example, $P_{subject}$ adverbs select the surface subject as an argument whether the sentence is active or passive as in (26). Thus the change in meaning between the two sentences about who is being clever.

(26) a. The doctor *cleverly* has examined John (his 3.142)

b. John *cleverly* has been examined by the doctor (his 3.143)

P_{manner} adverbs attribute modification under the VP to the thematic agent. Hence there is no change of meaning between active and passive sentences as in (27). Jackendoff suggests that the manner projection rule applies at D-S.

(27) a. The doctor examined John *carefully* (his 3.148)

b. John was examined *carefully* by the doctor (his 3.149)

As already noted, *merely* type adverbs can appear in front of any aux or verb (see class VI adverbs in Table 1.1) whereas speaker, subject, and manner adverbs can not. Jackendoff points out that the parallel adjectives *mere*, *utter*, *virtual* appear only with NPs that are indefinite or have a relative clause as in (28).

(28) He is { a *mere* boy / *the *mere* boy / the *mere* boy we expected him to be }

The P_{merely} adverbs can modify only indefinite NPs or NPs with a relative clause as (29a), (b), and (c).

(29) a. He is { *merely* a boy / **merely* the boy / *merely* the boy we expected him to be }

b. { *Scarcely* a mouse / **Scarcely* the mouse } was stirring

c. John saw *hardly* any birds

Jackendoff was unable to provide a projection rule for the P_{merely} class of adverbs[15].

[15]See Chapter 2 for the section dealing with Zagona (1988) who does deal with the *merely* type of adverb.

The next two chapters will provide an explanation for the *merely* type adverb. Chapters 3, 4 and 5 provide a syntactic explanation for some of the observations about adverbs that Jackendoff makes. This includes those cases where he provided a semantic explanation, for example, why there can not be 2 consecutive sentential adverbs–his $P_{speaker}$ and $P_{subject}$. There will also be an account of adverbs in active/passive sentences without having to refer to D-S for VP-adverbs and S-S for S-adverbs.

1.3 Bellert

Bellert (1977) looks at sentential adverbs. She looks at their syntactic surface distribution and their semantic properties. Using Jackendoff's (1972) classification of manner, speaker-oriented, and subject-oriented adverbs, she looks at the semantic properties of adverbs (their contribution to the truth conditions of the sentence, and other semantic properties of the adverbs) and the effect on surface distribution (e.g., whether the adverb can be negated, or occur in negated sentences and questions). Bellert accepts his classification but refines some classes to better reflect semantic and distributional properties. She first considers Manner adverbs which are VP-adverbs. Then she considers subject-oriented adverbs. Since Jackendoff's speaker-oriented adverbs form a heterogeneous group, she subdivides this group into 6 groups–Frequency, Evaluative, Modal, Domain, Conjunctive and Pragmatic. Like Jackendoff, she has adverbs base-generated but she does not mention if they move. She treats sentential adverbs as predicates that take different semantic categories as one of their arguments.

Since Bellert's article includes VP-adverbs as well as sentential adverbs, these two groups will be looked at separately. I have rearranged Bellert's refinement of the classes to reflect the similar distributional and semantic properties of sentential and VP-adverbs[16].

(i) VP-adverbs

Manner adverbs are cited as VP-adverbs that are dominated by the VP node and are part of one proposition (the VP) as in (30).

(30) John is speaking *loudly* (Bellert 2)

Frequency adverbs are the first subclass that Bellert subdivides Jackendoff's speaker-oriented adverbs into. Frequency adverbs are part of just one proposition, and are generated under the VP node[17] as in (31).

(31) John [$_{VP}$ *often* comes here] (her 11)

[16]This is entirely justified as there is no one-to-one correspondence between Jackendoff's positional classes (Table 1.1) and projection rules. Also he (p. 70) considered one projection rule for the "nonstrictly subcategorized adverbs" Manner, Time and Degree. Thus he seems to treat them as VP-adverbs.

[17]Bellert is not clear on whether she has frequency adverbs generated under the VP node. She points out that they act like manner adverbs which are VP-adverbs, i.e., just like the manner adverb *loudly*, they each form part of one proposition, and the sentence with the adverb implies the affirmative sentence without the adverb.

John is speaking *loudly*
John is not speaking *loudly*
Is John speaking *loudly*? } → John is speaking (her 4)

John *often* comes here
John does not *often* come here
Does John come here *often*? } → John comes here (her 11)

Combined with Frequency adverbs' sensitivity to affixes on verbs (e.g., progressive affix on verbs in English, perfective markers on verbs in Slavic languages) suggests frequency adverbs are attached to the VP node and not to a higher node.

In Slavic languages Frequency verbs do not cooccur with perfective affixes on verbs. In English, Punctual adverbs (a subgroup of Frequency adverbs) do not cooccur with the progressive aspect as in (32).

(32) *John was *immediately* sitting in his room (her p. 342)

Domain adverbs are another subclass of speaker-oriented adverbs. They act as "restrictive universal quantifiers" and form part of a proposition by specifying its domain[18].

(33) a. *Logically* John is right, but *morally* he is wrong (her 41)

b. *Morally* he is not wrong

By grouping these 3 types of VP-adverbs (Manner, Frequency, Domain) together similarities with negations and questions are noted. When the sentence is negated there is only the reading where negation has scope over the VP and its

[18]This suggests that they too are generated under the VP node. Note that all the examples Bellert used contain the copula. The following sentences indicate that domain adverbs are under the VP node.

John behaves *morally*

Sue thinks *logically*

When fronted they act like sentential adverbs (speaker-oriented that are evaluative or pragmatic).

John solved the problem *logically*

Logically, John solved the problem

There is only one proposition involved and the sentence with a domain adverb implies the affirmative sentence without the adverb.

Morally, John is wrong
Morally, John is not wrong
Is John *morally* wrong?
} → John is wrong

adverb. The affirmative sentence without the adverb exists for Manner, Frequency and Domain adverbs.

(34) a. John is not speaking *loudly* → John is speaking

b. John does not *often* come here → John comes here

c. *Morally* John is not wrong → John is wrong

Similarly sentences with VP adverbs can be questioned.

(35) a. Is John speaking *loudly*?

b. Does John *often* come here?

c. Is John *morally* wrong?

(ii) S-Adverbs

Subject-oriented adverbs are daughters of the S node. They take 2 arguments– the sentence without the adverb as in (36b) and the "derived" subject as in (36c)[19].

(36) a. John *cleverly/wisely/carefully* dropped his cup of coffee (her 6).

b. John dropped his cup of coffee

c. John was clever/wise/careful to drop his cup of coffee

[19]Bellert, following Jackendoff, says "derived" subject. The derived subject is supported by active-passive pairs as in *John wisely picked Jane* and *Jane wisely was picked by John* where wisdom is attributed to the surface subject. However the θ-role must be important given passive sentences such as *The book cleverly/wisely/carefully was put on the table* where one argument of the adverb is not the derived subject.

I have already considered two of Bellert's subclasses of Jackendoff's speaker-oriented adverbs (Frequency and Domain adverbs) to be VP-adverbs. Now I look at the other 4 subclasses (Evaluative, Modal, Conjunctive, Pragmatic) of speaker-oriented adverbs. Jackendoff refers to them as daughters of S that have the S as an argument. However Bellert points out that they have 2 arguments.

Evaluative adverbs, according to Bellert, are another subclass of Jackendoff's speaker-oriented adverbs. Evaluative adverbs take two arguments–the sentence and an evaluation of the fact/event/state of affairs denoted by the sentence without the adverb. The first argument is a reading of the sentence without the adverb as in (37b). The other argument is an evaluation of the event/fact/state of affairs of the sentence as in (37c).

(37) a. *Fortunately* John has not come (her 13)

b. John has not come

c. It is fortunate that John has not come

Modal adverbs are daughters of S that have 2 arguments–the sentence and the truth of the proposition expressed by the sentence. One argument is a reading of the sentence as in (38b). The other argument is to qualify the truth of the sentence as in (38c).

(38) a. *Probably/Undoubtedly/Evidently* John has not come

b. John has not come

c. It is *probably/undoubtedly/evidently* true that John has come (her 16)

Conjunctive adverbs have 2 arguments–the sentence, and the truth of that sentence, the preceding sentence(s) and the causal relationship. One argument is the sentence as shown in (39b) and the other argument is the truth that *I was rude*, *I apologize* and I apologized *because* I was rude.

(39) a. I *therefore* apologize for my rudeness (her 50)

b. I apologize for my rudeness

Pragmatic adverbs are daughters of the S node and have 2 arguments–either the content or the form of the sentence and the speaker. In (40a) one argument is the content of the sentence and the other argument is the speaker's attitude towards the utterance. In (40b) one argument is the form of the sentence and the other is the speaker's way of expressing the proposition.

(40) a. *Honestly*, John did it himself

b. *Briefly*, I promise you to finish my work today (her 56)

As expected with sentential adverbs, when the sentence is negated the adverb has scope over negation. Hence the negative sentence without the adverb is implied.

Subject-oriented: John *wisely* did not drop his cup of coffee

→ John did not drop his cup of coffee

Evaluative:	*Unfortunately* John has not come
	→ John has not come
Modal:	John *probably* has not come
	→ John has not come
Conjunctive:	*Thus* I don't apologize
	→ I don't apologize
Pragmatic:	*Honestly*, John did not do it himself
	→ John did not do it himself
	Briefly, John is not a nice honest guy
	→ John is not a nice honest guy

Sentences with S-adverbs can not usually be questioned. Bellert explains the inability to form questions on semantics, that is, you can not assert a proposition and question some aspect of it at the same time.

*Did John *wisely* drop his cup of coffee? (her 10)

*Has John *unfortunately* come?

*Has John *probably* come? (her 21)

*Do I *thus* apologize for my rudeness?

*Did John *honestly* do it himself?

*Is John *briefly* a nice guy?

By regrouping Bellert's reclassification, similarities in the sentential adverbs are noted in terms of negation and questioning. Table 1.2 summarizes sentential adverbs in terms of their 2 arguments. One argument is the sentence without the

Table 1.2: Bellert's Sentential Adverbs

Adverb	S argument	Other argument
subject-oriented	assertion	'derived' subject (person)
evaluative	assertion	evaluation of S (speaker)
modal	assertion	truth of S (speaker)
conjunctive	assertion	truth of Ss and relationship (speaker)
pragmatic	content of S	speaker
pragmatic	form of S	speaker

adverb and the other argument seems to be person. That is, a 'derived subject' is usually a person subject, while an evaluation of the S or its truth conditions can be attributed to the speaker. What can be observed in Bellert's analysis, which was primarily semantic, is that there is a difference in the argument structure of VP versus sentential adverbs.

Based on my reclassification of the sentential adverbs presented by Bellert, adverbs in sentences that are part of one proposition are under the VP node while adverbs that involve two propositions are under the S node. There were also differences between the 2 groups in terms of the behaviour with negation and questions. If I had not altered her analysis, adverbs she called sentential behaved in various ways. She suggested semantic explanations for why some S-adverbs could be negated and appear in negative sentences and be questioned; whereas, other S-adverbs could not be negated or appear in negative sentences or be questioned. I suggest that in my regrouping these differences would be a reflection of the selectional restrictions of the adverb but that the two distinct

patternings are a reflection of syntax. Adverbs have lexical entries with semantic specifications separate from syntactic argument structures. It is this syntactic distribution that I will focus on. To more clearly distinguish what part of the argument is strictly syntactic from the part that is semantic, I will review two recent articles by Rochette (1990a, b).

1.4 Rochette

Rochette (1990a, b) looks at the surface distribution of adverbs and their selectional restrictions. She also uses Jackendoff's (1972) classification of adverbs, but considers only the first four of his six groups[20]. Rochette claims that the selectional properties of adverbs can account for the distribution of adverbs in sentences. Adverbs are predicates that select semantic categories such as Event, State, Proposition and Action as their argument. Adverbs are considered to be secondary predicates in an adjunction position, either to the left or right of a head or its maximal projection as shown in Figure 3.

The particular node the adverb is adjoined to depends upon the semantic category selected. Adverbs selecting an Action or State are attached to the VP[21] and "form a complex predicate with the verb and they take on a 'manner' reading"

[20]She excludes his aux only class and the V-final only adverbs, i.e., classes V and VI.

[21]These are Jackendoff's class IV adverbs. They govern the head V from the VP projection. Rochette (sentences 8a-d, 1990b) points out that class IV adverbs such as *completely* (i.e., VP-adverbs) can occur before the verb but not before an auxiliary while class III adverbs such as *probably* (adjoined to IP or I) can occur before or after an auxiliary but not after 2 auxiliaries.

George *probably/*completely* has read the book
George will *probably/*completely* have read the book
George has *probably/completely* read the book
George will have **probably/completely* read the book

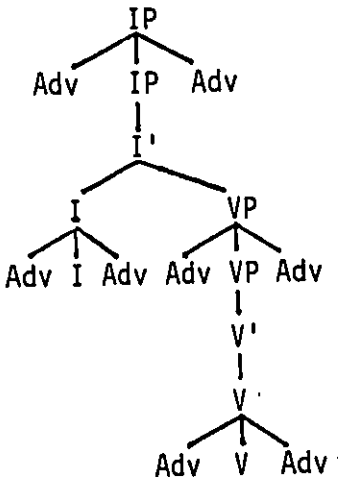

Figure 3

(1990a: 4), as shown in (41).

(41) a. George *completely* read the book (Rochette 4b, 1990b)

b. George read the book *completely* (her 4c, 1990b)

c. John hit Bill *hard* (her 5c, 1990b)

Adverbs that select Propositions[22] (also called speaker-oriented adverbs in the literature) can be adjoined to IP or I (also CP for French) as shown in (42). These include evaluative adverbs as in (42a) and modal adverbs as in (42b) and (c).

(42) a. *Fortunately* John has come → John has come (her 19a, 1990a)

b. George *evidently* read the book (her 3b, 1990b)

c. George read the book, *evidently* (her 3d, 1990b)

Adverbs[23] that select an Event may take on a Manner reading and attach to a VP as in (43a). Adverbs that select Events may also be two-place predicates, in which case one argument is the Event and the other is an external argument. The external argument is either the surface subject if the adverb is adjoined to IP or I as in (43b) or the agent if the adverb is adjoined to VP or V as in (43c).

[22]These are Jackendoff's class III adverbs. In LF the modal adverbs must undergo raising to have scope over the entire sentence. Rochette does not explain why modal adverbs would need to raise at LF except that she has shown elsewhere that modal verbs do.

[23]These are Jackendoff's class I and class II adverbs. When adjoined to IP or I they have scope over the entire event, whereas, when adjoined to VP they modify part of the event. The problem of adverbs selecting an Event and another argument is discussed towards the end of this subsection.

(43) a. John dropped his cup of coffee *slowly* (her 2c, 1990b)

b. Fred *carelessly* has been arrested by the police (her 12b, 1990a)

c. Mary was instructed *reluctantly* by Joan (her 12d, 1990a)

Adverbs do not enter into a head-complement relationship with their arguments as verbs do with their arguments (objects). Rather, Rochette says the semantic category that the adverb selects is mapped onto the head (I, V or C) and, via adjunction to the head or its maximal projection, the adverb governs its argument. She suggests that adjunction could freely occur in either direction with language specific conditions preventing the occurrence in some positions (1990b: note 2). For example, (41b) involves adjunction to the right of VP, while (42c) involves adjunction to the right of IP, and (43b) to the left of I.

The idea that the adverb subcategorizes for a semantic category is further supported by the type of adverb located in sentential complements in Romance languages. Rochette points out that an Event, Action or Propositional adverb can occur in a sentential complement but it must be in a corresponding emotive, effective or propositional sentential complement[24]. That is, the complement that the adverb selects must be of the same type (Event, Action, Proposition) as the sentential complement that it is in and that is selected for by the main verb. For example, the Propositional adverb *probablement* will only be in a propositional sentential complement (which is in indicative tense) as shown in (44).

[24]See Rochette (1990b) for differentiation of these complements.

(44) a. Marie croit que Jean gagnera *probablement* le prix (her 26a, 1990b)

b. *Marie souhaite que Jean gagne *probablement* le prix (her 26b , 1990b)

c. *Marie commence *à probablement* lire le livre (her 26c, 1990b)

Rochette gives a semantic treatment of adverbs to explain their syntactic distribution. This means that her analysis raises several interesting questions that she does not address. For example, adverbs must be in position at either S-S or LF to govern the head of the argument. But why would an adverb be in adjunction relationship with a maximal projection rather than its head?

Another example is where are adverbs base-generated? Rochette's adjunction positions seem to be based on a S-S reading of the sentence. For example, she suggests right adjunction to V in French to account for sentences like (45a); and possibly V′ as another adjunction site in English to account for sentences like (45b)[25].

(45) a. J'ai trouvé *facilement* mon chemin (her i, 1990b: note 2)

b. Mary will have put the book *slowly* on the table (her ii, 1990b: note 2)

Lastly, there is the problem with Event adverbs. How are these adverbs to be marked to give just a Manner reading while others also select another argument?

[25]Middle English used to have the constructions where adverbs occurred between a tensed V and its object when V moved to I (see Roberts 1985: 49). However with the loss of morphological agreement and the change to syntactic agreement, the V no longer moved to I and adverbs no longer occurred between a tensed V and its object. In French, verbs move to tense and an adverb can be located between the V and its direct object.

Even the two-place Event predicates are inconsistent as sometimes they select either a grammatical category (the surface subject) as in (43b) and sometimes they select a semantic category (the agent) as in (43c), repeated here as (46a) and (b).

(46) a. Fred *carelessly* has been arrested by the police (her 1990a)

b. Mary was instructed *reluctantly* by Joan (her 12d, 1990a)

If a two-place adverb is adjoined to the right of VP, how does it govern its second argument[26]? For example, how does *reluctantly* in (47a) govern the heads of its two arguments *instruct* and *Joan* as shown in Figure 4?

(47) a. Joan instructed Mary *reluctantly*

b. Mary has been *reluctantly* instructed by Joan

c. *Reluctantly* a Chinese restaurant was decided on

Rochette says that when the adverb adjoins to VP it may select the agent as another argument. Note that the adverb does not govern the agent which is the external argument of the verb. If a two-place Event adverb is adjoined to IP or I, Rochette says the other argument is the surface subject. However, this is not quite correct as in (47c) it is not the surface subject but the implicit agent or the speaker that is the other argument of the adverb.

[26]This applies to adverbs Rochette describes as two-place predicates selecting a subpart of an Event and are included in Jackendoff's class I type adverbs.

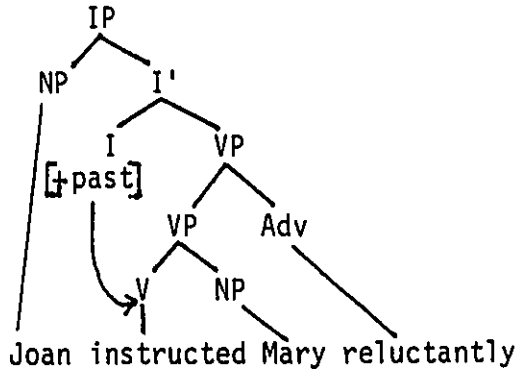

Figure 4

Table 1.3: Rochette's Selectional Restrictions of Adverbs

Sub-categorization	Manner Adverbs Action	State	Event	Event & Subject	Event & Agent
IP/I				*	
VP/V	*	*	*		*

Are adverbs like verb predicates in that they subcategorize for and semantically select their subjects? Unfortunately Rochette's analysis is not helpful in determining the subcategorization frames of adverbs since her analysis is based on S-S distribution. Do they freely subcategorize for XP, X and even X′ sometimes? Does an Event adverb subcategorize for IP/I and VP/V? Her analysis was about the selectional restrictions of adverbs. The selectional restrictions are summarized in Table 1.3.

Recall that Rochette only considered the first 4 classes of Jackendoff's adverbs.

However even within these classes not all possible selectional restrictions were considered, for example semantic selection of speaker-oriented adverbs was not given. Yet her semantic analysis is useful in showing that an adverb's position is determined by the interaction of the subcategorization and selectional restrictions. For example, *reluctantly* might have the following subcatgorization and selectional restriction frames:

Adv: [_ IP/I, VP/V]

[_ Event]

Some adverbs selecting an Event are in IP and some are in VP. Subcategorization of the adverb for IP and VP could account for both occurrences. Some Event adverbs under VP act like Manner adverbs and some Event adverbs under VP select also an agent argument. This could be explained by the particular lexical properties of the adverb requiring an agent/subject. Thus it seems that selectional restrictions are only part of the explanation for the surface distribution of adverbs. What Rochette's analysis shows is the need to study the syntactic part of the explanations for the distribution of adverbs[27]. What nodes are adverbs adjoined to, and what restricts their movement? Rochette's analysis is inadequate in accounting for the distribution given that (i) there is no explanation for why an adverb would seemingly be adjoined at S-S to X versus XP, or why it could freely adjoin in either direction, (ii) her selectional restrictions need to refer to grammatical positions (IP node, VP node) to account for the derived subject versus

[27]It also points out a need to study how the adverb governs the category it selects. Rochette has the Proposition, Action, Event that the adverb selects being mapped onto the head (I, V, C) of X or XP that the adverb subcategorizes for. But if IP versus I is subcategorized, why is the category mapped onto I in both cases?

agent arguments of Event adverbs.

1.5 Summary

The brief review of the three semantic articles on adverbs shows that selectional restrictions can account for the part of distribution that relates to what type of adverb occurs under what node. It is the syntactic analysis that needs to be studied. From Jackendoff's study I noted that this study will explain why two S-adverbs cannot be adjacent, why some adverbs can not move, why some adverbs can only appear pre-aux or pre-V, and why the adverbial reference sometimes changes between active and passive pairs of sentences. Bellert's article shows that those adverbs under the VP behave similarly syntactically as do those under the IP. Finally what Rochette's analysis does is show that adverbs' selectional restrictions and subcategorizations interact to account for the different possible positions of adverbs.

In the next chapter I focus on 3 studies which consider adverbs from a strictly syntactic perspective. Iatridou (1990), Travis (1988) and Zagona (1988) treat adverbs differently. Although there is no consensus in these analyses, certain observations are noted which can be useful in understanding why adverbs appear where they do.

Chapter 3 looks at some of the current theoretical issues important for adverbs. Since adverbs are generally considered as adjuncts this review will focus on the properties of adjunction structures. How adverbs govern their arguments will also be discussed. As well, licensing of empty categories will be reviewed since that is

important if adverbs move.

Chapter 4 explains the positions of adverbs in sentences based on a consideration of some of the theoretical issues, and the observations that arose in Chapter 2 in the syntactic accounts of adverbs.

Finally in the last chapter the main conclusions on adverb positioning are summarized, with an accounting of the the problems that the semantic interpretations in Chapter 1 failed to account for. Also implications of my analysis for the study of adverbs in other languages are considered.

Chapter 2. Three Syntactic Approaches to Adverbs

2.1 Introduction

The treatment of adverbs in the literature is very divergent about their syntactic properties. For example, an early debate in *Linguistic Inquiry* between Baker (1971, 1981) and Sag (1978, 1980) and summarized by Ernst (1983) illustrates three different views towards preverbal adverbs. Baker has preverbal adverbs generated to the left of auxiliaries in D-S with tensed auxiliaries moving to the left past the adverb producing the S-S as in (1). An auxiliary shift rule would not apply if the auxiliary was stressed as in (2) or if the finite auxiliary was followed by a deletion site as in (3a). Ordering of movement rules can result in adverbs preceding deletion sites as in (3c)[1].

(1) George and Mary have$_i$ *probably* never t_i seen a real politician (Baker 1a, 1981)

[1]Baker (1981: 313, example (19)) describes the ordering of the movement rules as follows. The underlying representation is *...he not* always *has gotten along with Fred.* A rule of "not placement" gives *...he has not* always *gotten along with Fred.* A rule of "not contraction" gives *...he hasn't* always *gotten along with Fred.* The "VP deletion" gives the surface representation *...he hasn't* always.

(2) a. Jack *never* WAS much of a swimmer (Baker 2a, 1981)

b. *Jack WAS *never* much of a swimmer (Baker 2b, 1981)

(3) a. Fred has never been rude to Grandfather, but John *always* hàs __ (Baker 3a, 1981)

b. *Fred has never been rude to Grandfather, but John hàs *always* __ (Baker 3b, 1981)

c. He's gotten along well with Fred in the past few weeks, but he hasn't *always* (Baker 17, 1981)

Sag has a S-S filter $* \left\{ \begin{array}{c} Q \\ Adv \end{array} \right\}$ __ *extraction site* that blocks preverbal adverbs from occurring before deletion sites as in (4a). The filter would allow stressed auxiliaries to precede the adverb as in (4b).

(4) a. The activists are now more active than they $\left\{ \begin{array}{c} ever \text{ were} \\ *\text{were } ever \end{array} \right\}$ __ (Sag 5a, 1978)

b. They denied that John has *always* admired Susan, but he HAS *always* admired her (Sag 6, 1980)

Ernst considers these conflicting analyses of Baker and Sag where Baker does not allow stressed auxiliaries before adverbs but does allow adverbs to precede

deletion sites while Sag allows stressed auxiliaries before adverbs but does not allow adverbs to precede deletion sites. Ernst generates VP-adverbs freely after stressed and unstressed auxiliaries[2]. He offers no explanation for why some adverbs precede deletion sites and some do not as in (5).

(5) *Has he { *wisely* / *clearly* } __? (Ernst 25, 1983)

Baker dealt with preverbal adverbs in terms of where they were base-generated (in D-S) and in terms of movement (auxiliary moves to left past adverb). Sag did not say where the adverbs were generated nor if there was any movement of adverbs or auxiliaries. He just had a surface filter ruling out improper sequences. Presumably the filter would mean that adverbs could be freely generated with the filter ruling out the improper sequences. Ernst had adverbs freely generated before and after auxiliaries.

The position of adverbs has also been used to justify the internal construction of the inflection and verb phrase nodes, and the relationship of auxiliaries to the main verb[3]. The syntactic treatment of adverbs varies according to the analysis of the IP or VP. For example, Pollock (1989) assumes that adverbs are generated

[2]He cites echo contradiction sentences and discourse situations where the speaker unexpectantly agrees or disagrees with the previous statements.

[3]Cf. Pollock (1989), Iatridou (1990), Zagona (1988).

pre-VP and post-VP[4] and that adverbs do not move. To account for the verb and adverb order he has tense moving to the verb past the adverb in English as in (6b), and the verb moving to tense past the adverb in French as in (6c). To account for the order in (7) he has NP "scrambling" as an optional movement that moves the NP to the right past the adverb.

(6) a. * John kisses *often* Mary (Pollock 4a)

b. John *often* kisses Mary (Pollock 4c)

c. Jean embrasse *souvent* Marie (Pollock 4b)

d. * Jean *souvent* embrasse Marie (Pollock 4d)

(7) a. Jean pense avoir vu Marie place de l'Opéra *hier* (Pollock 33d)

b. Jean pense avoir vu *hier* Marie place de l'Opéra (Pollock 34b)

Thus Pollock has VP adverbs generated before the verb and after the VP but not moving. Instead verbs or tense and NPs move past the adverbs creating the observed surface distribution.

[4]Pollock shows two representations for English: $[_{IP}$ NP I $([_{NEG}not/pas])$ $[_{VP}$ (Adv) $V \ldots]]$ and $[_{IP}$ NP I $[_{VP}$ V NP Adv]]. He points out that he does not show the SPEC positions for VP, CP, IP. Thus the Adv position in the first is clearly an adjunction position, which is where he considers adverbs to be generated, and the representation, to avoid confusion, should be $[_{VP}$ $([_{AdvP}Adv])$ $[_{VP}V \ldots]]$. He also points out that in English there is an adverb position generated between the subject NP and tense.

Iatridou disputes that the surface distribution Pollock describes is attributed to movement past the adverbs. She focusses on $V + adv + V$ and $V + adv + object$ word orders to show that the S-S is attributable to adverbs being generated as adjuncts to the left of the maximal projections of auxiliaries and of verbs, and as part of a predicate clause. I will look more in depth as what Iatridou says in Section 2.2.

Travis (1988) considers the syntactic properties of adverbs, and how they are licensed. But her analysis considers only 2 maximal projections—an IP and a VP—without considering the relationship of auxiliaries to the main verb. Since licensing of adverbs is an important topic, Section 2.3 briefly looks at Travis' ideas.

Three different perspectives on adverbs are reviewed in this chapter. Iatridou has adverbs generated in pre-aux and pre-VP positions and does not consider that they move. Adverbs have some feature that allow them to be where they are. For Travis, the heads I and V have features that license the adverbs and because these features percolate to the maximal projection, the adverb can be adjoined to IP and VP as well as I and V. These two analyses attempt to account for the distribution of adverbs in sentences. The third perspective is Zagona's analysis which differs in several ways. Adverbs can be base-generated in specifier and adjunct positions, and move to the left; or they can be generated as complements to the verb. Features in the verbal head license the adverbs. Zagona's account of

adverbs is discussed in Section 2.4.

In each of the sections dealing with Iatridou, Travis and Zagona, I will first summarize their main ideas that relate to adverbs. Then in each analysis subsection I present my analysis of each of their arguments.

2.2 Iatridou

Iatridou's paper is not an analysis of adverbs. Rather adverbs are considered in terms of how they fail to show the existence of an AgrP node. For Pollock (1989), adverbs are to the left of auxiliaries or verbs, and the movement of auxiliaries and verbs past adverbs to tense or of tense to verbs past adverbs results in the observed distribution of adverbs. But according to Iatridou, there are several positions for generating adverbs and "different adverbs have different base-generated positions" (1990: 557). While she agrees with Pollock that in English auxiliary verbs move to tense past adverbs as in (8), she claims, contrary to Pollock, that in infinitival clauses auxiliaries do not move to AgrP.

(8) I have *often* eaten apples (Iatridou 6)

She focusses on adverb placement with infinitives. She looks at adverbs base generated in pre-aux and pre-verb positions with infinitives, and at adverbs generated

as part of a predicate.

(i) V + Adv + V Order

The pre-aux and pre-VP positions are clearly distinguished in untensed sentences such (9a) and (b). In (9a) *frequently* is in the pre-aux position and *rudely* is in the pre-VP position. Either adverb can appear alone as in (9c) and (d).

(9) a. John is believed to *frequently* have *rudely* criticized Bill (her 12a)

b. John is believed to *rudely* have *frequently* criticized Bill (her 12b)

c. John is believed to *frequently/rudely* have criticized Bill (her 14)

d. John is believed to have *frequently/rudely* criticized Bill (her 16)

e. Mary is believed to be *completely* revising her dissertation (her 17)

f. *Mary is believed to *completely* be revising her dissertation (her 18)

Sentence (9d) is not the result of auxiliary movement of *have* past the adverb. If it were, then (9e) would require the existence of the pre-movement sentence in (9f), but (9f) is not good.

A pre-VP adverb can only occur if its selectional restrictions are met. For example, raising verbs, which assign no θ-role to the subject, can not have adverbs that refer to the subject in a pre-VP position as shown in (10)[5].

[5]Perhaps it is necessary for an adverb's predication role to be read at D-S since (10a) has a S-S subject, yet the sentence is ungrammatical.

(10) a. *John *deliberately* seems to have spilled the milk (her 39)

b. John seems to have *deliberately* spilled the milk (her 40)

(ii) V + Adv + Adj Order

"An adverb may be part of a predicate" as in (11a) where the adverb is a base-generated modifier of an adjective. The existence of two similar forms as in (11b) and (c) is not due to optional movement of the auxiliary past the adverb, but rather to two different base-generated positions. In (11b) the adverb is pre-VP but in (11c) the adverb is part of the predicate, i.e., it modifies the adjective The acceptability of the *Adv + Adj* predicate as in (11d) depends upon the semantic properties of the adverb which must be compatible with those of the adjective[6]. The *V + Adv + Adj* order in (11d) could not be a result of auxiliary movement of *be* past the adverb since the hypothetical unmoved version (11e) is ungrammatical.

(11) a. I consider John *consciously/deliberately* evil (her 22)

b. I believe John to *deliberately* be sarcastic (her 26a)

c. I believe John to be *deliberately* sarcastic (her 26b)

d. I believe John to be *clumsily/tolerably* sarcastic (her 27b)

e. *I believe John to *clumsily/tolerably* be sarcastic (her 27a)

[6]In this example, according to Iatridou's analysis, *sarcastic* would be a stage-level predicate having an Event variable. *Deliberately* selects an Event as one of its arguments.

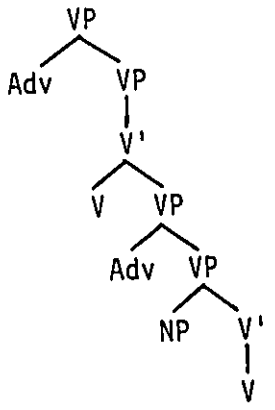

Figure 1

Iatridou schematically shows adverbs generated to the left in adjunct positions as in Figure 1. She has adverbs generated in an adjunction relation with the specifier position of the VP already filled with the subject NP as shown in Figure 1. Being adjoined to the VP, adverbs do not block agreement between the main verb and the subject[7].

2.2.1 Analysis

Iatridou shows that in English and in French there is an adverb position adjoined to the left of the maximal phrases of auxiliaries and of lexical verbs. She also shows that an adverb can be part of a predicate. These are important observations but there are two observations about adverbs that arise from her analysis that need

[7]In Iatridou's analysis Agr is not a separate node but a feature on the subject that is transferred to the verb in a Spec-Head relationship under [+finite] tense.

further explanation.

First, if adverbs are base-generated in pre-aux and pre-VP positions, sentence (8), repeated here as (12), can be explained in either of two possible ways. Either *have* moves to tense and passes *often* in pre-aux, or *have* moves to tense and *often* is to the right of aux in a pre-VP position.

(12) I have *often* eaten apples (her 6)

But how are the French sentences in (13) and (14) accounted for? Iatridou agrees with her predecessors that in French aux and main verbs move to tense, however she says that in infinitival clauses only aux moves to tense. In (13a) aux moves to tense and could have passed a pre-aux adverb or the adverb could have been in pre-VP position. In (14a) the adverb is a pre-VP adverb and [-tense] moves past the adverb to the verb. But what about (13b) and (14b)? She suggests two possibilities without choosing either one. Either morphology could provide [V Adv] words[8], or the [V Adv] could be a complex verb formed when adverb heads are sisters to verbs[9]. A problem to still be answered is what this $V + Adv + NP$ construction is in French. Since I am dealing with English adverbs this issue will not be directly addressed.

[8]This is the proposal by DiSciullo and Williams that she mentions.
[9]This is the proposal by Travis.

(13) a. Pierre a *à peine* vu Marie (her 46)

b. Pierre a vu *à peine* Marie (her 47)

(14) a. *À peine* comprendre l'italien ... (her 43a)

b. Comprendre *à peine* l'italien ... (her 43b)

Second, Iatridou does not address the issue of consecutive adverbs in English. Recall that an infinitival clause can have a pre-aux and a pre-VP adverb as shown in (9a) and repeated here as (15a). She also gives examples with only a pre-aux adverb and with only a pre-VP adverb. However she does not give examples with these adverbs adjacent as in (15b), (c) or (d). In (15d) the adjacent adverbs could be explained by the auxiliary passing the pre-aux adverb on its way to tense as illustrated in Figure 1. But what explains the adjacent adverbs in (15b) and (c)? The issue is whether there is multiple adjunction of adverbs to one maximal projection or whether there is adjunction to a series of maximal projections, some of which do not have an overt head.

(15) a. John is believed to *frequently* have *rudely* criticized Bill (her 12a)

b. John is believed to *frequently rudely* criticize Bill

c. John *frequently rudely* criticizes Bill

d. John has *frequently rudely* criticized Bill

Iatridou does mention French as having two consecutive VP-adverbs as in (16).

(16) a. *Souvent mal* faire ses devoirs, c'est stupide (her 51)

b. Faire *souvent mal* ses devoirs,... (her 52)

c. *Souvent* faire *mal* ses devoirs,... (her 53)

However she offers no explanation for these sentences. Although Iatridou refers to (16a) as a sentence with two VP-initial adverbs, what is their exact relationship? Is multiple adjunction to one node possible in English and French? The issue of adjunction will be addressed in Chapter 3.

2.3 Travis

Adverbs are freely generated in D-S with licensing at S-S or LF by a feature in the head (I, V) to which they are adjoined. The licensing restricts the occurrence of adverbs. Travis' account of licensing attempts to explain both the generation and distribution of adverbs.

First, adverbs are neither arguments nor predicates. (17) and (18) show that adverbs are not arguments since they receive no θ-role nor are they licensed via

predication since they are not predicated of anything[10].

(17) Horatio has *evidently* lost his mind (Travis 5b)

(18) Stanley *easily* ate his Wheaties (her 6b)

Second, she claims adverbs are heads that cannot project to phrasal categories and thus could not take complements[11] as shown in (19).

(19) *proudly of their achievements (her 18b)

Adverbs are generated in an adjunction position to a head as shown in Figure 2, and it is some feature in that head that licenses the adverb. The feature percolates from the head X to its maximal projection XP.

Feature percolation from a head X to a phrasal category XP allows the adverb to be licensed anywhere within the scope of that XP as shown in Figure 3 (see Travis 1988: 12)[12]. For example, *probably* in (20) could be in any of the 3 positions

[10]Travis used these sentences to illustrate possible positions of adverbs. Concerning licensing, she states that adverbs are not arguments and get no θ-role. The idea that the adverb is not predicated of anything presumably refers to the Principle of Full Interpretation that maximal projections are licensed by predication, and she considers adverbs not to be maximal projections.

[11]Travis (1988: 18) does point out counter examples with speaker-oriented adverbs; however I point out in the analysis subsection that adverbs seem to take complements, which would dispute that adverbs cannot have phrasal projections. Also because they can take specifiers they would seem to be maximal projections. For example, *Stanley very easily ate his Wheaties.*

[12]Feature percolation explains the different possible adverb positions in English. In German and

Figure 2

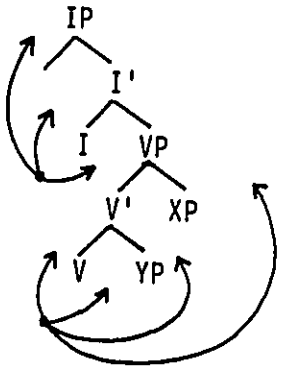

Figure 3

indicated under the IP node in Figure 3, and *slowly* in (21) could be in any of the 4 positions indicated under the VP node in Figure 3[13].

(20) a. George has *probably* read the book (her 32a)

b. George *probably* has read the book (her 32b)

c. *Probably*, George has read the book (her 32c)

(21) a. Mary will have *slowly* put the book on the table (her 33a)

b. Mary will have put the book *slowly* on the table (her 33b)

c. Mary will have put the book on the table *slowly* (her 33c)

The licensing features are Agr or Event for I and Agent or Manner for V. If the adverb is licensed it assigns an adjunct θ-role[14]. If Agr is the licensing feature, whatever Agr is coindexed with (the subject *Fred*) gets the adjunct θ-role as shown in (22a). If Manner is the feature, the external argument of the verb (the agent *police*) gets the adjunct θ-role as in (22b).

Icelandic, according to Travis, feature transmission is from the head X to its sister YP and down to the Y allowing for adverbs' range to be restricted to within the VP since the features of I have been transmitted to V.

[13]Note that in English the adverb can not be in a position between the V and its object. This has customarily been related to the requirements of case theory. So if YP in Figure 3 is an object, then there are only 3 possible positions.

[14]Travis does not say what she means by an "adjunct θ-role" except to refer to Zubizarreta (1982) and to the adjunct θ-role being assigned to whatever Agr is coindexed with. But how is an agent adjunct θ-role assigned by a feature in V?

Table 2.1: Travis' Classification of Adverbs

Initial/Aux	VP-initial/VP-final	Aux	VP-final
Class Ia	Class Ib		
Class IIa	Class IIb		
Class III			
	Class IV		
			Class V
		Class VI	

(22) a. Fred *carelessly* will be arrested by the police (her 44b)

b. Fred was arrested *carelessly* by the police (her 44d)

Basically adverbs are subdivided as to whether they occur under IP and are licensed by I (i.e., initial or aux positions), or whether they occur under VP and are licensed by V (i.e., VP-initial or VP-final). Travis' division is based on Jackendoff's (1972) classification of adverbs. She groups them as to whether they occur under the IP node or the VP node. Her division is shown in Table 2.1.

Adverbs occurring in initial and aux positions are sensitive to the subject if from Jackendoff's Class I, and sensitive to the Event if from Class II or Class III. She called Class III epistemic or sentence adverbs[15]. A feature Agr or Event is in I to license the adverb. For example, as long as the adverb is under the IP node the surface subject will get the adjunct θ-role. In the active sentence (23a), *police* is the surface subject and gets the θ-role; and in the passive sentence (23b), *Fred*

[15]Recall that Jackendoff assigned the projection rule $P_{speaker}$ to Class III adverbs.

is the derived surface subject and gets the θ-role. In (23c) the whole event *will be arrested by the police* is modified by the adverb under the IP node.

(23) a. The police *carelessly* will arrest Fred (her 11a)

b. Fred *carelessly* will be arrested by the police (her 11b)

c. Fred *quickly* will be arrested by the police

Adverbs occurring in VP-initial or VP-final positions are sensitive to the agent[16] if from Class I and sensitive to Manner if from Class II or IV. A Manner or Agent feature in V licenses the adverb. The adverb under the VP node will assign an adjunct θ-role to the agent *police* which is the subject of active sentences as in (24a) or to the agent *police* which is object of the preposition *by* in passive sentences as in (24b). In (24c) the process is modified by the adverb *easily* under the VP node.

(24) a. The police arrested Fred *carelessly* (her 11c)

b. Fred was arrested *carelessly* by the police (her 11d)

c. Fred was arrested *easily* by the police

[16] I disagree with the idea of agent sensitivity needing to be assigned and comment on this in the analysis subsection. For a still different treatment of "passive-sensitive" adverbs, and adverbs in general, see McConnell-Ginet (1982).

Table 2.2: Travis' Adverb Licensing

Position	Type	Licensor	Feature	Scope
initial/aux	sentential	I	event	IP
initial/aux	subject-oriented	I	Agr	I
VP-initial/VP-final	manner	V	agent/manner	V

These adverbs are heads that can move anywhere under the maximal projection of the head that licenses them. This is summarized in Table 2.2. Not included in this table are speaker oriented adverbs that Travis suggests are licensed by a discourse feature in C; Class VI adverbs licensed by a feature in I but marked [-transportable]; and Class V adverbs that do not fit this typology since they are maximal projections (hence their inability to move from final position since they can only move to another XP).

2.3.1 Analysis

The basis of Travis' proposal is the assumption that adverbs are not maximal projections. Not being maximal projections they are not licensed by predication, θ-role assignment nor operator licensing. Being heads they cannot be licensed by X-bar theory since they are in an adjunction position. Hence a new type of head licensing is proposed. However there are problems with the assumption that adverbs are bare heads.

First, adverbs can take specifiers as shown in (25) which supports the idea that

adverbs can be heads of maximal projections[17].

(25) a. *Very clumsily for an adult* John dropped his cup of coffee

b. Stanley *quite easily* ate his Wheaties

c. Mary will have put the book on the table *extremely slowly*

Second, there are counter examples that show adverbs can take an XP complement, thus projecting to the phrasal category[18] as in (26). These involve maximal projections of the adverb head since the sentences are unacceptable without the adverb head as in (26b) and (26d).

(26) a. *Clumsily for an adult* John dropped his cup of coffee

b. **For an adult* John dropped his cup of coffee

c. Stanley ate his Wheaties *quickly for a little boy*

d. *Stanley ate his Wheaties *for a little boy*

You cannot move the PP out of the adjunction. (27a) is *S for the reading

[17]Abney (1987) and Grimshaw (1991) have an AdvP headed by a DegP with the adverb the lexical head of the extended projection. For Abney an adverb could be generated in [SPEC, DegP] or in [SPEC, AdvP] while for Grimshaw adverb specifiers are generated in [SPEC, AdvP] and move to [SPEC, DegP]. Hence my analysis is compatible with Abney's and Grimshaw's construction of an adverb phrase. We differ on the licensing and generation of ([DegP)[AdvP.

[18]In the examples in (26) if the adverb was not considered a head with a complement, then the adverb would be a head adjoined to a PP with the P licensing the adverb. And in this scenario what would license the PP to the sentence?

where the PP moves out of the AdvP since there is a meaning change. What (26a) says is that John, being an adult, was clumsy to drop his coffee. What (27a) says is that most adults drop their coffee in a particular way but that John did it in a fumbling way. (27b) and (c) show that you cannot extract from the AdvP and still maintain the meaning that is in (26a) and (27d).

(27) a. **For an adult*, John dropped his cup of coffee *clumsily*

b. *It is *clumsily* that John dropped his cup of coffee *for an adult*

c. *It is *clumsily* that *for an adult* John dropped his cup of coffee

d. It is *clumsily for an adult* that John dropped his cup of coffee

The counter examples in (28a) and (c) to her *proud*, *proudly* as in (28c) indicate that semantic restrictions could be responsible for the lack of complements after adverbs as suggested to Travis by Kayne (see Travis (1988: 7)).

(28) a. Mary is *proud for a little girl*

b. *Mary is *for a little girl*

c. Mary walked *proudly for a little girl*

d. *Mary walked *for a little girl*

e. **proudly* of their achievements (her 18b)

This suggests that adverbs are maximal projections. Not being arguments they could be predicates, and hence predicated of a subject which is also a maximal projection.

If adverbs can be maximal projections can they be licensed by predication or is a special form of licensing still needed? Another form of licensing might be necessary if adverbs were adjoined to a non-maximal projection. First it would be necessary to show that, for English, adverbs are adjoined to a head. Since adverbs do not occur between a verb and its object in English, all adverbs under the VP node need not be adjoined to a non-maximal projection. For example, in (29a) the adverb *quickly* could be adjoined to the VP as in Figure 4a. When the I moves to V the $NP + Adv + V$ order results. In (29b) the adverb is adjoined to the right of VP as in Figure 4b.

(29) a. John *quickly* ate the meat

b. John ate the meat *quickly*

A possible position where adverbs might be adjoined to a non-maximal projection is under the IP node[19] between a subject and a tensed auxiliary. This is

[19]Pollock (1988) points out that English but not French allows for an adverb between the subject and verb. As noted by Zagona in the next section, Spanish also allows an adverb between the subject and verb.

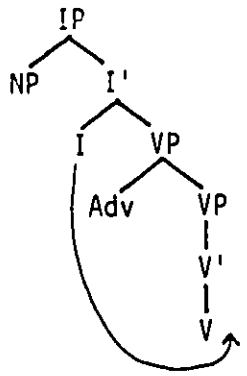

Figure 4a

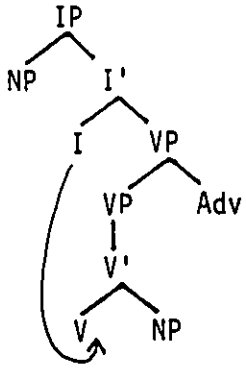

Figure 4b

illustrated in (30) and Figure 5 where *quickly* could be adjoined to I′ or to I.

(30) John *quickly* has been eating the meat

Another problem with the head licensing is that it cannot distinguish between modification of a V and of a VP since the features of the head percolate to the XP. Travis handled this by assigning scope values to adverbs. Her VP-initial/VP-final adverbs had V scope. But how is scope to be selected by an adverb? As shown in (31) the adverbs clearly have scope over the entire VP. In (31a) the adverb *slowly* is predicated of the whole VP *ate his dinner.* In (31b) the adverb *yesterday* is predicated of the entire VP with its adjoined adverb *ate his dinner quickly.*

(31) a. John ate his dinner *quickly today* but *slowly yesterday*

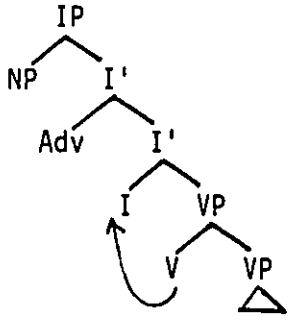

Figure 5a

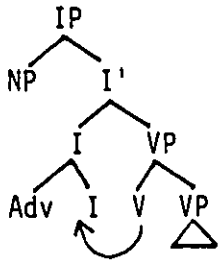

Figure 5b

b. John ate his dinner *quickly today* and *yesterday*

The final aspect of Travis' analysis that requires comment was referred to earlier (see note 16). She refers to a feature Agent in V allowing Manner adverbs to assign an adjunct θ-role to the agent. This is to allow the adverb to ascribe Manner to the subject in active sentences and to the object of the preposition *by* in passive sentences.This is shown in (32).

(32) a. The police will arrest Fred *quickly* (her 12b)

b. Fred will be arrested by the police *quickly* (her 12d)

There is no need to specify an adjunct θ-role as Manner adverbs are predicated

of the VP or V'. θ-roles would be assigned by the V in D-S. Hence Manner is attributed to the agent θ-role assigned by the verb for both active and passive sentences.

Based on this analysis of Travis' article, and contrary to her position, I will consider adverbs to be maximal projections. The following chapter considers if they can be licensed by predication and the projection they are adjoined to. Another problem addressed is why adverbs can occur between a subject and tensed auxiliary in English. Adjunct θ-roles is not an issue and hence will not be addressed further. The syntax of adverbs will determine the arguments while the semantics covers the selectional restrictions of the adverb and θ-role selection by verbs.

2.4 Zagona

Zagona, like Iatridou and Travis, deals with pre- and post-VP adverbs. However, unlike them, she does not have adverbs only in an adjunct position, and she deals primarily with a different group of adverbs[20]. Zagona has adverbs generated in specifier and complement as well as adjunct positions as shown in Figures 6 and 7[21].

[20]Note that Zagona uses the distribution of this group of adverbs (*scarcely* type) to support her claim that both auxiliaries and main verbs in English and Spanish have their own maximal projections.

[21]See Zagona (1988: 45).

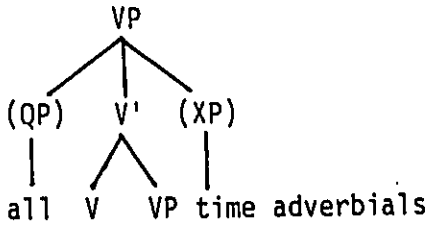

Figure 6: Auxiliaries

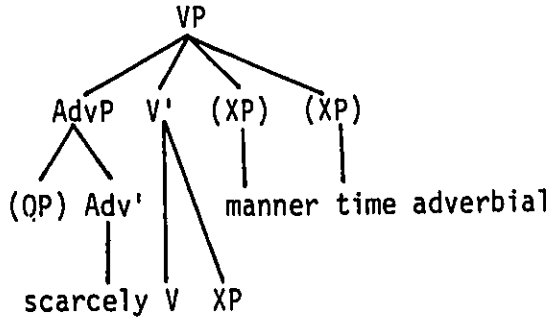

Figure 7: Main (theta-assigning) Verbs

Figure 6 shows that, for auxiliaries, adverbs are not generated in specifier position and there are no Manner adverbs. Only main verbs, as shown in Figure 7, can have adverbs as specifiers, complements, and adjuncts (both Manner and Time).

(i) Adverbs as [SPEC, VP]

Zagona deals primarily with pre-verbal adverbs of the *scarcely* class. They are generated in [SPEC, main VP] as shown in (33a) but can move up to [SPEC, aux] as shown in (33b) where the adverb can be in any of the blank pre-aux spaces.

(33) a. John *merely* writes (her 27b, p. 35)

b. John __ would __ have __ been *merely* questioned by the police (Zagona 36, p. 36)

The pre-verbal adverbs in [SPEC, VP] include *scarcely, simply, merely, really, hardly, barely, nearly.* They act like Degree adverbs and occur neither in a post-verbal position as in (34a) nor in a pre-subject position as in (34b)[22].

(34) a. *John writes *merely*

b. **Merely* John writes

[22]Recall that this is Jackendoff's class VI adverbs. He gave P_{merely} projection rule to these adverbs but he could not explain how the rule operated.

These adverbs can not be generated in a [SPEC, aux] position, but rather must move there. This can be illustrated by the sentences in (35), (36) and (37). A manner adverb can not be preposed to pre-VP position if a *scarcely* type adverb or its trace is present as in (35b) and (c).

(35) a. He may have been *intelligently/carefully* questioned

b. *John *merely intelligently* answered all the questions (her 35a, p. 36)

c. *He may *merely* have been *intelligently/carefully* questioned (her 38, p. 37)

You can not have *scarcely* type adverbs modifying both aux and VP as in (36).

(36) *They may *barely* be *hardly* finished (her 56b, p. 42)

The unacceptability of (37a) can be explained if *simply* is considered part of the [SPEC, VP] *all simply* as in (37b). Being a non-maximal projection it can not be extracted. This seems to be based on a comparison with sentences such as (37c) which she found acceptable.

(37) a. *They will *simply* have been *all* reading (her 54b, p. 41)

b. They will have been *all simply* reading (her 52a, p. 40)

c. They should have been *all* reading (her 41a, p. 38)

Since *all* can be generated in [SPEC, VP], if *simply* could be generated in [SPEC, aux] then (37a) would be acceptable, but it is not[23].

Thus when this class of adverbs occurs in [SPEC, aux] as indicated by the the blanks in (38), it must be due to movement from [SPEC, VP] rather than base-generation in [SPEC, aux].

(38) They __ will __ have __ been *simply* reading

In Spanish there is a similar class of pre-verbal adverbs that are generated in the specifier position of the main verb[24]. Like English *scarcely* adverbs they are generated only in [SPEC, VP] and can move to [SPEC, aux]. They follow the same patterns as the *scarcely* adverbs. That is, they do not occur post-verbally as in (39a); only one of these adverbs can occur pre-verbally even if an auxiliary is present as in (39b); they can occur in [SPEC, VP] as in (39c); and they can occur in [SPEC, aux] as in (39d).

(39) a. *Habia escrito la carta {*meramente/apenas/ hasta*} (her 44, p. 148)

'(S/he) had written the letter {*merely/barely/ even*}'

[23]Zagona points out that (37c) was considered "less natural" than sentences where *all* preceded one of the auxiliaries. My native English speaking Ottawa informants all found (37c) unacceptable. According to her diagram for Main (theta-assigning) Verbs as shown in Figure 7, she also should not have found (37c) acceptable.

[24]These adverbs include *meramente, ya, hasta, apenas, casi.*

b. *Juan *hasta* esta *casi* resolviendo el problema (her 4S, p. 149)

'Juan *even* is *almost* solving the problem'

c. Esos libros fueron *meramente* leidos (her 51a, p. 149)

'Those books were *merely* read'

d. Esos libros *meramente* fueron leidos (her 51b, p. 149)

'Those books *merely* were read'

(ii) Adverbs as Complements

Adverbs can appear as complements of verbs like *word*, *phrase*, and *behave* as shown in (40a). When the [SPEC, VP] position is unfilled, the adverb complement can move to it as shown in (40b).

(40) a. John worded the announcement *carefully*

b. John *carefully* worded the announcement (her 30, p. 35)

If the [SPEC, VP] is already filled, either by a *scarcely* type adverb as in (41a) or its trace as in (41b), the complement adverb can not move to the specifier position as shown in (41c) and (d). Nor can the complement move past an already filled specifier as in (41e).

(41) a. John *merely* worded the letter *carefully*

b. John *merely* had worded the letter *carefully*

c. *John *merely carefully* worded the letter

d. *John *merely* had *carefully* worded the letter

e. *John *carefully* had *merely* worded the letter

That these adverbs are complements is shown when *do so* replaces V′, i.e., the verb and its complement. When the adverb *well*, a daughter of V′, appears with *do so*, an ungrammatical sentence results as shown in (42)[25].

(42) a. *John phrased the announcement *badly*, but Bill did so *well* (her 24b, p. 34)

b. *The boys behaved *badly*, but the girls did so *worse*

Adverbs are adjuncts and not complements when they occur outside the V′ *do so* as in (43).

(43) Martha ate dinner *earlier* and George will do so *later* (her 23c, p. 33)

[25]Zagona points out (note 6, p. 53) that adverbial complements have peculiarities and are not completely distinct from adjuncts. This idea is further discussed in the following analysis subsection.

(iii) Adverbs as Adjuncts

Time adverbs are adjuncts that are generated to the right of auxiliaries and main verbs as shown in (44). The adverbs in (44a) and (b) are adjoined to the main verb where the present tense allows a present or future reading and hence acceptability of present or future Time adverbs.

(44) a. John comes home {**already/now/tomorrow*} (her 19a, p. 32)

b. John is coming home {**already/now/tomorrow* } (her 19b, p. 32)

c. John has come home {*already/?now/*tomorrow* } (her 19c, p. 32)

In (44c) the adverb is adjoined to the auxiliary. The present tense of the perfective aspect auxiliary does not allow a future reading, and hence the unacceptability of future Time adverbs. The perfective aspect *has* indicates completed action so *already* is acceptable[26].

Since Time adverbs can be adjoined to auxiliaries and to main verbs, structural explanations can be given to ambiguities as in (45).

(45) The secretary had eaten *at 3pm* (her 20b, p. 32)

[26]Note that Zagona words the explanation differently, saying the perfective *have* has [+PAST] as a feature. This is because she has features as part of auxiliaries to license main verbs, and I am not concerned with licensing of verbs. Zagona points out (note 3, p. 52) that if (44b) is interpreted as the progressive aspect, then *already* is acceptable.

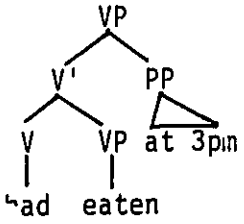

Figure 8a

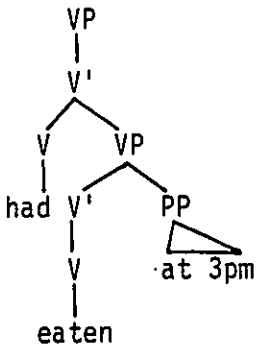

Figure 8b

Sentence (45) has 2 possible interpretations--the eating was done by 3pm, and the secretary was eating at 3pm. The first reading results when the adverb is adjoined to the auxiliary as shown in Figure 8a. If the adverb adjoins to the VP as in Figure 8b, the second reading arises[27].

In Spanish the same structural ambiguity arises with Time adverbs when the perfective aspect is used. For example, in (46) there are 2 possible readings depending upon what the PP adjoins to. If it is an adjunct of the auxiliary, then the time refers to the aspect *había* with the reading that Elena was finished eating at 3 o'clock. If it is an adjunct of the main verb, then there is the reading that at 3 o'clock Elena ate.

[27]Figures are from Zagona (1988: 33).

(46) Elena había comido *a las tres* (her 35, p. 145)

'Elena had eaten at three o'clock'

Manner adverbs are also adjuncts that are generated to the right of the main verb as in (47a). They can move to [SPEC, VP] position as in (47b)[28].

(47) a. John put away his books *carefully*

b. John *carefully* put away his books

They can not move to [SPEC, VP] that is already filled either overtly as in (48a) or by a trace from adverb movement as in (48b).

(48) a. *John *merely carefully* put away his books (her 35b, p. 36)

b. *He may *merely* have been *intelligently/carefully* questioned (her 38, p. 37)

Manner adverbs are generated only as adjuncts to the main verb. Hence they may not move to [SPEC, aux] position even if no *scarcely* type adverb or its trace is present as in (49)[29].

[28]Note that Zagona discusses this movement in terms of Manner adjuncts moving to [SPEC, VP] rather than to an adjunction position to the left of the main verb.

[29]Note that this sentence is often found acceptable. However in Jackendoff's terms it would be an adverb under S (not VP) with a $P_{subject}$ projection rule.

(49) *He may *carefully* have put away his books (note 7, p. 54)

In Spanish, unlike in English, Manner and Time adverbs can also occur between a verb and its objects as shown in (50)[30].

(50) a. Ponen *frecuentemente* las cartas en la otra caja (her 42a, p. 148)

'(They) put *frequently* the letter in the other box '

b. Cortó *rápidamente* el pan (her 42b, p. 148)

'(S/he) cut *quickly* the bread'

Zagona considered the positions some adverbs are generated in, and where they move to[31]. One class of adverbs are specifiers. The other adverbs she discusses are adjuncts which are AdvP predicates. Predication is a syntactic relationship between a predicate and its subject where the AdvP and its subject are co-indexed via mutual c-command. Like other predicates in English the subject is on the left[32].

[30]However these adverbs can be explained by the V to I movement in Spanish where the V passes the adverb in pre-VP position. See Chapters 3 and 4 for where this pre-VP position is and how the adverb gets there.

[31]The licensing of adverbs as presented here is what I gleaned from Zagona's description of licensing of VPs and what distinguishes them from licensing of AdvPs. Licensing of adverbs in [SPEC, VP] was not mentioned.

[32]Note that the Principle of Full Interpretation requires all elements to be licensed by subcategorization or predication to get an interpretation at PF and LF. Zagona's book looks at the licensing of VPs and alters it to include temporal marking by I^o. AdvP adjuncts, however, appear to be licensed just by predication.

The adverb adjuncts are coindexed with the verb head. Lexical properties of the verb head determine what type of specifiers, complements, adjuncts are allowed. Hence auxiliary heads, e.g., perfective *have*, require a VP complement, do not allow a specifier, and allow a Time adverb adjunct as optional. Specifiers, complements and adjuncts for main verbs will depend upon the lexical properties of the verb head.

2.4.1 Analysis

Zagona has adverb adjuncts represented schematically as generated on the right of multiply branching VPs as in Figure 6 and 7. If her VP projections were represented as binary branching structures (as they are for Iatridou and Travis) then the VP projections would be as in Figure 9 and 10.

Zagona refers to *scarcely* type adverbs as being generated in "the specifier of VP position" and to there being an "independent specifier position for each auxiliary." There is an immediate problem with sentences such as (33b) repeated here as (51). If the subject NP *John* is in [SPEC, IP] how could *merely* also be there? If the alternative approach (cf. Sportiche 1988) is taken where the subject is base-generated in [SPEC, VP] and moves up to [SPEC, IP], how could the *scarcely* type adverbs be base-generated in [SPEC, VP]?

(51) John *merely* would have been questioned by the police

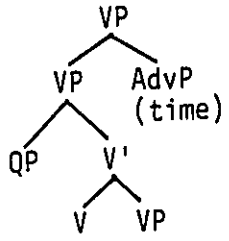

Figure 9: Auxiliaries

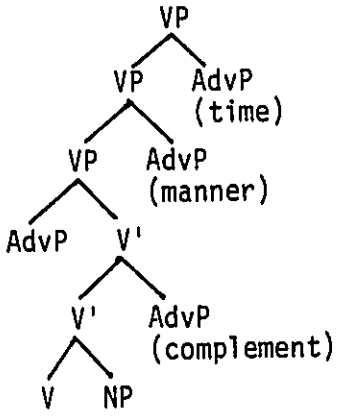

Figure 10: Main (theta-assigning) Verbs

A solution for both analyses where the subject is generated in either of two different positions is to have *scarcely* adverbs generated in an adjunction position to the left of the verb. An adjunction to the left would not seem to affect her analysis. There would be adverbs generated to the left and to the right of the VP with adverbial movement to the left possible if an adjunction position was not filled. The criteria she uses to support *scarcely* adverbs being generated to the left of VP is not questioned since a filled adjunct position on the left could not be moved into; *all simply* could still form one constituent with *all* in the specifier position of the adverbial phrase as in (37b) repeated here as (52). In order to account for the adverb's position between the NP subject and the modal, this adjunction position could not be to the left of XP. Possible solutions would have an adjunction position on the left of V′ or V as in Figure 11a and b respectively.

(52) They will have been *all simply* reading (her 52a, p. 40)

Complement adverbs are adjuncts of V′. They only move to a position to the left of VP if there is an unfilled adverbial position. Zagona describes these adverbs as moving to an unfilled [SPEC, VP]. However it is unlikely that complement adverbs move out of V′. Zagona gave (40b) repeated here as (53a) as an example of adverbs selected by the verb being preposed. This example is an exception in

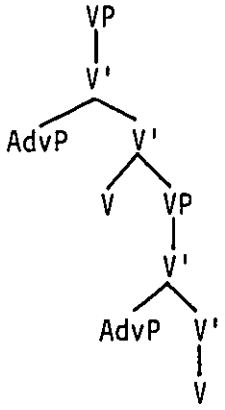

Figure 11a

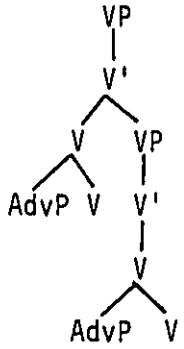

Figure 11b

that (53b) is often considered acceptable while (53d) and (53c), which are similar to (53a), are considered unacceptable[33]. If complement adverbs (V′ adjuncts) do not move to the left, there is a more consistent explanation of adverb movement. Adverbs adjoined to the right of an XP may move to the left if the position is not already occupied by an adverb or its trace.

(53) a. John *carefully* worded the announcement (her 30, p. 35)

b. John worded the announcement

c. *John *carefully* worded the letter

d. *John *elegantly* dressed

[33]Jackendoff (1972: 64) has (53c) as unacceptable.

I will assume Zagona's analysis of auxiliaries and main verbs where both head maximal projections as in her Figures 6 and 7, and modified in Figures 9 and 10. Thus auxiliaries can have adverbs adjoined on right, but no base-generation of complement adverbs or *scarcely* type adverbs. Main verbs can have adverb complements, and adverb adjuncts on the right and specifier type adverb adjuncts on the left. Recognizing these separate levels for adverbs and that adverbs move to the left, helps explain combinations of adverbs.

Manner and Time adverbs are adjuncts of VP, perhaps licensed by a verb feature. It is possible for both aux and main verb to have Time adverbs. In Figure 12 and (54), the Time adverb *already* is adjoined to the auxiliary VP and the Time adverb *yesterday* is adjoined to the main VP. Movement of the aux Time adverb must occur since if both adverbs remain *in situ* an incorrect S-S results as in (54b)[34].

(54) a. John had *already* come home *yesterday*

b. *John had come home *yesterday already*

The main VP Time adverb could not move since Time adverbs like *yesterday* do

[34]Generating certain time adverbs on AuxP and VP results in not allowing the adverbs to remain *in situ*. Chapter 4, Section 4.4 reconsiders where time adverbs are generated and thus eliminates this problem.

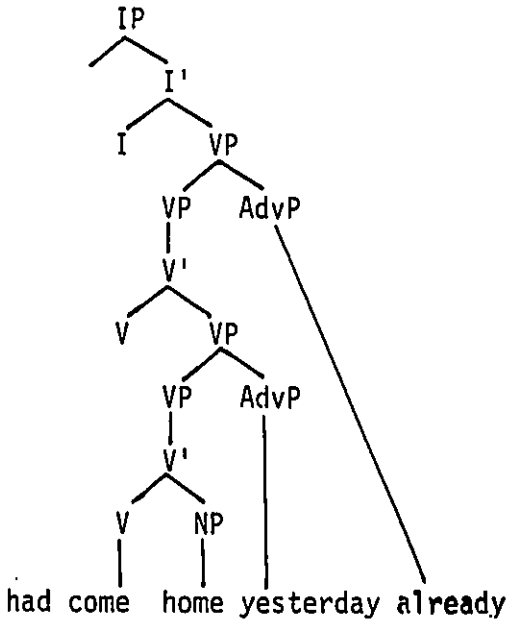
IP
I'
I
VP
VP
AdvP
V'
V
VP
VP
AdvP
V'
V
NP
had come
home yesterday already

Figure 12

not occur pre-VP as in (55).

(55) a. John came home *yesterday*

b. *John *yesterday* came home

This reanalysis raises several important points about the movement and licensing of adverbs.

1. Why are some adverbs (*scarcely* type) adjoined on the left only?

2. How do *scarcely* type adverbs occur between a subject NP and a modal since the subject is in [SPEC, IP] (whether through base-generation or through movement)? Is this similar to the problem noted earlier of adverbs occurring between the subject and tensed auxiliary?

3. Are *scarcely* type adverbs adjoined to V′ or V? If they are not adjoined to XP why can not an adverb move to the left to an empty adverbial adjunction position attached to XP?

4. If adverb complements are adjoined under V′, why can they not move to the left, still being adjoined under V′?

5. Why do adverbs adjoined to the right of XPs higher than VP move to the left if an adverb is adjoined to the right of VP?

2.5 Summary

This chapter looked at three different syntactic treatments of adverbs. Iatridou showed that there are separate positions for adverbs before auxiliaries and main verbs as in (9a) repeated here as (56a), and that adverbs can form part of a predicate as in (11c) repeated here as (56b).

(56) a. John is believed to *frequently* have *rudely* criticized Bill

b. I consider John to be *deliberately* sarcastic

Zagona's contribution to these positions is that adverbs are predicates base-generated on the right of their subject and can move to a position on the left if it is not filled by an adverb or its trace as in (48b) repeated here as (57).

(57) *He may *merely* have been *intelligently/carefully* questioned

Zagona also showed that some adverbs are complements of verbs and as I showed they do not move as in (52c) repeated here as (58).

(58) *John *carefully* worded the letter

She also showed that certain adverbs are base-generated to the left of main verbs and can move to any pre-aux position indicated as in (33) repeated here as (59). I suggested that these adverbs are adjoined possibly to V′ or V.

(59) John _ would _ have _ been *merely* questioned by the police

The review of Travis' article showed that there is no reason to not consider adverbs as maximal projections licensed by predication. There is the potential problem though of licensing adverbs adjoined to the left of a non-maximal projection (V′ or V).

The next chapter will look at some of the important theoretical issues raised in the summary, that is, adjunction, predication and licensing.

Chapter 3. Adjunction and Government

3.1 Introduction

I have been assuming that adverbs are predicates. The only study considered so far that does not is Travis (1988). As discussed in Section 2.3, her premise was that adverbs were not predicates (nor arguments) since they are not predicated of anything and they are not maximal projections. However in the analysis subsection I showed that adverbs do indeed project to a maximal phrase. Hence there was no reason not to consider adverbs as predicates and licensed by predication. It is the nature of this licensing which will be the focus of this chapter.

Jackendoff (1972) had the predicate structure of adverbs reflected in his projection rules. $P_{speaker}$ and $P_{subject}$ adverbs take the sentence as one of their two arguments[1] while P_{manner} adverbs have the V/VP as their only argument[2]. The analysis of Bellert (1977) showed that sentential adverbs and VP-adverbs have different argument structures–while S-adverbs have 2 arguments, VP-adverbs have only 1 argument. Since negation behaves differently with respect to S-adverbs and

[1] Although his projection rule for $P_{speaker}$ adverbs only refers to the reading of the sentence as an argument, his paraphrase for a sentence with a $P_{speaker}$ adverb indicates the speaker is an argument. See also McConnell-Ginet (1982) for S-adverbs having two arguments.

[2] Recall that Jackendoff gave no projection rules for P_{merely} and P_{root} adverbs.

VP-adverbs[3], and negation has scope over the sentence at LF, then the predication of adverbs will be relevant at S-S, D-S and LF. Rochette (1990a, b) considered adverbs to be predicates that select a semantic category. Adverbs would be secondary predicates that select 1 or 2 arguments. They are secondary predicates because their arguments can already be an argument of another predicate. The adverb governs the head of its argument at S-S. Iatridou does not mention predication. Zagona considered adverbs as predicates generated on the right of their subjects. The AdvP and its subject are co-indexed via mutual c-command. The lexical properties of the V would determine what kind of VP-adverb could appear.

Assuming that adverbs are predicates, how are they licensed? There is no agreement in the literature as to how predicates are licensed. Discussion of non-verb predicates often focusses on small clauses. For those studies dealing with adverbs, Zagona has the AdvP and its subject in a mutual c-command relationship. Rizzi (1990: 40) has a subject and its predicate in a relation of mutual m-command. M-command is necessary for predicates to govern their subjects in small clauses[4] or for predicates when their subject is the object of the verb as in Figure 1.

Whether predication requires a c-commanding or m-commanding relationship depends upon whether the AdvP is adjoined to an XP or an X′. In both examples

[3]S-adverbs have scope over negation while negation has scope over VP-adverbs. Recall from Section 1.3 that for negative sentences with adverbs, a S-adverb implies the sentence with negation while for VP-adverbs the sentence without negation and without the adverb is implied.

[4]See Rizzi (1990: 49-51).

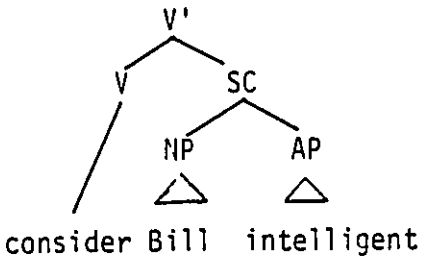

Figure 1a

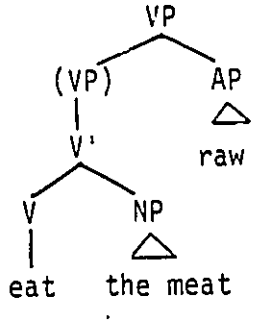

Figure 1b

in Figure 1, the predicate (AP) c-commands its subject (NP). Only in Figure 1a does the NP subject *Bill* mutually c-command its AP predicate *intelligent*. But in both Figure 1a and 1b, the NP subject (*Bill* and *the meat*) m-commands its AP predicate (*intelligent* and *raw* respectively). Thus, an important issue this chapter deals with is what node the AdvP is adjoined to, how the adverb predicate licenses its subject(s), and if the relationship is satisfied at D-S, S-S or LF. Section 3.2 on Adjunction Positions looks at base-generated positions as outlined so far, and as in Haegeman (1991) and Rizzi (1990), and at the licensing of adverbs.

Licensing will have to account for the possible adjunction positions for adverbs that exists in English between a subject and a tensed auxiliary and that does not exist in French as shown in (1). It also has to account, in part[5], for why the presence of an adverb generated to the left of the main verb prevents adverbs generated to the right of the verb moving to the left past the verb as shown in

[5]This includes whether pre-VP generated adverbs are in an adjunction position or whether they are in an *A'* specifier position as Rizzi (1990) has quantifier adverbs such as *beaucoup* in French or in [SPEC, VP] as Zagona has them generated.

(2). It must also crucially account for the adverb position after the first tensed auxiliary or modal for sentential adverbs as shown in (3) and (4)[6].

(1) a. John *merely* would have been questioned by the police (Zagona 36, p. 36)

b. My friends *rarely/often/seldom* have helped me (Pollock p. 370)

c. George *probably* has read the book (Travis 32b)

d. *Pierre *à peine* a parlé l'italien

(2) *He may *merely* have been *intelligently/carefully* questioned (Zagona 38, p. 37)

(3) George has *probably* read the book (Travis 32a)

(4) a. George *probably* has read the book

b. George will *probably* have read the book

c. *George will have *probably* read the book

d. George *probably* read the book

e. *George read *probably* the book

Section 2.4 suggests that adverbs are base-generated in a position and can move as in (5). Some adverbs can be adjoined to the right of AuxP and VP and can move to the left past the verb as in (5a)[7]; some adverbs are generated to the

[6]See Section 1.4, note 21.

[7]These would include P_{manner} adverbs that can move immediately to the left of the verb. Adverbs in final only position are within the VP and do not move to the left since they are subcategorized for by the verb.

left of the main verb and could move to the left of auxiliaries and modals as in (5b)[8]; and some adverbs are generated to the right of IP and can move to the front of the sentence or after the subject or after the first auxiliary as in (5c)[9].

(5) a. George has _ eaten *already*

b. John _ would _ have _ been *merely* questioned by the police

(Zagona 36, p. 36)

c. _ George _ will _ have read the book, *probably*

Section 3.3 looks at the movement of adverbs including movement through adjunction. It relates movement to traces and the need to satisfy the ECP and antecedent government. I use Rizzi's definition of the ECP. According to Rizzi, a nonpronominal trace must satisfy ECP (i.e., be properly head governed) and antecedent government. Head government and antecedent government are defined as follows (1990: 25).

Head Government: X head governs Y iff

X is a head that m-commands Y,

[8]This is the P_{merely} class of adverbs.

[9]These would include $P_{speaker}$ and $P_{subject}$ adverbs. Time adverbials as discussed in Section 2.4 can also be to the right of IP, and are more restricted in where they move to. This issue is discussed later in this chapter.

X is [±V, ±N], Agr or T,

no barrier intervenes and relativized minimality is respected.

Antecedent Government: X W-antecedent governs Y (where W=A, A', X^0) iff

X is in a W-position that c-commands Y,

W and Y are coindexed,

no barrier intervenes and relativized minimality is respected.

Section 3.4 relates base-generation adjunction positions to the predication requirements of adverbs. Section 3.5 summarizes the discussion on adverb generation, movement and licensing.

3.2 Adjunction Positions

Haegeman has maximal projections base-generated to the right of XPs and X's in adjunction positions. Her examples are in (6) and Figure 2. For raising verbs as in (6a), the IP is generated to the right of V' as in Figure 2a[10]. "NP adverbials" such as *every night* in (6b) are adjoined to the right of V' as in Figure 2b[11]. Manner

[10]These figures are D-S figures. Hence, Figure 2a is before movement of the NP *replicants of themselves* to subject position of the main clause.

[11]Haegeman's (99b) was actually [$_{VP}$ [$_{VP}$ [$_{V'}$ drink t_i] every night] [$_{NP_i}$ two...lemon]]. This did not correspond to her Figure 100, p. 383, shown as my Figure 2b. I have altered her bracketing

adverbials as in (6c) are VP constituents and are generated inside VP as in Figure 2c[12]. Time adjuncts are base-generated in an adjunction position to the right of IP as in (6d) and Figure 2d. The only base position she shows adjoined to the left is topic position as in (6e) where the topic is base-generated to the left of IP.

(6) a. $[_{IP}$ [Replicants of themselves]$_k$ seemed to the boys $[_{IP}$ t_k to be ugly]]
(H. 96c, p. 317)

b. My doctor told me to $[_{VP}$ $[_{VP}$ $[_{V'}$ drink t_i *every night*]] $[_{NP_i}$ two...lemon]]
(H. 99b, p. 382)

c. I wonder $[_{CP}$ how$_i$ $[_{IP}$ John will fix it t_i]] (H. 22, p. 410)

d. I wonder $[_{CP}$ when$_i$ $[_{IP}$ John bought it t_i]] (H. 21a, p. 409)

e. $[_{IP}$ Simeon$_i$ $[_{IP}$ I don't like him$_i$]] (H. 64a, p. 369)

Although these examples include more than adverbs, adjunction can be recursive in either direction for both XP and X′. This is shown in her modified X-bar schema where the semi-colon indicates that order is irrelevant[13]. For English, however, the adverbials she showed were generated to the right; and, for our purposes, the YP could indicate an AdvP.

---

in (99b) to correspond with her figure. The Figure 2b is the D-S figure before heavy NP shift moves the subcategorized NP *two ... lemons* to the right and adjoins it to VP.

[12]Haegeman (p. 411, Figure 24) actually had a figure as represented by $[_{I'}$ I $[_{VP}$ $[_{V'}$ V NP] $[_{PP}$]]]. There is no reason to expect such a structure as it would violate X-bar construction for English by having specifiers (PP) on the right (of V′). Hence I altered her Figure 24 to have the PP adjoined to V′ rather as a specifier to VP since she describes the adverb as being inside VP.

[13]See Haegeman (1991: 369).

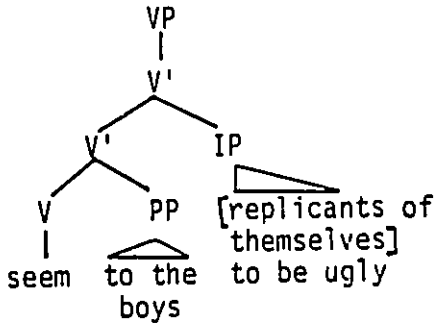

Figure 2a

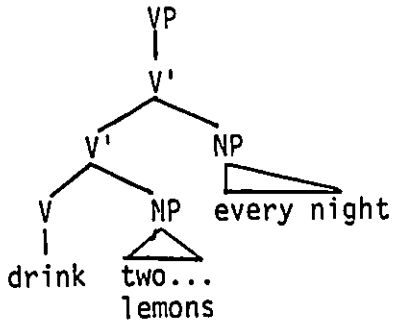

Figure 2b

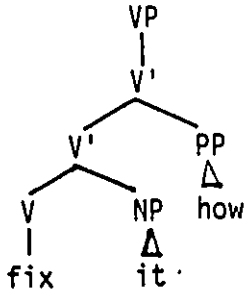

Figure 2c

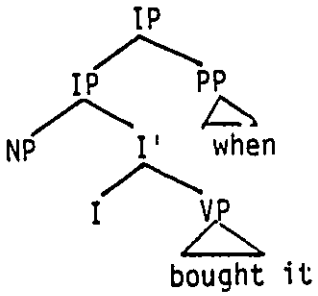

Figure 2d

$$XP^* \rightarrow XP\ ;\ YP$$

$$XP \rightarrow SPEC\ ;\ X'$$

$$X'^* \rightarrow X'\ ;\ YP$$

$$X' \rightarrow X\ ;\ YP$$

Adverbs base generated to the right of their subjects prevents overgeneration of adverbs. X-bar theory allows only one recursion and hence there would not be multiple base generated adjunction to one node.

As noted in Section 2.4, Zagona has manner adverbs adjoined to V′ and time adverbs optionally adjoined to VP or IP. Haegeman's frequency adverbs (NP adverbials like *every night*) are adjoined to V′ as are manner adverbs (PPs), and time adverbs are adjoined to IP. If IP were split into AgrP and TP, then the time adverbs would be adjoined to the TP part of inflection. Rizzi has sentential adverbs adjoined to a functional projection (AgrP or TP). They can not be head governed and are just in an m-command relationship with the clause they modify. VP-adverbs are adjoined to or within VP, a lexical projection. The position is properly head governed by V or T so when the VP-adverb moves its trace can satisfy the ECP as long as no potential governor intervenes.

Zagona has P_{merely} type adverbs generated in an A' specifier position as [SPEC, VP]. Like Zagona, Rizzi has certain adverbials in French generated in an A' specifier position as [SPEC, VP]. This is shown in (7a) where Rizzi describes the

quantifier phrase *beaucoup* as being generated in [SPEC, VP]. If unfilled, a QP specifier such as the QP specifier of the NP object in *beaucoup de livres* can move into that position as shown in (7b).

(7) a. Il a *beaucoup* consulté ces livres (Rizzi 28, p. 12)

b. Il a *beaucoup*$_i$ consulté [t_i de livres] (Rizzi 29b, p. 12)

In Section 2.4 the problem of having a *merely* type adverb generated in [SPEC, VP] and optionally moving to higher specifier positions was noted. The problem was that these adverbs could be to the left of modals and tensed auxiliaries and main verbs. In particular, for English, it would require the subject to be adjoined to IP and/or to VP rather than in specifier position. I suggested that these adverbs were not in a specifier position but were adjoined to the left of a projection of the verb, leaving open to what projection they were adjoined. Now I suggest that P_{merely} type adverbs (and QPs in French) are adjoined to the left of V'[14].

[14]Only these adverbs would be base-generated to the left of V' in an adjunction position. This is base-generated adjunction to an X' and movement into an empty X' adjunction position. It is not movement by adjunction which would be against the current assumptions that adjunction movement is to a non-argument maximal projection (cf Chomsky 1986b). Riemsdijk (1989) proposes that move α includes move X' as well as XP and X^0 but does not include adjunction movement. He cites (note 22, p. 133) ongoing research by Vergnaud that "a sentence consists of a set of X'-projections that may contain open (i.e. empty) positions that act like slots into which other members of the set (i.e. other simplex X'-trees) may fit with substitution of an X'-tree into an open X'-slot." This is not the same type of movement that I am proposing, since mine involves moving an XP from within X' and not the entire X'.

Having the P_{merely} adverbs (and QP adverbials) in an adjunction position instead of in an A' specifier position poses no problem for Relativized Minimality. The definition of antecedent government (see Section 3.1) refers to A' positions[15]. There would be no problem with this change, as Rizzi (cf. p. 17) earlier refers to A' binders[16].

Adverbs are generated to the right of their subjects, adjoined either to V' or to XP. This predication role is established at D-S. How is the subject of the adverb licensed? It is generally considered that it is the maximal projection of a predicate that governs the subject. I will briefly explain why, though the adverb is the predicate that selects its subjects, it is the AdvP that must govern its subjects.

[15]Although his definition of an A' chain refers to an A' specifier, it could be altered to specify position or binder rather than specifier as in *Z is a typical potential antecedent governor for Y, Y in an A' chain = Z is an A' position c-commanding Y.*

[16]Rizzi also has negation in an A' specifier position since it blocks antecedent government in A' chains as in (a) but it does not block head government as in (b) or (c) nor antecedent government in A chains as in (d).

a. **Combien* n'a-t-il pas conduit [*t* de voitures] (Rizzi 49, p. 19)
b. They have$_i$ not t$_i$ left (Rizzi 62b, p. 22)
c. Jan köpte$_i$ inte t$_i$ boken (Rizzi 64a, p. 22)
d. John$_i$ does not seem t$_i$ happy

Rizzi considered negation (*not* in English and *pas* in French) to also be an A' specifier of VP. What effect do these changes have on negation? Negation need not be an A' adjunct nor an A' specifier of VP. It can be explained by negation being an A' specifier of NegP. Note that Rizzi himself points this out in his Appendix 1 (p. 22) and in Notes 15 and 17 for Chapter 3 (p. 115 and 116). For English it would be appropriate to have negation and the P_{merely} adverbs generated in different positions as they behave differently, notably *not* can not move in front of auxiliaries or modals whereas the P_{merely} adverbs can; and *not* can not move to [SPEC, CP] whereas P_{merely} adverbs can move to [SPEC, CP] where they induce subject-aux inversion.

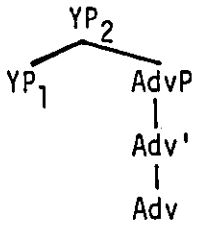

Figure 3a

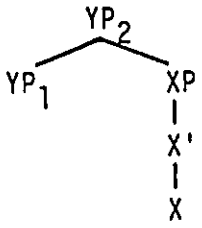

Figure 3b

Depending upon the definition[17], government requires an α-commanding relationship. Since m-command is less restrictive than c-command I will look at government under m-command. For X to m-command its subject YP_1, there are 2 conditions: neither X nor Y can dominate each other, and the first maximal projection dominating X must dominate Y. As shown in Figure 3, the first requirement is satisfied since neither X (Adv^0) nor Y (YP_1) dominate each other[18]. The problem is with the requirement that the first maximal projection dominating X must dominate Y. The first X^{max} dominating X (Adv^0) is XP (AdvP) and it does not dominate Y. The Adv^0 can never m-command nor c-command its subject YP. Thus it is the maximal projection of the adverb predicate that must govern its

[17]See Section 1.1.

[18]Y does not dominate X because everything that YP_1 dominates is not the same as everything YP_2 dominates. Thus YP is not considered to dominate XP.

subject. Neither X nor Y dominate each other, and the first X^{max} (YP_2) dominating X (AdvP) dominates Y (YP_1)[19]. For predicates, the X and Y in α-command definitions refer to maximal projections.

Henceforth, whenever reference is made to licensing or government by an adverb, it is to be interpreted as licensing by an AdvP. Licensing by an adverb then satisfies the definition of government as follows.

- X is a maximal projection that m-commands its subject Y
- X has lexical content, being [±N ±V]
- no barrier intervenes and relativized minimality is respected

Now all elements of a sentence can be accounted for since adverbs are licensed through predication.

3.3 Adverb Movement and Traces

3.3.1 Types of movement

Movement can take place through substitution as in (8) and (9); or through adjunction as in (10).

[19]Note that the licensing could equally well, at this point, refer to c-command since the first projection (YP_2) that dominates X (AdvP) also dominates Y (YP_1).

(8) a. John$_i$ seems [$_{SC}$ t_i happy]

b. John [$_{I'}$ t_i [$_{VP}$ runs$_i$]]

(9) a. What$_i$ had$_j$ [$_{IP}$ John t_j bought t_i]

b. When$_j$ did [George do what t_j] (H. 27a, p. 455)

(10)a. My doctor told me to [$_{VP}$ [$_{VP}$ [$_{V'}$ drink t_i *every night*]] [$_{NP_i}$ two...lemon]]

(H. 99b, p. 382)

b. I read [$_{NP}$ a description t_i] *yesterday* [$_{PP_i}$ of Hockney's latest picture]

(H. 102b, p. 384)

In English the first type of movement includes movement of NPs with the passive voice or with raising verbs as in (8a); and movement of aux to I, I to V as in (8b), or (V + I) to C as in (9a). This includes movement of maximal projections and movement of heads. Substitution also includes moving a maximal projection to [SPEC, CP]. This includes movement of NPs as in (9a) and adverb adjuncts as in (9b).

The other type of movement–adjunction–moves an element to a new position. Movement via adjunction is to a non-argument maximal projection as shown in (10), (11) and (12). Heavy NP shift in (10a) involves adjunction of an NP to the right of VP. PP-extraposition from an NP as in (10b) involves adjunction of the PP to the right of the VP. Quantifier raising at LF in English is shown in (11)

where the object quantifier is adjoined to VP. WH-movement as adjunction to IP in Polish is shown in (12).

(11) [$_{CP}$ Who$_j$ [$_{IP}$ t_j [$_{VP}$ [$_{NP_i}$ everyone] [$_{VP}$ likes t_i]]]] (H. 24a, p. 490)

(12) Maria myśli [$_{CP}$ [$_{C'}$ że [$_{IP}$ [$_{NP}$ co$_i$] [$_{IP}$ Janek kupił t_i]]]] (H. 27, p. 354)

Maria thinks that what Janek bought

'What does Maria think that Janek bought?'

The examples in (10) to (12) illustrate that a moved phrase which does not involve substitution is always considered adjoined to a non-argument maximal projection. The other traits of adjunction through movement according to Haegeman are that the original structure is preserved, the moved elements c-command their traces, and the ECP applies to the traces[20].

Except for WH-adjunct movement in (9b), these descriptions are of lexical items other than adverbs. Both types of movement (substitution and adjunction) also apply to adverbs. Each type of adverb movement will be looked at in turn.

(i) Adverb to adverb movement

The first type of movement occurs when P_{merely} adverbs, which are generated to the left of the main verb from a V′ node, move to the left to an empty X′

[20]I will use Rizzi's definition of the ECP.

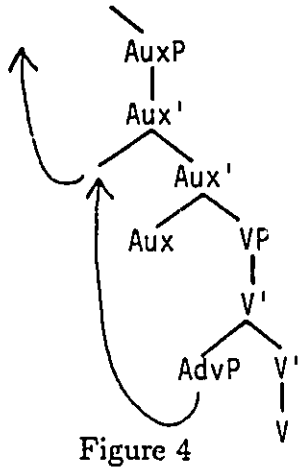

Figure 4

adjunction position as in Figure 4. Hence P_{merely} adverbs can occur in any of the positions in (13) because movement of this first type takes place; that is, there is a position for adverbs that is adjoined to the left of X'. The head V will properly govern the trace, and the trace will be antecedent governed by the moved adverb or the intermediate trace(s).

(13) John -- would -- have -- been [$_{VP}$ *merely* questioned by the police]

(Zagona 36, p. 36)

If the trace of a P_{merely} adverb is adjoined to V', a VP-adverb can not move to the left as shown in (3) and repeated here as (14a) since the VP-adverb would be a potential antecedent governor and the trace would not be properly governed. This contrasts with sentential adverbs which can occur with a P_{merely} adverb that has moved as in (14b).

(14) a. *He may *merely* have been *intelligently/carefully* questioned

(Zagona 38, p. 37)

b. *Evidently*$_i$ his friends have *simply*$_j$ been t_j helping him t_i

In French, when the V′ adjunction position is filled, a QP can not move to [SPEC, CP] as in (15a) nor can a VP-adverb move to [SPEC, CP] as in (15b). In both cases antecedent government is blocked by the potential antecedent governor *beaucoup* in an A' adjunction position. If a sentential adverb is involved as in (15c) the QP *beaucoup* is not a potential antecedent governor.

(15) a. **Combien*$_i$ a-t-il *beaucoup* résolu [t_i de problèmes] (Rizzi 30b, p. 12)

b. **Comment*$_j$ a-t-il *beaucoup*$_i$ résolu [t_i de problèmes] t_j (Rizzi 32b, p. 13)

c. *Pourquoi*$_j$ a-t-il *beaucoup*$_i$ résolu [t_i de problèmes] t_j (Rizzi 33, p. 14)

Similarly in English, if a P_{merely} adverb is adjoined to V′, a VP-adverb can not move to [SPEC, CP] as in (16a). Sentential adverbs can occur in [SPEC, CP] when an adverb is adjoined to V′ as in (17c).

(16) a. **How* may he have been *merely* questioned t

b. *How* may he have been questioned t

c. *Why* may he have been *merely* questioned t

If a P_{merely} adverb is not present, a VP-adverb can move to the left of the verb as in (17a). The trace is properly head governed by V or T. The adverb antecedent governs the trace. VP would be a barrier so the adverb could not move higher. Similarly in French, if the V′ adjunction position is unfilled by a QP then *tout* can move leftward as in (17b).

(17) a. John has [$_{VP}$ *easily*$_i$ won the race t_i]

b. Ils ont *tous* [$_{VP}$ *tout*$_i$ mangé t_i] (Rizzi (ii), Note 11, p. 114)

Is *easily* in (17a) in an empty V′ adjunction position or has it adjoined to the left of VP? Similarly in (14a), what position does the moved adverb *intelligently/carefully* occupy? That is, does it attempt to occupy a trace filled X′ adjunction position, or does it adjoin to the left of VP and block antecedent government of the trace? There would seem to be no criteria that could be used to distinguish if the movement is to an empty V′ adjunction position or via adjunction to the left of VP. Both would block antecedent government. An X′ adjunction position is a possible position as sentential adverbs can clearly occupy the Agr′ adjunction position as in (1c) and (4a).

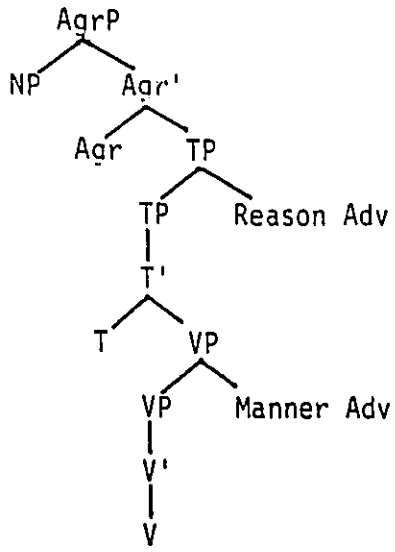

Figure 5

(ii) Adverb movement to [SPEC, CP]

The first type of movement also occurs when a WH-adjunct moves to [SPEC, CP]. In (18) a VP-adjunct has been questioned. The trace would be head governed by T or V (if auxiliaries). This is illustrated in Figure 5[21]. The trace t forms an A' chain with its antecedent *how*. By Relativized Minimality no maximal projection in an A' position intervenes between the trace and its antecedent so the trace t is properly antecedent governed.

(18) *How* did he come t (Rizzi 46b, p. 46)

[21]Adapted slightly from Rizzi (1990: 50).

In the discussion of adverb to adverb movement it was noted in (16a) that VP-adverbs can not be questioned if there is a potential A' governor that intervenes. For moved VP-adjuncts, negation is a potential antecedent governor and a trace could not be properly antecedent governed as in (19a). Negation is not a potential antecedent governor for traces of moved sentential adverbs as in (19b)[22].

(19) a. **How* didn't John leave *t*

b. *Why* didn't John leave *t*

According to Rizzi, sentential adjuncts do not move and leave a trace, rather they are base generated in [SPEC, CP] and can move to a higher [SPEC, CP]. They can not leave a trace because the trace would never satisfy the ECP, not having a head governor. This is shown in Figure 5 where T is too low to head govern a sentential adverb trace and Agr can only govern what it agrees with, i.e., the subject. Rizzi accounts for sentences like (20) by generating the adverb in [SPEC, CP][23].

[22]Recall the contrast with negation as noted in Section 1.3 and note 3 of this chapter.

[23]Rizzi (p. 46) admits that having S-adverbs generated in [SPEC, CP] with no trace and just c-commanding the clause they modify is a radical solution to explaining how a trace of a S-adverb could not be head governed in X'. He cites supporting evidence from French where a VP WH-adjunct can be left in situ but not a sentential WH-adjunct as in (i), and where only moved VP WH-adjuncts have stylistic inversion but sentential WH-adjuncts do not as in (ii).

(i) a. Il a [parlé *comment*] (Rizzi 48b, p. 47)
b. *?Il a [parlé] *pourquoi* (Rizzi 48c, p. 47)

(20) *Why* did John leave (Rizzi 47, p. 46)

Rizzi's position that Agr can not head govern reason adverbials since Agr can only govern what it agrees with seems like an ad hoc stipulation. In Section 1.3 on Bellert, it was noted that one of the two arguments of subject oriented (sentential) adverbs was the "derived" subject. (For other types of sentential adverbs, one of the 2 arguments is external to the sentence, for example, the speaker.) Hence there seems to be no reason to exclude Agr as a possible head for head government. Thus there would be no need to have S-adverbs base-generated in [SPEC, CP] while VP-adverbs move to [SPEC, CP][24].

For WH-adjuncts, antecedent government of VP-adverbs is blocked by negation; whereas it is not for S-adverbs. It also seems that a VP-adverb does not block antecedent government by a sentential WH-adjunct as in (21a); while it does block antecedent government of VP WH-adjuncts as in (21b). In a parallel

(ii) a. *Comment* a parlé Jean (Rizzi 50b, p. 47)
b. *?*Pourquoi* a parlé Jean (Rizzi 50c, p. 48)

In the case of (i), WH-words must move to the front of the sentence in LF. Rizzi says the reason (i)b is *? is that the trace would not be properly governed (by X inside X'). This suggests that *pourquoi* is generated in [SPEC, CP] for the WH-adjunct question. Further support that the WH-adjunct is generated in [SPEC, CP] is in example (ii). Movement of a WH-word to [SPEC, CP] leads to subject-aux inversion–stylistic inversion being parasitic on an operator-variable chain. Hence the stylistic inversion in (ii)a. That S-adverbs do not involve stylistic inversion supports the idea that sentential WH-adjuncts do not move to [SPEC, CP], but are generated there.

[24]Note that Rizzi showed a trace for *pourquoi* as in *Pourquoi a-t-il beaucoup résolu [t de problèmes] t'*, even though he says WH adjuncts of IP are generated in [SPEC, CP].

way, ar S-adverb blocks antecedent government of a sentential WH-adjunct as in (21c) but it does not block antecedent government of a VP WH-adjunct as in (21d).

(21) a. *Why* has John *carefully* done his homework

b. **How* has John been *carefully* doing his homework

c. **Why* has John *apparently* been doing his homework

d. *How* has John *apparently* been doing his homework

Why is *apparently* not an intervening antecedent governor between *how* and its trace? WH-adjuncts of VP-adverbs could not also be base-generated in [SPEC, CP] as you would not be able to distinguish between (19a) and (19b). The idea of barrier and the domain of the adverb play a role. This will be seen in the discussion on licensing of adverbs. Since my focus is on adverbs and adverb movement that is not of the WH-adjunct type I will not specifically relate licensing of traces to these observations on WH-adjuncts except to note here the apparent applicability of the ideas to soon be noted.

(iii) Adverb movement via adjunction

The second type of adverb movement is to a new position via adjunction to a maximal projection. Two examples are illustrated in Figure 6.

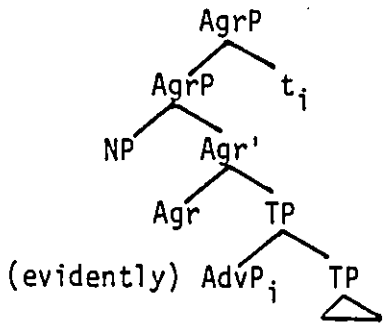

Figure 6a

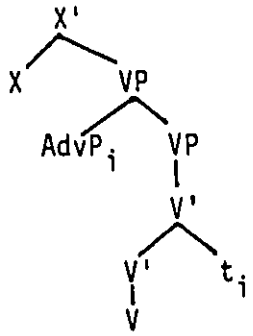

Figure 6b

A speaker-oriented adverb generated to the right of its subject (AgrP) has moved and adjoined to TP as in (22a) and Figure 6a where *evidently* appears after the auxiliary which has moved into Agr. In (22b) *evidently* appears at the beginning of the sentence where it has adjoined to AgrP.

(22) a. George has *evidently* read the book *t*

b. *Evidently* George has read the book *t*

In the example in Figure 6a, the ECP is not satisfied since the trace is not properly head governed (by X in X′). Antecedent government is also not satisfied. When the AdvP adjoins to TP it can not c-command its trace. Only if the AdvP were to adjoin to the higher node AgrP could the AdvP antecedent govern its trace. Adjunction movement of a VP-adverb to VP as in Figure 6b can satisfy

the ECP and antecedent government. The trace will be head governed by X in X' and the moved adverb c-commands its trace.

There seems to be an asymmetry between moved S-adverbs and moved VP-adverbs. While the trace of moved VP-adverbs is head governed and antecedent governed, the trace of S-adverbs is not head governed and may or may not be antecedent governed. Do adverbs leave a trace when they move? Does ECP and antecedent government apply to the trace of a moved adverb?

3.3.2 Licensing of traces

If an adverb is base generated and moves, a trace should be generated. A trace is properly governed if it satisfies the Empty Category Principle and antecedent government as outlined by Rizzi (1990: 87, 92). To satisfy the ECP, a non-prominal empty category must be properly head governed, i.e., governed in the intermediate projection by a head[25]. To be antecedent governed, the trace must be connected with its antecedent in a chain by satisfying the following conditions: the antecedent and trace are nondistinct; the antecedent c-commands the trace; no barrier intervenes; and Relativized Minimality is respected. Head government

[25]The heads that can govern are A, N, P, V, Agr and T. Proper head government in ECP requires strict c-command to account for restrictions on subject extraction. Subjects are not freely extracted, as for example with heavy NP shift. Agr would always m-command the subject position erroneously allowing subject movement.

in ECP is satisfied at S-S, while antecedent government is satisfied at LF. Antecedent government is satisfied at LF to allow for reconstruction (a LF process) of moved elements with unbound traces[26].

Most of Rizzi's discussion (1990) of movement involved WH-questions or extraction from WH-islands. My focus is on adverb generation to the right of the subject with movement to the left, and not on formation of adjunct questions. Is Rizzi's ECP and antecedent government applicable to adverb traces not involving WH-movement? It was already noted that for movement via adjunction, VP-adverbs satisfied both the ECP and antecedent government but S-adverbs did not satisfy ECP and might not satisfy antecedent government.

The first problem is in satisfying the ECP. The ECP requires that traces be head governed within X′. An asymmetry exists with the ECP between S-adverbs and VP-adverbs. If S-adverbs are base-generated in an adjunction position to AgrP and move, the traces could never be head governed in an intermediate projection–unless there was a null licensing head in C. There would be no problem for VP-adverbs adjoined to VP or to V′ since they could presumably be head governed

[26]For example, in (a) the preposed *how likely [t to win]* contains a raising trace t that is not A bound by its antecedent *John*. The D-S is in (b) and the complete S-S is shown in (c).

a. How likely [t to win] is John t' (Rizzi 31c, p. 39)
b. e is how likely [John to win]
c. [$_{CP}$ [$_{SPEC}$ How likely [t_i to win]]$_k$ [$_C$ is$_j$] [$_{IP}$ John$_i$ t_j t_k]]

by the head of the node dominating it, i.e., an auxiliary verb, T or V.

There is also an asymmetry between moved adverbs and WH-adjuncts. When an adjunct moves to [SPEC, CP], the (V + I) moves to C. Thus if an S-adverb adjoined to AgrP were to be WH questioned, its trace could be head governed by the filled C. Hence sentential WH-adjuncts would satisfy the ECP while moved S-adverbs would not.

The second problem is in satisfying antecedent government. Depending upon where an adverb moves, an S-adverb might never c-command its trace while a VP-adverb usually would. If an S-adverb were to move to the front of the sentence before the subject it would c-command its trace[27]. But in (23a) when *happily* is generated to the right of AgrP and moves to adjoin to the left of TP, the adverb can not c-command its trace. A moved VP-adverb as in (23b) will c-command its trace unless the adverb is base-generated adjoined to VP and moves to an empty V′ adjunction site as in Figure 7d. Could antecedent government be amended to refer to the adverb m-commanding its trace?

(23) a. John has *happily* been reading the paper

b. John has been *quietly* doing his homework

For the AdvP to m-command its trace, the first requirement is satisfied, that

[27]Perhaps it does not even matter that the trace is not c-commanded at S-S if reconstruction at LF is allowed and antecedent government is satisfied at LF.

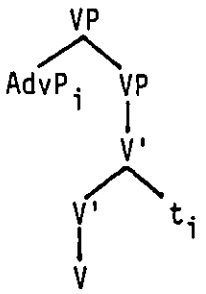

Figure 7a

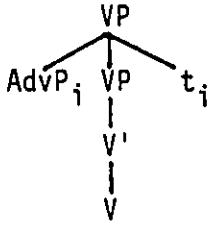

Figure 7b

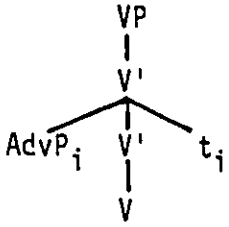

Figure 7c

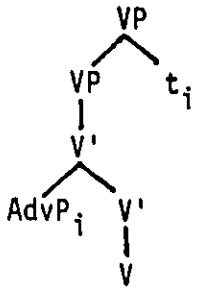

Figure 7d

is, neither the AdvP nor the trace dominate each other. The other requirement is that the first X^{max} dominating X must dominate Y. In the case of Figure 8, this would require AgrP to dominate t_i. TP does not dominate $AdvP_i$ since everything TP_1 dominates is not the same as everything TP_2 dominates. In other words the TP_2 adjunction is transparent. The same argument is used in Section 3.2 to show that AgrP does not dominate an unmoved AdvP (in the t_i position in Figure 8). Hence the first X^{max} (AgrP) dominating the moved AdvP does not dominate the trace t_i and the m-command relationship is not satisfied. Thus to change the c-command requirement of antecedent government would not alter the inability of adverbs lower than their traces to command their traces[28].

ECP and antecedent government seem unable to give a unified account for the licensing of adverb traces. Are traces generated when adverbs move? Before

[28]That is, VP-adverbs as in Figure 7d and S-adverbs adjoined to a lower projection (Agr' or TP) would never be able to m-command their traces.

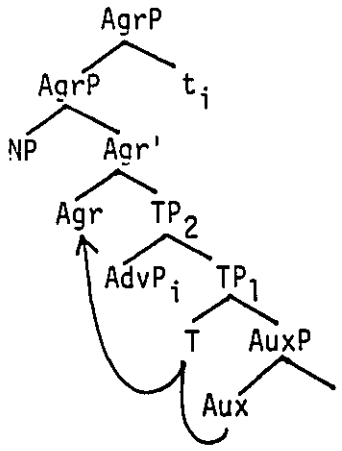

Figure 8

considering an alternative for adverb traces I will first mention Rizzi's comments that perhaps moved PPs do not form an operator-variable chain.

An operator-variable relationship is established when the adverb moves to [SPEC, CP]. Rizzi raises the point that perhaps movement that is not to specifier position does not result in an operator-variable relationship with the trace subject to ECP and A' binding. To account for "the almost fully" adverbial PP preposing in Italian as in (24a) versus the ill-formed sentence with WH-extraction in the proposing in (24b), Rizzi (1990: 105) suggests that an A' binder can only block government of a trace by its antecedent if the trace is a variable and the antecedent is an operator.

(24) a. *Per questa ragione*, non immagino chi potrebbe essere licenziato (Rizzi 59a, p. 104)
'For this reason, I don't imagine who could be fired'

b. **Per quale ragione* non immagini chi potrebbe essere licenziato (Rizzi 60a, p. 104)
'For what reason to you not imagine who could be fired'

c. **Per questa ragione*, rimpiango che sia stato licenziato (Rizzi 61a, p. 105)
'For this reason, I regret that he was fired'

In (24a) there is no operator-variable relationship and the intervening A' binder *chi* does not block antecedent government. In (24b) the WH extraction *quale* results in an operator (the PP *per quale ragione*) that must antecedent govern its trace (a variable). An A' binder *chi* blocks antecedent government of the trace by the PP. Note that the moved PP must still govern its trace but that an intervening A' binder can not block it. Factive verbs as in (24c) and negation form islands that also block government.

This raises the idea that perhaps a moved adverb and its trace form a different type of relationship than WH-words and their traces. The usual way to handle traces, through the ECP and antecedent government (c-command), does not seem adequate to handle the traces of moved adverbs. Licensing of adverb traces will now be dealt with, but since my focus is on adverb generation and movement I will not relate, in this paper, licensing of adverb traces to traces of WH-adjuncts.

3.3.3 Adverb licensing

Section 3.2 proposes that adverbs are licensed through predication. The predication relationship is established at D-S, but the licensing requirement is met at S-S. Since selectional restrictions are satisfied at S-S[29], the interpretation at S-S will require the AdvP to govern the subject at S-S. The maximal projection of the subject acts like a barrier beyond which the adverb can not move. All X^{max} except AgrP (i.e., IP) are generally considered to be barriers. There is also the requirement on the adverb that, if it moves, its trace must be governed.

(i) Adverb licensing of adverb traces

The current definitions of ECP and antecedent government are inadequate to handle government of an adverb trace. The actual means of an adverb governing its trace will be left vague except to specify that the adverb trace must be bound within the domain of the adverb, where domain is the maximal projection of the adverb's argument. Note that this is similar to Binding Principle A for NP-traces which states that [+ anaphor] must be bound in its governing category. The GC can be equated with the domain of the adverb and the accessible subject with the subject of the adverb. However the comparison falters with the binding requirement of c-command. Since there were problems even with m-command, the

[29]The requirement that selectional restrictions are satisfied at S-S is based on passive sentences with sentential adverbs where the adverb has the animate subject as one of its arguments but the subject position is empty at D-S. For example, *John* reluctantly *has been examined by the doctor.*

nature of the binding of the adverb trace will be left unspecified.

(ii) Moved adverbs licensing their subjects

An adverb adjoined to AgrP could move to the left of AgrP, Agr′ or TP. From each of these positions an AdvP governs its subject (AgrP and another argument) and the AdvP binds the trace in its domain. If the speaker oriented adverb is adjoined to CP it can move to C′ if CP is filled as in (25a), to AgrP or Agr′, or to TP as in (25b) since AgrP is not a barrier. If adjoined to AgrP it can similarly move to Agr′ or adjoin to the left of AgrP or TP as in (25c). This accounts for the position of S-adverbs after the subject and before the first auxiliary/modal (Agr′ position) or after the first auxiliary/modal (TP position)[30].

(25) a. Whom *apparently* did John meet

b. Whom did John *apparently* meet

c. John has *apparently* been studying for his test

AdvP adjoined to V′ or VP could only move to the left of V′ or adjoin on the left of VP. The AdvP will still govern its subject. The moved adverb will govern its trace in its domain. VP is a barrier preventing higher movement of the adverb. This explains why VP adverbs when moved to the left can only appear adjacent

[30]Recall that TP does not dominate a maximal projection adjoined to it, acting transparent for m-command.

to the verb.

There are other positions that adverbs can be base-generated in such as adjoined to TP and AuxP. The analysis becomes a little more complicated because of movement of tense and auxiliaries, and that these projections are often transparent for some principles. In addition the predication relation is established at D-S but read off at S-S, after movement of T and Aux.

Some time adverbs can be considered adjoined to TP. In (26a) T has moved to V and in (26b) Aux has moved to T[31]. Figure 9a represents part of the tree for (26a) and Figure 9b represents part of the tree for (26b). T moves out of the domain of the adverb in both cases. If the AdvP were to move within the TP the trace of the AdvP would be bound. However, the AdvP is constrained in not being able to move.

(26) a. John studied *today*

b. John has been studying *today*

What about adverbs adjoined to AuxP? Section 2.4 showed that adverbs such as *already* could be adjoined to AuxP. *Already* can adjoin to AuxP or move to the left of Aux' as in Figures 10a and b. The subject (Aux) moves from Aux to T to

[31]It was pointed out in Section 1.2 note 4 and Section 2.4 analysis subsection that time adverbs can occur at the very end of a sentence or at the beginning but not between the subject and/or auxiliaries and/or verb.

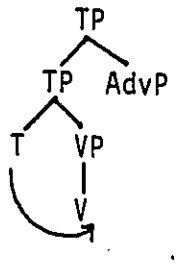

Figure 9a

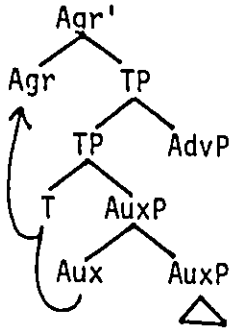

Figure 9b

Agr, and the AdvP maximal projection governs the trace of its subject. The trace of *already* is bound in the domain of the AdvP.

(27) John had *already* come home *yesterday*

3.4 Conclusion

Predication is established at D-S through the subcategorization properties of adverbs. Adverb predicates license their subjects by their maximal projection. The predication relation, being established at D-S, prevents overgeneration of adverbs since X-bar theory allows only one recursion of an XP and of an X'.

Adverbs that are speaker oriented have the sentence as one argument and the speaker as the other. They can be adjoined to IP or to CP. This allows 2 non-adjacent speaker oriented adverbs in a sentence as in (28a). Even though both

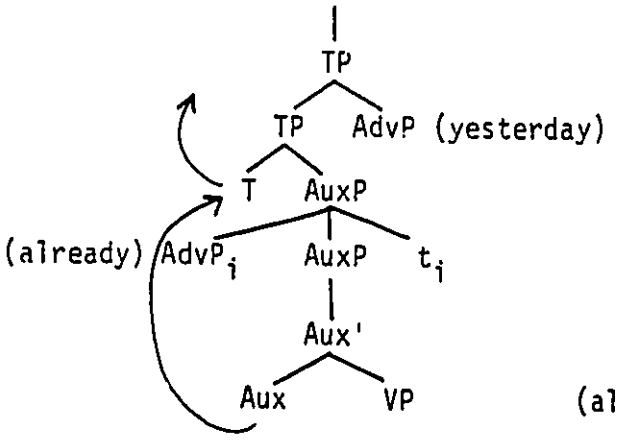

Figure 10a

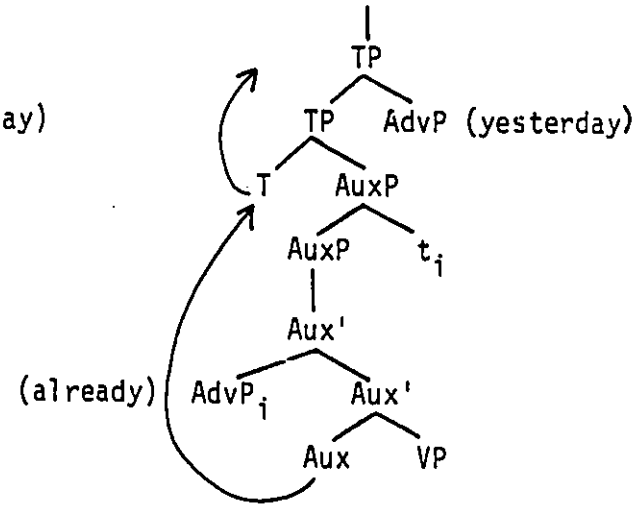

Figure 10b

adverbs have moved you do not find a third speaker oriented adverb as in (28b).

(28) a. *Happily*, Max has *evidently* been trying to decide ... (Jackendoff 3.193)

b. **Happily*, Max has *probably* been trying to decide on a trip, *evidently*

Adverbs that have the subject and the sentence as its arguments can only be generated to the right of AgrP (and not to CP or TP). This allows the AdvP to govern the NP subject and the sentence. Hence only 1 subject oriented adverb can be generated in a sentence as in (29).

(29) a. **Carefully*, Max *quickly* was climbing the ... (Jackendoff 3.201)

b. Max *carefully/quickly* was climbing the ...

Since speaker oriented adverbs can be generated adjoined to CP or to AgrP and subject oriented adverbs can be generated only adjoined to AgrP, it is possible to have a sentence contain 2 S-adverbs–a speaker oriented adverb adjoined to CP and a subject oriented adverb adjoined to AgrP. Thus the speaker oriented adverb will always precede the subject oriented adverb as in (30a) and (30b). The two S-adverbs can not be adjacent as in (30c) since you can not have multiple adjunction via movement. That is, the AdvP adjoined to CP would have to adjoin to AgrP since CP is null. The adverb adjoined to AgrP could move to Agr′ as in (30a), or it could adjoin to TP as in (30d). This is shown in Figure 11.

(30) a. *Evidently* John *carefully* has left the room (Jackendoff 3.183)

b. **Carefully* John *evidently* has left the room

c. **Evidently carefully* John has left the room (Jackendoff 3.182)

d. *Evidently* John has *carefully* been saving his money

In English there appears to be some flexibility as to whether an adverb is base-generated to V′ or VP. Subcategorized adverbs would be on V′ and, being selected by the verb, non-moveable. English seems to allow manner adverbs to be adjoined to V′ or VP and time adverbials to be adjoined to VP or to TP. Presumably V′ is open for manner adverbs unless filled by a subcategorized PP as in *put the book on the table* in which case the adverb would be adjoined to VP. But the positions

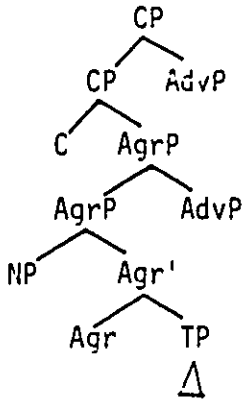

Figure 11a

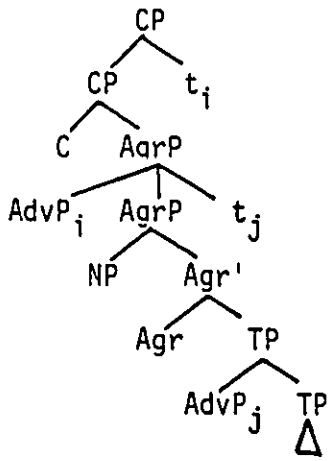

Figure 11b

V′ and VP would not both be open for manner adverbs at the same time. An adverb generated to the right of V′ or VP could move to an empty V′ adjunction position, or could adjoin to VP. Because predication is established at D-S, when a VP-adverb moves to the left of VP or V′ as in (31a), you can not generate another adverb in the empty spot as in (31b).

(31) a. Max had been *sadly* eating his dinner

b. *Max had been *sadly* eating his dinner *slowly*

Adverbs adjoined to the tense node would be time adverbs such as *today*. T, when [+ finite], either moves up to Agr or down to V in English, and the time AdvP governs the trace of its subject. Time adverbs adjoined to TP can not

move except to adjoin to AgrP where they will m-command their subjects and antecedent govern their traces.

(32) a. *Today* I have eaten

b. *I *today* have eaten

c. *I have *today* eaten

d. I have eaten *today*

Adverbs can be adjoined to the auxiliary node AuxP. The AdvP governs its subject AuxP. AdvP can move into an Aux′ adjunction position on the left or adjoin to AuxP. The AdvP can then occur after a tensed auxiliary (its subject) and govern its subject's trace. The trace of the AdvP will be bound in the domain of the AdvP.

P_{merely} adverbs were not discussed with other adverbs in terms of predication with subjects being on the left. These adverbs act differently, being more like negative elements[32]. In Section 3.3 under adverb to adverb movement, these adverbs were seen to be generated to the left of V′ in an adjunction position. The standard definitions of ECP and antecedent government (cf. Rizzi) accounted for the traces left when these adverbs moved to higher X′ adjunction positions.

[32]These adverbs are referred to by various terms in the literature such as negative pre-verbal adverbs and adverbs with a feature [affective] (cf Klima 1964) and as affective operators (cf Rizzi 1990).

3.5 Summary

Adverbs are predicates generated to the right of their subjects. An AdvP governs its subject at S-S. Government by a maximal projection is defined as:

(i) X is a maximal projection that m-commands Y

(ii) X has lexical content

(iii) no barrier intervenes and relativized minimality is respected

It is not a mutual m-command relationship since the NP in [SPEC, AgrP] can be one of the subjects of S-adverbs and it does not m-command its predicate, AdvP.

It is not a c-command relationship. In Section 3.2 (see footnote 19) it was pointed out that licensing could equally well refer to c-command. Now we see why this could not be. The AdvP must license its subject at S-S since that is where selectional restrictions are satisfied. Since AdvP can move to an empty X′ position on the left or adjoin to an XP on the left, c-command would not allow the AdvP to license its subject from all its possible S-S positions.

When the AdvP moves it must stay within the domain of its subject. The idea of domain is expressed through barriers, which is consistent with the idea that all XPs except IP are barriers, and consistent with the observations about adverbs. When the subject of the adverb is TP, AuxP or VP, the adverb is bound within

the domain of its subject since TP, AuxP and VP are barriers. Since AgrP is not a barrier, adverb predicates of a null CP can move into the domain of AgrP.

The predication relationship of adverbs and their subjects is formed in D-S through the subcategorization properties of adverbs and X-bar theory which allows for recursion of XP and X′ so that the AdvP can be base-generated in an adjunction position on the right of XP or V′. The meaning is read at S-S where the adverb must m-command its subject.

Adverbs can move to an empty X′ adjunction position on the left or adjoin to XP on the left. The adverb can only move within the domain of its subject. The trace of a moved AdvP will also be bound in the domain of its antecedent.

In the next chapter I will relate these ideas on adverb generation and licensing to the analyses given in Chapter 2 of Iatridou, Travis and Zagona. In the final chapter I will relate these ideas to the problems raised in the summaries of Jackendoff's, Bellert's and Rochette's studies.

Chapter 4. Three Syntactic Approaches Reconsidered

4.1 Introduction

In the last chapter it was pointed out that an adverb is a predicate that selects its arguments at D-S, and that it was the AdvP that had to govern them. The rationale was that, being in an adjunction relation, an adverb could never c-command nor m-command its subject. An AdvP and not an adverb had to be in the adjunction position since adverbs can project to phrasal categories. This is not an arbitrary requirement of X-bar theory or some other module of grammar. It is a requirement to allow the adverb to satisfy its predication requirements. For example, S-adverbs can appear before the subject or before or after the first auxiliary. One argument is the sentence and the other is the subject or the speaker. This other argument can also appear as complement to the adverb with the sentence still being one argument. The S-adverb can still occupy these positions and not those of VP-adverbs. In (1), *his parents* expresses the person argument internal to the AdvP, and the other argument is the AgrP to which it is adjoined. The AdvP can occupy any of the S-adverb positions as in (1a), (b) and (c), but it can

not occupy the VP-adverb position to the left of the verb as in (1d).

(1) a. *Unfortunately for his parents*, John has not been doing his homework

b. John, *unfortunately for his parents*, has not been doing his homework

c. John has, *unfortunately for his parents*, not been doing his homework

d. *John has not been, *unfortunately for his parents*, doing his homework

It is the subcategorization requirements of the adverb that determine where it can be generated. S-adverbs and VP-adverbs can move as long as the adverb remains within the domain of its subject. Adverbs associated with aux can also move within the AuxP projection. Only time adverbs adjoined to TP could not move to the left of TP or T'. The movement of the AdvP is restricted to within the domain of its subject. So the trace of the moved AdvP will also be in the domain of the AdvP.

Such an analysis goes against the stated assumptions of some of the approaches previously discussed. In Section 4.2 I will discuss how this analysis relates to Travis' head licensing. Then in Section 4.3 I will discuss the implications for Iatridou's analysis. Finally in Section 4.4 I will relate this approach to Zagona's and the issues I raised in the analysis subsection 2.4.1.

4.2 Travis Revisited

Travis' proposal is in many respects the opposite to the one I proposed. She has adverbs as heads adjoined to a head and licensed by a feature in that head. Feature percolation to the XP allows the adverb to appear anywhere in the scope of XP. My proposal generated adverbs adjoined to an XP in a predication relation. The AdvP governs its subject (XP) in an m-command relationship, and the AdvP can move to the left of XP or X′ and still govern its subject. Both approaches recognize that the adverb is restricted to a certain domain—for Travis it is the domain defined by feature percolation from an X to an XP; for me the domain is the maximal projection of its subject. Both also try to capture the idea that adverbs are not freely generated anywhere—rather there are constraints on their generation.

Travis' accounting was shown to be unacceptable since adverbs are not bare heads but project to an AdvP. She requires adverbs to be a head in order to be base generated adjoined to another head. Since a feature in the head licenses the adverb, she also requires adverbs to assign "adjunct θ-roles" to account for the modification of the subject or speaker that occurs with S-adverbs, and modification of agent that occurs with some manner adverbs. This leads to describing some adverbs as being sensitive to agents and surface subjects. She also requires adverbs to assign scope over an X or XP to distinguish among the different types of adverbs

(see Table 2.2).

The issue of assigning adjunct θ-roles does not arise under my proposal. So-called adjunct θ-roles arise for S-adverbs because one of the arguments is the NP in [SPEC, AgrP] position or the speaker. For VP-adverbs adjunct θ-roles is a non-issue since the agent θ-role that is ascribed to a manner adverb only arises because of the assignment of agent θ-roles by the V, and manner adverbs modify the VP.

Assignment of scope is not a feature assigned to the adverb but is determined by the maximal projection the adverb is adjoined to. Hence an adverb like *already*, if adjoined to AuxP in D-S, will have scope over the AuxP. An adverb like *today*, if adjoined to TP, will have scope over TP.

My proposal also makes a unified simple accounting of the differences between active and passive sentences. S-adverbs can take the NP in [SPEC, AgrP] as the person argument whether it is overtly filled in D-S with active sentences as in (2a) or empty in D-S with passives but filled at S-S as in (2b). Semantic selection would only allow a person; so if the subject is inanimate as with implicit subjects as shown in (2c), the subject position could not be one of the arguments.

(2) a. The police *carelessly* will arrest Fred (Travis 11a)

b. Fred *carelessly* will be arrested by the police (Travis 11b)

c. The book *reluctantly* was placed on the table

Subcategorization would require one argument of the adverb to be the XP to which it is adjoined. For S-adverbs the other argument could be the NP in subject position, an implied NP such as the speaker or an implicit subject, or an NP internal to the AdvP as in (3b). In (3a) the adverb *happily* could refer to the subject *John* or to the speaker as one of its arguments. But in (3b) only *his trainer* which is the NP complement internal to the AdvP can be the other argument.

(3) a. *Happily* John has won the race

b. *Happily for his trainer*, John has won the race

For VP-adverbs the fact that manner adverbs seem to attribute modification to an agent—either the subject position for active sentences or to the object of the preposition *by* for passive sentences—is not due to adjunct θ-role assignment. Rather the adverb modifies a VP and the V assigns an agent θ-role. This is shown in (4).

(4) a. The police will arrest Fred *quickly* (Travis 12b)

b. Fred was arrested by the police *quickly* (Travis 12d)

My proposal that adverbs subcategorize for their subjects and can move accounts for where adverbs appear, i.e., on the left or right of its subject. There is no need to assign extra properties to the adverbs such as assigning scope or being sensitive to subjects or agents. The scope is determined by the maximal projection of its subject. Subcategorization at D-S accounts for the subject/agent sensitivity and the differences between actives and passives. It also provides an account for implicit subjects in passive sentences. To account for implicit subjects, both the subcategorization of the adverb at D-S and the semantic selection properties of the adverb must be met.

4.3 Iatridou Revisited

Iatridou generates adverbs to the left of auxiliary verbs and to the left of main verbs. A $V + adv + V$ order could occur if the first V is an auxiliary and moves to tense past the adverb as in (5a), or if the first V is an auxiliary in an infinitival clause and the adverb is generated to the left of the second verb as in (5b). For infinitival clauses there is also a possible $to + adv + V + adv + V$ order as in (5c).

(5) a. I have *often* eaten apples (Iatridou 6)

b. John is believed to have *frequently/rudely* criticized Bill (Iatridou 16)

c. John is believed to *frequently* have *rudely* criticized Bill (Iatridou 12a)

She also has a *V + adv + adj* order where the adverb modifies the adjective as in (6).

(6) I believe John to be *deliberately* sarcastic (Iatridou 26b)

My proposal has not dealt with adverbs modifying adjectives or NPs so examples like (6) will not be dealt with here. My proposal has essentially a similar explanation except the adverbs are generated on the right and move to the left. In (5a), the adverb could be base generated on the right of AuxP and move to the left adjoined to AuxP, and aux moves to tense so that the aux *have* precedes *often*. It could also result from aux moving to tense with the adverb generated to the right of VP and moving to the left of VP. In (5b), the VP-adverb moves to the left either to adjoin to VP or into the V′ adjunction position. In (5c), *frequently* is base generated to the right of AuxP and *rudely* is base generated to the right of V′. *Rudely* moves to the left to adjoin to VP or V′, and *frequently* adjoins to the left of AuxP. Aux does not move to tense so that *frequently* precedes *have* and *rudely* precedes the verb *criticize*.

There are 2 significant implications of my proposal for Iatridou's analysis. The first concerns the sequences of possible adverbs she does not list that I mentioned in the analysis subsection 2.2.1. Second, there are implications of proposal for the internal structure of the inflection node. Both of these will be looked at.

Iatridou discusses infinitival clauses where one adverb precedes an auxiliary or a main verb as in (5). She gave no examples such as (7) where 2 adverbs precede an auxiliary verb or a main verb.

(7) a. *John is believed to *rudely frequently* have criticized Bill

b. *John is believed to *frequently rudely* have been criticizing Bill

c. *John is believed to *rudely frequently* criticize Bill

The analysis subsection 2.2.1 raises the issue of multiple adjunction. Since Iatridou was not really discussing adverbs she just generated them before auxiliary and lexical verbs. Although the examples in (7) with consecutive adverbs are unacceptable, there are examples with consecutive adverbs which are good as in (8).

(8) a. John is believed to have *frequently rudely* criticized Bill

b. John is believed to *frequently rudely* criticize Bill

My proposal can account for the differences in acceptability between (7) and (8). Adverbs that have an auxiliary as their subject are adjoined on the right of AuxP. In infinitival tense the auxiliary verb does not move to tense. Hence, when the adverb moves to adjoin on the left of AuxP, the adverb will precede the auxiliary. There can only be 1 adverb since there is only 1 adverb predicate of the auxiliary verb (and it is adjoined to AuxP). This explains the unacceptability of (7a) and (b). VP-adverbs can be generated adjoined to V′ and to VP as in Figure 1a. Both adverbs can move to the left of the verb since there are 2 possible positions–adjoined to V′ or to VP. This accounts for the acceptability of (8a) and (b). *Rudely* is generated adjoined to V′ and *frequently* to VP. When they move *rudely* must adjoin on the left of V′ and *frequently* on the left of VP. This explains the unacceptability of (7c) as illustrated in Figure 1b. If *rudely* moved to adjoin to VP and *frequently* to V′, then *rudely* would not be able to govern its trace as *frequently* would be an intervening potential governor.

$[_{VP}\ [_{AdvP_j}\ \textit{rudely}\ ]\ [_{VP}\ [_{V'}\ [_{AdvP_i}\ \textit{frequently}\ ]\ [_{V'}$ criticize Bill] $[t_j\ ]\ ]\ ]\ [t_i\ ]\ ]$

The other issue is about the internal construction of IP, and, in particular, if there is an AgrP. According to Iatridou, adverbs could be generated before the auxiliary verb and/or main verb, so for infinitival clauses you can not claim auxiliaries move to AgrP and hence you can not prove the existence of an AgrP node. Indeed in discussing her examples, both with her approach and my approach,

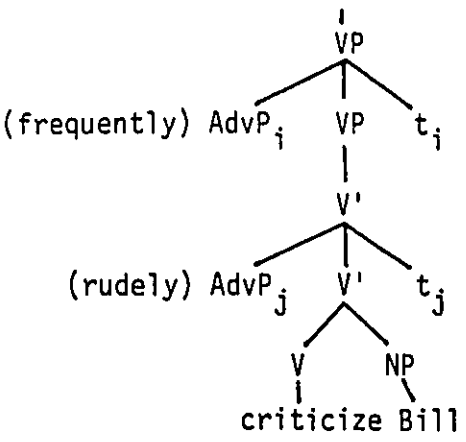

Figure 1a

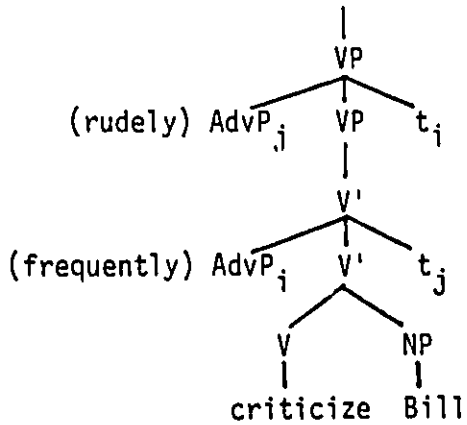

Figure 1b

an AgrP has not been relevant since only AuxP and VP were considered. But what happens to S-adverbs if there is no AgrP[1]?

Her approach would require S-adverbs to be generated as in Figure 2a since they can appear before the subject, after the subject or after the first auxiliary as in (9a). Time adverbs such as *today* would be generated as in Figure 2b since they can appear sentence initial or sentence final as in (9b). Both time adverbs and S-adverbs would be licensed by a feature in T. They would both be licensed by some feature in T, yet they could not both be generated in the same positions in a sentence.

(9) a. _ John _ has _ been doing his homework, *happily*

[1]Recall that she has the subject NP base generated in [SPEC, VP]. Also she is arguing against the existence of an AgrP node and, in particular, an AgrP node that follows a TP node.

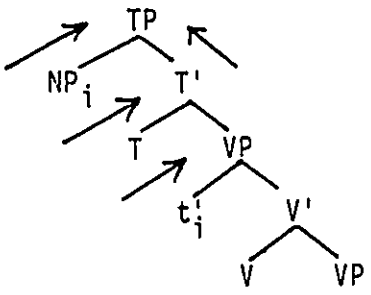

Figure 2a

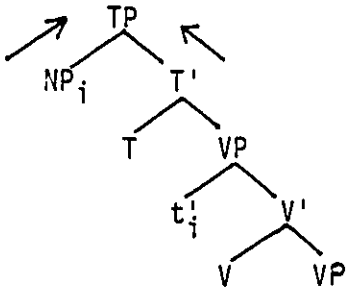

Figure 2b

b. _ John washed the dishes *tonight*

My proposal explains the differences based on the predication properties of the adverbs. S-adverbs are predicated of 2 subjects—a person and the sentence—while time adverbs are predicated of the tense node[2]. This is illustrated in Figures 3a and 3b respectively. My approach requires a distinction between a node just for tense (TP), and a node for the sentence which also contains the subject (AgrP).

Adverbs generated on the right of their subjects and moving to the left could account for the *V + adv + V* and the *to + adv + V + adv + V* orders as in (5a) and (5c) respectively. Just generating adverbs in these positions could also account for the orders. However, only my proposal gives an explanation for the

[2]In the concluding chapter I suggest that time adverbs like *tonight* have 2 arguments—the sentence and tense.

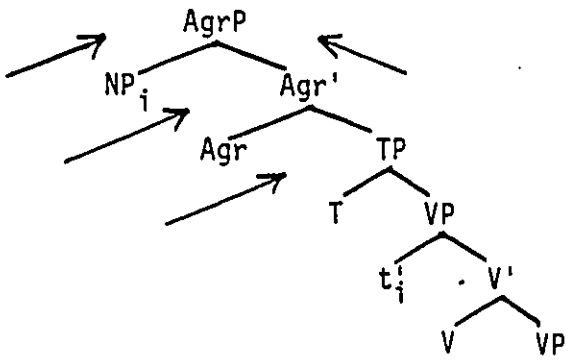

Figure 3a

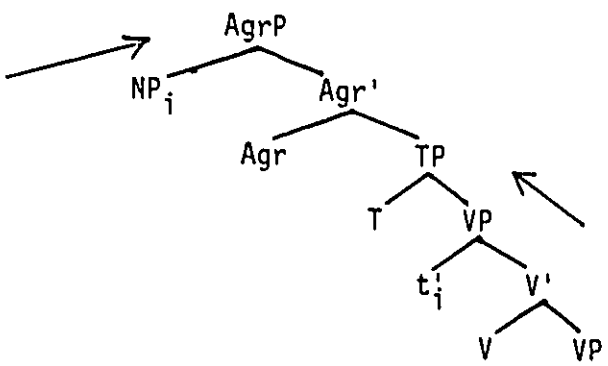

Figure 3b

following sequences: **to + adv + adv + V + V* as in (7a) and (7b), and *to + V + adv + adv + V*. Just generating adverbs would require a stipulation that in infinitival tense only 1 adverb may precede an auxiliary but 2 may precede main verbs. However, it is the subcategorization properties of the adverb that determine where consecutive adverbs are possible. Allowing adverbs to be predicated of sentences, tense, auxiliary and main verbs requires that these maximal projections be distinguishable from each other.

4.4 Zagona Revisited

Zagona provided many of the insights into my proposal. First she had a base generated position on the left of V′ with this potential X′ adjunction site existing for all auxiliaries and modals in English. However, this X′ position also exists in

English for AgrP and for CP as shown in (10a) and (b) respectively where adverbs can move into this X′ adjunction position.

(10) a. John *happily* has been washing the dishes

b. Whom *apparently* did John meet

Second she treats adjuncts as adverb predicates generated on the right of their subjects. The adverbs are maximal projections that are co-indexed with their subjects via mutual c-command. This formed the basis of adverbs being predicates generated on the right of their XP subjects. However I have the AdvP governing the subjects via m-command. She has the adverb coindexed with a feature of the head. I do not discuss the actual licensing (by features) of the adverb. My approach suggests it is not just a feature in the head that licenses the adverb but the whole XP or V′.

A third important contribution was the distinction between the number and types of adverbs that could appear with main verbs and with auxiliary verbs. She has only 1 adverbial position possible for AuxPs but 3 for main verbs—as complements, V′ adjunct or VP adjunct.

Zagona deals with *scarcely* type adverbs and adverbs as complements of V′ and as adjuncts of V′, VP and AuxP. She deals mainly with *scarcely* type adverbs. My

proposal considers adverbs to be predicates generated on the right of their subjects, and did not consider the *scarcely* type of adverb to be a predicate. I suggested they were base generated adjoined on the left of V′, perhaps as a negative quantifier.

The distinction Zagona makes between adverbs as complements and as adjuncts is that the former appear under V′ and adjuncts under VP. She allows both to move to the left of V′ and VP. As pointed out in subsection 2.4.1, what should distinguish adverb complements from adjuncts is the inability of the former to move in English. This inability to move an adverb can be attributed to subcategorization properties of the verb and not to the node to which the adverb is adjoined. For example in both (11a) and (b) the adverb *carefully* can be considered adjoined to V′ on the right. However, in (11a) the verb *worded* could be considered to subcategorize for two complements (a NP and an adverb); while in (11b) the adverb would modify its subject *washed the dishes*. Hence *carefully* can not move in (11a), whereas it can in (11b).

(11) a. John worded the letter *carefully*

b. John *carefully* washed the dishes

Zagona allows time adverbs to be adjoined to VP or to AuxP. Since her focus is on the VP, she does not consider adverb generation and movement to nodes higher

than auxiliary verbs, i.e., the internal construction of the IP, and S-adverbs are not discussed. This presents a problem for her analysis of time adverbs that was not discussed in the analysis subsection 2.4.1. Recall that she attributed ambiguity in (12) to be between the reading of the time adverbial *at 3pm* adjoined to AuxP giving the reading that the eating was done by 3pm, and adjoined to VP giving the reading that the secretary was eating at 3pm.

(12) The secretary had eaten *at 3pm* (Zagona 20b, p. 32)

According to her placement of time adverbials, a sentence should be possible where *already* is adjoined to AuxP and *yesterday* to VP[3]. Such a combination is unacceptable as in (13a). If one time adverb moves as in (13b) the sentence is acceptable. In 2.4.1 I suggested that generating time adverbs to VP and to AuxP would force the adverb adjoined to AuxP to move. However expanding the analysis to AgrP and to TP corrects the problem about the adverbs not being allowed to remain *in situ*. It also eliminates not allowing some VP adjuncts to move to the left of VP as in (13c).

(13) a. *John had come home *yesterday already*

b. John had *already* come home *yesterday*

[3]See subsection 2.4.1, Figure 12 and sentences (54a) and (b) and the ensuing discussion.

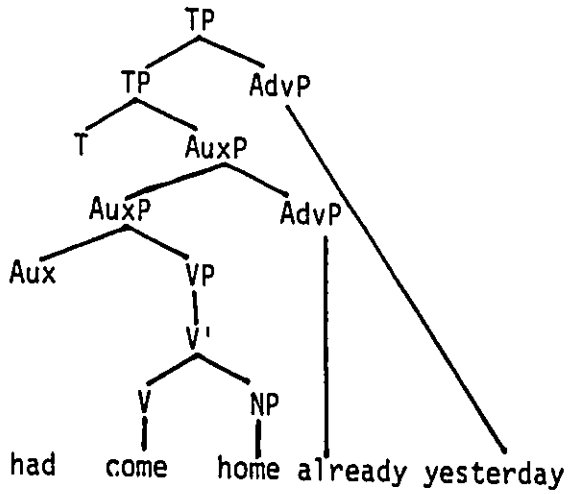

Figure 4

c. *John had *yesterday* come home

Yesterday is adjoined to TP and hence does not move to the left of TP. The adverbs are generated as in Figure 4 and can remain *in situ* as in (14).

(14) John had come home *already yesterday*

This requires a reanalysis of Zagona's explanation for the ambiguity as shown in (12). The PP time adverbial *at 3pm* is adjoined to TP. This is consistent with AdvP adjoined to TP not moving to the left of TP as in (15b). Adjunction to

TP gives the reading that the secretary was eating at 3pm. The reading that the eating was done by 3pm results from the presence of the perfective aspect. The ambiguity is thus not due to structural differences but from the presence of a past tense and a perfective aspect. This is a more plausible interpretation since you do not require some VP adjuncts not to move to the left as in (15b) while allowing others to move as in (15a). It also properly accounts for the order of the adverbs when they remain *in situ* as in (15c).

(15) a. The children *frequently* eat

b. *The children *at 3pm* eat

c. The children had eaten *already at 3pm*

The reanalysis in subsection 2.4.1 posed five questions about the movement and licensing of adverbs. First, *scarcely* type adverbs are adjoined on the left of V′. I suggested perhaps they are like negative quantifiers rather than predicates.

Second, *scarcely* type adverbs can move from their V′ left adjunction position to a higher X′ adjunction position—including to the left of modals. This is the same position between a subject and tensed auxiliary that S-adverbs can appear in. It is the same position because if an S-adverb is adjoined to Agr′ as in (16), *hardly* can not move up from the V′ adjunction.

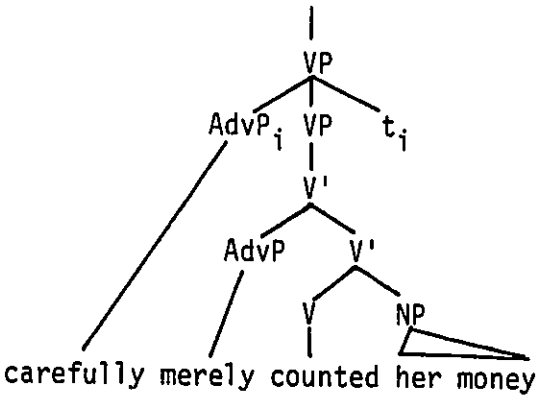

Figure 5

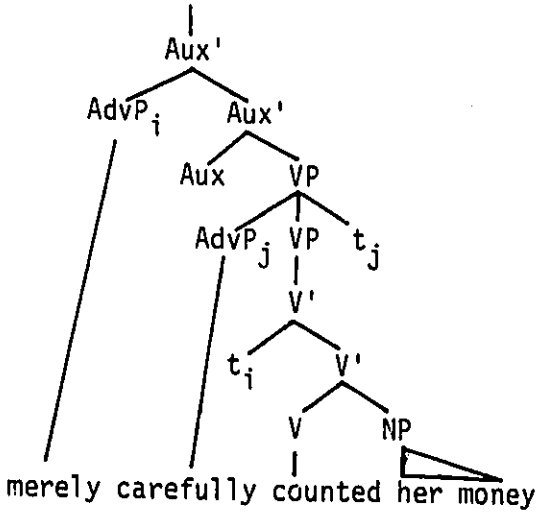

Figure 6

(16) a. *John *apparently hardly* had read any of the books

b. John *apparently* had *hardly* read any of the books

Third, if a *scarcely* type adverb is present, a VP-adverb can not adjoin to the left of VP since the *scarcely* adverb would be a potential intervening governor and block antecedent government of a trace by the moved VP-adverb as in Figure 5. If the *scarcely* adverb has moved the moved VP-adverb would be an intervening potential antecedent governor for the trace of the *scarcely* adverb as in Figure 6.

Adverbs adjoined to V′ can function as adjuncts and move as in (17) or act as complements to the verb and not be allowed to move to the left as in (18). It would be the verb subcategorizing for the adverb which accounts for the adverb not moving.

(17) a. Mary counted her money *carefully*

b. Mary *carefully* counted her money

(18) a. Bill ran *downstairs*

b. *Bill *downstairs* ran

Lastly, adverbs are not required to move. For example, base generating time adverbs to TP instead of VP gives the correct sequence of adverbs *in situ*. If the adverb can move, such as those adjoined to AuxP, and it moves within the maximal projection of the node it is attached to, the sentence is still licit.

4.5 Summary

Adverbs are predicates that subcategorize for their subjects at D-S. Adverbs also make selectional restrictions as to what subject is appropriate . Adverbs can move to the left within the maximal projection of their subjects, except for adverbs subcategorizing for tense. In conjunction with other aspects of grammar such as whether tense moves to the verb or vice versa, adverbs being predicates and moving can account for their S-S distribution. This includes sequences of adverbs that are possible. The interpretation of active and passive sentences with adverbs follows consistently from the subcategorization and semantic selection properties of the adverb.

Several of the studies cited in Chapter 2 made reference to adverbs in French and Spanish. If my proposal has validity then it should be able to explain these patterns as well. In the next chapter the applicability of my proposal for other languages will be considered.

Chapter 5. Conclusion

5.1 Introduction

The idea that adverbs are predicates has been prevalent among semanticists (cf. Bellert (1977), Grimshaw (1979), Lawler (1971)). By treating adverbs as predicates syntactically, I was able to explain several of the observations raised about adverbs in Chapter 1. These observations were raised about the syntax of adverbs because Jackendoff, Bellert and Rochette focussed on the semantic properties of adverbs, and hence could not address the syntactic issues.

Two of the observations raised in the Section 1.2 on Jackendoff[1] that have already been answered concern the adjacency of adverbs, and the behaviour of adverbs in active and passive sentences. In Chapter 3, Section 3.4 I showed why you could not have 2 S-adverbs adjacent (Jackendoff's $P_{speaker}$ and $P_{subject}$). It is not due to adverbs belonging to the same semantic class since if adverbials are generated differently (e.g., modal and adverb), you could have 2 $P_{speaker}$ or 2 $P_{subject}$ adverbials. You could have 2 $P_{speaker}$ adverbs since there are two possible

[1]See Chapter 1, Section 1.2, examples (22) and (23) for adjacency, and examples (26) and (27) for active/passive sentences.

positions for generation (CP and AgrP). Rather than having the projection rules refer to left to right ordering to embed the meaning of the sentence and stipulating that $P_{speaker}$ adverbs precede $P_{subject}$ adverbs; predication, syntactic generation, licensing of adverb traces and the idea of barriers (all XPs being barriers except AgrP) are used to explain the order of S-adverbs for which Jackendoff suggested a semantic explanation.

The other observation that was previously addressed (see Section 4.2) was the different behaviour of S-adverbs and VP-adverbs in active and passive sentences. Jackendoff suggested that VP-adverbs assign adjunct θ-roles at D-S but S-adverbs assign adjunct θ-roles at S-S. In my approach adverbs do not assign adjunct θ-roles. S-adverbs select the sentence and an animate argument for both active and passive sentences at D-S, and VP-adverbs select VP or V′ at D-S. The verb assigns an agent θ-role to the subject for actives and to the object of *by* for passives at D-S and VP-adverbs modify the verb which assigns the agent θ-role.

In the next section observations raised in the first chapter that have yet to be addressed will be answered. In particular, for Jackendoff I will relook at his 6 classes and 5 projection rules as well as two of his observations that **initial** and **aux** adverbs only occur in **aux** position in subordinate clauses, and that there is a semantic reason for the cooccurrence restriction against $P_{speaker}$ adverbs and inversion. This section will also extend the reanalysis of Bellert's discussion of the

surface properties of S- and VP-adverbs. Section 3.3 pointed out that there are also adverb predicates of TP and AuxP. How these adverbs behave in questions and under negation must be considered. Finally this section must reconsider some of the questions that were raised in the analysis of Rochette about where adverbs are in a sentence and what licenses them.

In Section 5.3 I briefly look at the implications of my proposal for the behaviour of adverbs in other languages. The conclusion summarizes the main ideas of my proposal.

5.2 Some Further Syntactic Explanations

5.2.1 Jackendoff's classes

Jackendoff grouped adverbs into 6 syntactic classes, depending upon the S-S position occupied in a sentence, and he grouped adverbials according to 5 semantic projection rules (4 projection rules if modals are not considered). The effect of my proposal for Jackendoff's classification will be looked at in this section.

Recall that Jackendoff arranged adverbs into 6 classes that were determined by the syntactic positions they could occupy in a sentence. Adverbs in **initial** and **aux** positions[2] have the sentence as one of their arguments. He has these

[2]Remember that Jackendoff's aux groups modals and tense while auxiliaries are under the VP node.

adverbs generated in front of **aux** and marked with a [+transportable] feature in their lexical representation to allow the adverb to appear in either position. He also allows adverbs generated in **aux** and dominated by S to occur in final position with a pause[3]. I have adverbs as predicates generated to the right of the sentence and moving. The D-S position would be **final**, i.e., at the end of the sentence (but preceded by a pause/comma and intonation changes) as in (3).

(3) John won the game, *evidently*

Jackendoff also had P_{merely} adverbs generated in **aux** but [+transportable] only to the front of auxiliaries and verbs. I did not consider these adverbs to be predicates generated on the right of their subjects.

Jackendoff generated some adverbs in **aux** and **final** positions, i.e., before the verb or at the end of the VP. Because they do not move, they could not be in front of auxiliaries or between a verb and its object. I considered these adverbs to be predicates generated on the right of their subjects (V′ or VP) and moving into an empty V′ position on the left or adjoining to VP on the left. Jackendoff merely stipulates where these adverbs can occur and does not mention consecutive

[3]Although he has aux generated adverbs dominated by S being allowed in final position with a pause, his table does not indicate this position. Class III has no final position indicated, so the final for classes I and II would seem to belong with the aux and final positions in the VP.

adverbs[4]. My approach accounts for consecutive VP-adverbs as in (4a), for adverbs not occurring between a verb and its object in English, and for VP-adverbs not occurring before auxiliaries. In (4b) *frequently* has moved and adjoined to VP and *rudely* has moved into the V′ position. In English lexical verbs do not move, so if an adverb has adjoined to VP or V′ on the left it will always precede the verb as in (5a). There is no adjunction position between a verb and its object. For those languages where an adverb occurs between a verb and its object as in (5b), the verb has moved to tense.

(4) a. John *frequently rudely* criticizes Bill

b. John [$_{VP}$ [$_{AdvP_j}$ *frequently*] [$_{VP}$ [$_{V'}$ [$_{AdvP_i}$ *rudely*] [$_{V'}$ criticizes Bill] [t_i]]] [t_j]]

(5) a. John *often* kisses Mary (Pollock 4c)

b. Jean embrasse *souvent* Marie (Pollock 4b)

He had adverbs in **final** only position subcategorized for by the verb. They were either intransitive prepositions, i.e., a P without its NP complement or *-ly* adverbs that were strictly subcategorized for by the verb. Like Jackendoff and Zagona I also explain adverbs in **final** only position as being part of a verb's subcategorization frame and hence unable to move.

[4]He does discuss consecutive S-adverbs but not VP-ones.

Recall that Jackendoff has 5 projection rules for adverbials that grouped them into semantic classes. He did not give the selectional restrictions for 2 of these semantic classes, i.e., the P_{root} and P_{merely} adverbials. Since P_{root} are modals and not adverbs, I do not look at them. As noted for the syntactic classification, I do not consider *merely* type adverbs to be predicates. Their semantic properties also seem to differ from adverbs as shown in (6).

(6) a. John found a *carefully* concealed weapon

b. *John found a *hardly* concealed weapon

c. **Carefully* any concealed weapons were disclosed to the investigators

d. *Hardly* any concealed weapons were disclosed to the investigators

The 3 projection rules $P_{speaker}$, $P_{subject}$, and P_{manner} stated their selectional restrictions in terms of syntax. That is, if an adverb was a daughter of S, the reading of the sentence was selected as an argument. For some adverbs that were daughters of S, the derived subject of the sentence was also an argument. P_{manner} adverbs attached their semantic meaning onto the verb. The idea of selection restrictions has changed since 1972 (cf. Grimshaw (1979) and Rochette (1990)), and adverbs are considered as selecting propositions, events, actions, etc. Selection is considered separate from subcategorization, and they do not make reference to

each other. I do not discuss the semantics of adverbs except to note that (a) one of the arguments of S-adverbs would be animate, and (b) the properties of the XP or V′ rather than the head would be selected.

There are still 2 issues raised by Jackendoff's analysis to be looked at. First, in subordinate clauses Jackendoff says adverbs in the **initial** and **aux** class can only occur in the **aux** position as in (7). As noted in Section 3.3, the **initial** position is an adjunction position as shown in Figure 1. There would seem to be no syntactic reason in terms of adverb generation and movement for one of these adverbs not occurring in **initial** position in embedded clauses. Thus (7a) should be possible. Note that Jackendoff has the sentence as ?S rather than *S. The reason for the ?S judgement would need to be explored, e.g., it could be a dialect variation[5].

(7) a. ?George says that *evidently* Bob has disappeared (Jackendoff 3.81)

b. George says that Bob has *evidently* disappeared (Jackendoff 3.82)

Second, Jackendoff suggests that inversion has a semantic effect which is incompatible with $P_{speaker}$ adverbs to explain the cooccurrence restrictions of adverbs in (8)[6]. That is, $P_{speaker}$ adverbs do not occur in questions as in (8a) though they can occur in tag questions. This could be explained by semantic reasons since (8a) is

[5]The few people in Ottawa that I asked whether (7a) was good, found it acceptable.
[6]See Chapter 1, Section 1.2.

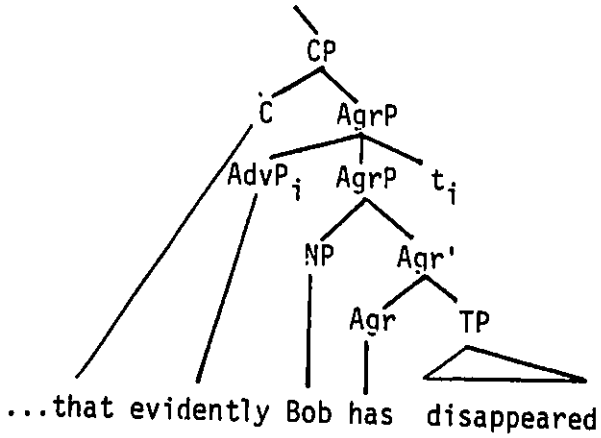

Figure 1

a Yes/No question and, for example, one argument of the adverb might have to be a proposition and not a question. As pointed out in Chapter 4[7] speaker oriented adverbs can occur in WH-questions as shown in (9), so there could not exist a cooccurrence restriction against S-adverbs and inversion.

(8) a. *Did Frank *probably* beat all his opponents (Jackendoff 3.160)

b. ??*Never* has Bill *apparently* seen anything to compare with that (Jackendoff 3.178)

(9) Whom *apparently* did John meet

[7]See example (10b) in Section 4.4, repeated here as (9).

Hence the explanation for the cooccurrence restriction in (8a) is due to the selectional restrictions and subcategorization requirements of the adverb not both being met.

In (8b) the adverb *never* moves to [SPEC, CP] and *apparently* is an intervening potential governor so that *never* can not properly govern its trace. Hence syntax explains this cooccurrence restriction.

5.2.2 Bellert's semantic effects on distribution

Using Jackendoff's classification of adverbs, Bellert looked at the semantic properties of adverbs and the effect on surface distribution. My focus was on the latter part of her discussion, i.e., the difference in distribution for S-adverbs and VP-adverbs in questions and with negation.

Bellert considered manner adverbs to be VP-adverbs, and subject and speaker oriented adverbs to be S-adverbs. She subdivided the speaker oriented adverbs into 6 groups -frequency, domain, evaluative, modal, conjunctive and pragmatic. The speaker oriented adverbs that Bellert analyzes are not just from Jackendoff's class III. Some of the adverbs she uses are not included in Jackendoff's table, e.g., domain adverbs *morally*, *logically*; and some belonged to Jackendoff's classes I and II and thus could be S-adverbs or VP-adverbs, e.g., the frequency adverb *frequently*. I rearranged Bellert's analysis of speaker oriented adverbs so that

domain and frequency adverbs were VP-adverbs[8]. What is noticeable with my arrangement is that S-adverbs pattern differently from VP-adverbs in Yes/No questions and under negation.

As already discussed in Section 1.3, S-adverbs take 2 arguments. An S-adverb with a negative sentence implies the negative sentence. Thus the adverb must raise at LF to take scope over negation which raises at LF, as in (10). These adverbs can not be in Yes/No questions as in (11).

(10) John *apparently* has not been studying → John has not been studying

LF: [*Apparently* [not [$_{AgrP}$ ...

(11) *Has John *apparently* been studying

VP-adverbs have just one argument. They are under the scope of negation so that a negative sentence with a VP-adverb implies the affirmative sentence as in (12). They can be in Yes/No questions as in (13).

(12) John does not play piano *often* → John plays piano

LF: [not [$_{VP}$ *often* [$_{VP}$ ...

(13) Did John solve the problem *logically*

[8]See Section 1.3 for the reasons, especially notes 17 and 18.

There are 2 groups of adverbs that the discussion in Section 1.3 and as above excludes. As pointed out in Section 3.3, there are time adverbs adjoined to TP and aspectual adverbs adjoined to AuxP. How do these behave with respect to Yes/No questions and negation?

First, time predicates can be in Yes/No questions as in (14a). Interestingly, the negative sentence with a time predicate as in (15) implies both the negative sentence **and** the affirmative sentence. The first implication, i.e., the negative sentence, arises from semantics[9] with the idea that each proposition can be associated with a time. I suggest that these type of time adverbs select 2 arguments—a sentence and tense. At LF *today* takes scope over negation and the sentence as with S-adverbs in (10) and in (14b). The second reading, where negation has scope over the adverb which has scope over the VP, arises due to the syntactic position of the adverb, i.e., TP is under the scope of NegP in D-S. The time adverbs that are 2 place predicates selecting a sentence and a time as its subjects seem to be definite in reference such as *yesterday* and *at 3pm*. Time adverbs that select only a VP seem to have indefinite reference such as *recently* and *frequently*.

(14) a. Has John been studying *today*

b. LF: [*today* [not [$_{AgrP}$ ...

[9]See Lawler where time adverbs are viewed as 'essential Predicates', and a proposition and a time adverb mutually entail each other.

(15) John did not study *today* → John did not study

→ John studies

There are two observations about adverb predicates of the AuxP. First, in Yes/No questions and in negative sentences the adverb becomes a negative polarity item. There is a preference for *yet* rather than *already* as in (16b) and (17). *Already* was the example used earlier of adverbs adjoined to AuxP. What needs to be investigated is whether this is a particular feature of the adverb *already* or whether it is a property of aspectual adverbs adjoined to AuxP.

(16) a. John has eaten *already*

b. Has John eaten *yet*

(17) John hasn't eaten *yet* → John hasn't eaten

→ John will eat

The other interesting observation is that these adverbs in negative sentences imply both the sentence with its negation **and** the affirmative sentence as in (17). The affirmative reading arises in syntax since both the VP and the adverb are under the scope of negation. What needs further study is how the sentence with negation reading arises.

5.2.3 Rochette's semantic account

It is now possible to answer the questions that were raised in Section 1.4 in the summary of Rochette (1990a, b). One point raised in the snalysis of her semantic account was why were adverbs adjoined to an X rather than an XP, and vice versa. This question arose because Rochette based her explanation on the S-S distributional properties of the adverbs. This problem is solved by viewing adverbs as predicates, not only semantically but also syntactically. Adverbs are not adjoined to heads. As predicates, they are base generated on the right of their subjects. They are base generated adjoined to an XP or V'. Adverbs can move to adjoin to the left of XP or move to an empty X' adjunction position on the left.

Another point was raised about the semantic category Event. The adverb selects the semantic category which determines the node it is attached to. For Event, the node could be V, VP, I or IP. If the node were V or VP, the Event category could take on a manner reading or be a 2 place predicate with agent and Event as arguments. If adjoined to I or IP, the adverb selecting Event would be a 2 place predicate with surface subject and Event as arguments. Thus there were 3 related problems: sometimes a semantic category (agent) is selected and sometimes a grammatical category (surface subject); how would a 2 place adverb selecting Event and adjoined to V or VP govern its second argument; and for adverbs selecting Event and adjoined to I or IP, the surface subject might not be selected.

According to my proposal, adverbs adjoined to AgrP select 2 arguments–the sentence and an animate argument. The animate argument can be a complement of the adverb, the NP subject of AgrP in [SPEC, AgrP], implicit, or the speaker. There are no 2 place predicates adjoined to VP. The agent argument reading arises from the verb assigning θ-roles and the adverb modifying the V′ or VP.

Finally, adverbs can not be freely adjoined to the left or right. Nor are there language specific constraints governing the direction the adverb adjoins to. Rather like other predicates in English, adverbs are generated on the right of their subjects. Presumably if a language generated predicates on the left of their subjects, then adverbs[10] would also be base generated on the left of their subjects.

5.2.4 Summary

A semantic explanation is inadequate to account for the positioning of adverbs in sentences. Adverbs are predicates that subcategorize for an XP or V′, and make selectional restrictions for their subjects. The syntactic analysis shows adverbs subcategorizing for maximal projections at D-S and governing their subjects at S-S. Discussion of the selectional restrictions of adverbs should now be reconsidered in these terms.

[10]This assumes that adverbs in that language form an open lexical category as they do in English.

The particular syntactic position the adverb occupies determines the semantic interpretation of the adverb. This was already noted in Section 1.3[11] where Bellert's domain adverbs *logically* and *morally* were viewed as adjoined to VP but became speaker oriented (i.e., evaluative or pragmatic) when adjoined to AgrP as in (18).

(18) a. John solved the problem *logically*

b. *Logically*, John solved the problem

Another example that supports the syntactic position determining a semantic interpretation is with the meaning change for the adverb *hopefully*. Since the 1600s, *hopefully* has meant 'in a hopeful manner', occupying VP-adverb positions as in (19a). *Hopefully* later acquired a second meaning 'it is hoped' as in (19b). This latter meaning has been commonplace since at least the 1930s. This S-adverb meaning would presumably have resulted from positioning *hopefully* at the beginning of the sentence since *hopefully* can occur in initial position and takes on this more recent meaning.

(19) a. He set to work *hopefully*

b. *Hopefully* we will have a warm day for the picnic

[11]See especially note 18.

5.3 Implications

What are the implications of my proposal for adverbs in other languages. Not all languages have adverbs as an open lexical category. Thus adverbs may not be predicates in all languages. For those languages where adverbs are predicates we would expect their subjects to be generated on the same side as subjects of other predicates are generated. We would also expect the adverb in all languages to subcategorize for a syntactic category and to make selectional restrictions. As well the AdvP would govern its subject(s).

Are there differences in the behaviour of adverbs in different languages? Chapter 2 cited examples of sentences in French and Spanish where an adverb occurs between a verb and a direct object as in (20).

(20) a. Cortó *rápidamente* el pan (Zagona 42b, p. 148)
(S/he) cut quickly the bread

b. Jean embrasse *souvent* Marie (Pollock 4b)

c. *John kisses *often* Mary (Pollock 4a)

The same principles used to explain the *Adv + V + dO* order in English can be used to explain the *V + Adv + dO* order in French and Spanish. The adverbs

rápidamente, *souvent*, and *often* are predicates base generated on the right of V′ or VP and move to the left. While the verb moves to tense in French and Spanish producing the *V + Adv + dO* order, tense moves to the lexical verb in English giving the *Adv + V + dO* order. It is actually the AdvP that moves to the left; so, being an XP, it is not a potential intervening governor between the X chain (V_i and t_i for French and Spanish or t_i and T_i for English). Thus differences in movement between tense and verbs can account for the different word orders with VP-adverbs rather than having to cite language specific behaviours for VP-adverbs.

We would expect differences between languages in the subcategorizations and selectional restrictions particular adverbs make. For example, in English *scarcely* but not *probably*[12] is generated to the left of V′ and can move to the left of Aux′ and Agr′; and when it moves to [SPEC, CP] it triggers subject aux inversion as in (21).

(21) a. *Scarcely* had Mary finished her homework when ...

b. **Probably* had Mary finished her homework when ...

In French, both *à peine* and *peut-être* trigger subject aux inversion as in (22).

(22) a. *À peine* a-t-il fait cela quand elle s'est retournée

[12]In English *probably* is considered an S-adverb, belonging to Jackendoff's class III.

b. *Peut-être* a-t-il fait cela (Rizzi and Roberts, 7b, p. 4)

One similarity in subcategorization properties between an adverb in French and English is with time adverbs like *today*. In French time adverbs like *hier* also subcategorize for TP and can not move to the left as in (23a). The *V + Adv + dO* order as in (23c) is a result of "heavy" NP complements moving rightward past the adverb[13]. There are also time adverbs in French and English that subcategorize for a VP and can move to the left as in (25).

(23) a. *Jean pense *hier* avoir vu Marie place de l'Opéra (Pollock 33c)

b. Jean pense avoir vu Marie place de l'Opéra *hier* (Pollock 33 d)

c. Jean pense avoir vu *hier* Marie place de l'Opéra (Pollock 34b)

(24) a. John thinks he saw Mary *yesterday*

b. *John thinks he *yesterday* saw Mary

(25) a. John could have read the book *recently*

b. John could have *recently* read the book

c. Jean a lu le livre *récemment*

d. Jean a *récemment* lu le livre

[13]This movement is referred to as "scrambling". Note that heavy NP shift also occurs in English as, for example, in (10a) and (b) in Section 3.3.

One difference that needs to be investigated concerns movement positions. Spanish and English do not allow *scarcely* type adverbs to follow the verb, whereas French does as in (26). Is this related to the observation that in Spanish and English an adverb can occur between the subject and first tensed auxiliary, whereas in French an adverb could not occur there. In English this position was shown to be related to a possible X′ adjunction site that exists on the left.

(26) a. *Habia escrito la carta { *meramente/apenas/hasta*} (Zagona 44, p. 148)
(S/he) had written the letter {merely/barely/even}

b. Pierre a vu *à peine* Marie (Iatridou 47)

c. *John writes *merely*

Another example of a difference in adverb movement is between English and Modern Greek. English allows only the AdvP to move. Greek allows the adverb head to move and to incorporate into the verb, if it is a VP-adverb as in (27)[14]. The unincorporated sentence is in (27a) while in (27b) the adverb has incorporated into the verb.

(27) a. O Yánis diafimízi ton caftó tu *sixná* (Rivero 48a)
The John advertise+Act himself often

[14]See Rivero (1990).

'John promotes himself often'

b. O Yánis *sixno*diafimízi ton eaftó tu (Rivero 48c)

The John often-advertises himself

5.4 Conclusion

This thesis proposes that adverbs are **predicates** that must have their subcategorization requirements met at D-S and their selectional restrictions met at S-S. The subject of the predicate can be an XP or V′ in English. Certain time adverbs and S-adverbs have 2 arguments–the sentence and a time or person respectively. Adverbs adjoined to AuxP and VP have 1 argument.

The **maximal projection** of the adverb governs its subject(s) at S-S where **government** is defined as follows.

X governs Y iff

X is an XP m-commanding its subject Y,

X has lexical content, and

no barrier intervenes and relativized minimality is respected.

An adverb may move but it must remain within the domain of the subject XP.

Although it is unspecified how the trace is licensed by the moved AdvP, it is noted that the trace is bound within the domain of the adverb. Binding of adverb traces parallels Binding Principle A where a [+ anaphor] must be bound in its G.C.

Following X-bar theory and predication theory, adjunction allows only one recursion of the AdvP to XP and X′. The possible adjunction positions open for moved adverbs, and the licensing requirement of the adverb can account for the S-S distribution of adverbs.

The appearance of adverbs in sentences is highly constrained by interacting principles and levels. Adverbs are predicates generated in an adjunction position on the right of their subjects in D-S. Predication and X-bar theory constrain the number of adverbs that can be generated and where they can be generated. It also allows 2 place adverb predicates to express one of these arguments in a complement position internal to the AdvP.

Adverbs govern their subjects at S-S through licensing by their maximal projections. The licensing requirement and the selectional restrictions adverbs make constrain what adverbs can occur and where.

Movement of adverbs is not random but restricted in English to the **2 types of movement**–substitution to an empty X′ adjunction position on the left or to [SPEC, CP], or adjunction to an XP on the left. The type of possible movement and the licensing requirements determine where an adverb can move.

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