

SENTENCE PROCESSING:
Psycholinguistic Studies
Presented to Merrill Garrett

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- Shattuck-Hufnagel, S., & Klatt, D. H. *Phonetic speech errors rule out three models of sentence production*. Paper prepared for the working group on slips of the tongue (V. Fromkin, Chairperson), XII International Congress of Linguists, Vienna, Austria, September 1977.
- Shattuck-Hufnagel, S., & Klatt, D. H. The limited use of distinctive features and markedness in speech production: Evidence from speech error data. *Journal of Verbal Learning and Verbal Behavior*, 1978, in press.
- Shattuck-Hufnagel, S., & Klatt, D. H. *Feature constraints on different types of phonetic speech errors*. (Manuscript in preparation).
- Wickelgren, W. A. Distinctive features and errors in short-term memory for English consonants. *Journal of the Acoustical Society of America*, 1966, 39, 388-398.

11

Like Syntax

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In developing a theory of ongoing speech production, researchers have typically assumed that important clues may be provided by studying factors that occur in casual speech but not in writing. This assumption serves as a basis for investigating speech errors (e.g., Fromkin, 1971; Garrett, 1975; Shattuck-Hufnagel, Chapter 10 of this volume), hesitation pauses (e.g., Boomer, 1965; Goldman-Eisler, 1968; Martin, 1971), and various phonological reductions (Baker, 1972; King, 1970; Stampe, 1972; Zwicky, 1970). Here, we invoke the assumption as a rationale for studying restrictions on the occurrence of the word *like* as a filler, meaning roughly *for example* or *approximately*, as in (1).

- (1a) John is like the best baseball player in town.
 (1b) We intended to leave Chicago at like 9 o'clock.

The precise meaning of *like* as a filler varies in different sentences (a matter we will return to later). Our primary concern, however, lies not with these shades of meaning but with restrictions on *like*'s occurrence.

In many sentences, including (1), *like* can occur in casual speech without an accompanying pause. In this respect, *like*'s behavior can be distinguished from interjections (e.g., *oh, well, say*) studied by James (1973). In other contexts, as in (2), a bordering pause is required:

- (2a) Bob's like *(.) father would not leave town without us.
 (2b) We should leave town *(.) like.

In (2) and throughout this paper, we denote a pause by a comma. An asterisk is placed outside the parenthesized comma to signify that the sentence is ungrammatical when the comma is not present.

Initially, we confine our remarks to *like* as it occurs in contexts that do not require a pause. We then consider pause-bounded *like* and relate *like*'s behavior to adverbial intensifiers such as *even*, *only*, *also*, and *just*. The analysis of *like* and intensifiers provides consequences for the analysis of English auxiliaries and other issues. Finally, we discuss implications for a theory of sentence processing.

PAUSELESS LIKE

Let us examine a typical example of the kind of puzzle that *like* poses to any researcher. Consider (3):

- (3) λ Why λ don't! λ we λ call λ both λ Harriet λ and λ Suzie λ up
 ?* * * * ?* *
 λ this λ afternoon λ ?
 * *

The results of inserting one or more *likes* in the various niches between the words of (3) are given by what appears under the lambdas in (3): if nothing is there, we would find grammatical a sentence appearing with *like* in the position of the lambda. On the other hand, if an asterisk or some other index of less than perfect grammaticality is under a lambda, *like* in that place will produce a sentence that is ungrammatical to that extent.

A number of factors can be isolated that predict such arrays of asterisks as appear in (2) and (3). Let us briefly examine some.

First, as Bill Cantrall has pointed out to us (personal communication, 1977), because *like* often means something close to "approximately," it will be semantically odd if it precedes any element about which the speaker must be certain [examples due to Cantrall]:

- (4a) Give 'em hell, (*like) Harry! (Speakers know to whom they are speaking.)
 (4b) What's (*like) that? (out when *like* is not a preposition)
 (4c) May I introduce you to (*like) my mother? (out as a bona fide introduction)

¹When the pronoun receives emphatic stress, however, *like* is permitted. This observation is accounted for in the following discussion by reference to *like*'s association with focus.

Although these examples argue strongly that one component in a description of *like* must be a semantic one, there are equally strong arguments to the effect that phonology must play a role.² This appears most clearly in cases involving two synonymous expressions, one of which is longer than the other, such as *submarine* and *sub*, or full names and nicknames.

- (5a) They photographed two like submarines.
 (5b) ?They photographed two like subs.
 (6a) Did they invite like Isadore?
 (6b) ?*Did they invite like IZ?

Of course, the short and long expressions also differ in their degree of formality, but *like*'s preference for casual speech would predict, if anything, that (5b) and (6b) would be better than (5a) and (6a), contrary to fact. It seems probable to us that the reason for these contrasts is phonetically determined; i.e., after *like*, an elaborate fundamental frequency gesture must be executed and that with a short closed syllable, there is not enough time to perform this gesture.

The occurrence of *like* is also influenced by overall speaking rate, with greater acceptability at faster rates. Thus, *like* can only appear in sentences spoken at a fairly rapid rate of speech, e.g., (7a), and not in the same sentence read with exaggerated slowness, as in (7b).

- (7a) I was (like) very disappointed in you.
 (7b) I... was... (*like)... very... disappointed... in... you.

It appears that *like* is often used in fast speech because of the speaker's need to buy processing time.

To demonstrate that a full description of the behavior of *like* will have to be sensitive to both semantic and phonological parameters, we examine cases of

²Dennis Peacock (personal communication, 1977) has suggested that the preferred position of *like* is at the first +juncture to the left of a stress increase. Such an account would correctly block *like* before the head noun of an NP. In addition, according to Peacock, the juncture account would block *like* from occurring between two words not separated by a +juncture, as in (ib) below, where *want to* is not separated by a +juncture and is reducible to *wanna*.

- (ia) He wants like to do it alone. (Peacock's judgments)
 (ib) *I want like to do it alone.

In our speech, however, (ia) and (ib) are equally acceptable. Also, the +juncture account fails to predict the acceptability of cases such as the following, where *like* can be inserted at a location where no +juncture exists, as evidenced by the reductions possible when *like* is omitted:

- (iia) I got like your message. (*got your-gotcha*)
 (iib) Let's aid like your mother. (*aid your d-ɹ* palatalization)

constituent structure ambiguity. Consider (8a), in which the prepositional phrase *to Kennedy* either can be the indirect object of *send*, on which reading (8a) and (8b) are synonymous, or can be an object of the adjective *insulting*, on which reading it is (roughly) synonymous with (8c).

- (8a) The pranksters sent the letters that were insulting to Kennedy.
- (8b) The pranksters sent Kennedy the letters that were insulting.
- (8c) The letters that were insulting to Kennedy were sent by the pranksters.

Note that *like* is often associated with elements that bear emphatic stress, as *Kennedy* would, in (8a), if it were used to answer (9).

- (9) To whom did the pranksters send the letters that were insulting?

What is of interest here is that, although *like* could precede *to Kennedy* in an answer to (9), it could not precede *insulting*: thus, (10a) can answer (9), but (10b) cannot.

- (10a) The pranksters sent the letters that were insulting like to *Kennedy*.
- (10b) *The pranksters sent the letters that were like insulting to *Kennedy*.

On the other hand, there are contexts in which (10b) could be used; e.g., as an answer to (11).

- (11) What kind of letters did the pranksters send?

In an answer to (11), *insulting to Kennedy* would be a constituent, whereas it would not be one in an answer to (9). This type of syntactic difference is the kind that we, rather arbitrarily, single out as a starting point for our examination of the behavior of *like*.

Pauseless *like* is typically prohibited before certain grammatical categories, including head nouns, tensed auxiliaries, and pronouns, as in (12):

- (12a) *Bob's like bank is closed on Fridays.
- (12b) *We saw a red like helicopter at the state fair.
- (12c) *Ed like is working nights.
- (12d) *It like has been raining for two days.
- (12e) *We gave like her a birthday party.
- (12f) *Did like you have a good round?

However, a moment's reflection serves to indicate that describing constraints in terms of grammatical categories per se is the wrong tree to bark up. Each of

the sentences in (12) becomes acceptable when the word following *like* is emphatically stressed, as in (13):

- (13a) Bob's like BANK is closed on Fridays.
- (13b) We saw a red like HELICOPTER at the state fair.
- (13c) Ed like IS working nights.
- (13d) It like HAS been raining for two days.
- (13e) We gave like HER a birthday party.
- (13f) Did like YOU have a good round?

Thus, we seem to be driven to the conclusion in (14):

- (14) Pauseless *like* precedes and is associated with focused elements.

By *focus*, we mean new information contained in an utterance that is not assumed by the speaker to be previously shared by both speaker and hearer (following Chomsky, 1971; Jackendoff, 1972). Although it is not always clear exactly which element in a sentence contains focus, it is generally agreed that, in question-answer cases, the focus is associated with that part of the answer that corresponds to the *wh* word of the question, as in (15) through (17).

- (15a) *Who* is sending eggs to Marie?
Focus
- (15b) *They* are sending eggs to Marie.
Focus
- (16a) *What* are they sending to Marie?
Focus
- (16b) They are sending *eggs* to Marie.
Focus
- (17a) *Who* are they sending eggs to?
Focus
- (17b) They are sending eggs to *Marie*.
Focus

As Chomsky (1971) has noted, the focused element need not correspond to a constituent in deep structure. Thus, *like* can be associated with the focused phrase "certain to lose" in the following sentence in reply to the question "Is John certain to win?"

- (18) No, John is like certain to lose.

In this case, the approximate deep structure is:

- (19) [_SJohn win]_S is certain. = Chomsky's [57]

In the *a* sentences of (15) through (17), it is clear that the *wh*-words can be preceded by *like*:

- (20a) Like who is sending eggs to Marie?
- (20b) Like what are they sending to Marie?
- (20c) Like who are they sending eggs to?

The claim made by (14) is that in the *b* sentences *like* can only modify the focused elements. That it *can* modify these elements can be seen in (21); that it cannot modify other elements can be seen from the ungrammaticality of the sentences in (22), when these are understood as answers to (15a) through (17a).

- (21a) Like THEY are sending eggs to Marie.
- (21b) They are sending like EGGS to Marie.
- (21c) They are sending eggs to like MARIE.
- (22a) %THEY are like sending eggs to Marie.
- (22b) *THEY are sending like eggs to Marie.
- (22c) *THEY are sending eggs like to Marie.
- (22d) *THEY are sending eggs to like Marie.

We have prefixed (22a) with the percentage sign to indicate our belief that there is a good deal of variation in judgments of acceptability for this type of sentence. Whereas (22a) is dubious for us, there are speakers who accept it. In addition, there are some sentences that do not differ from (22a) in any significant respect, as far as we can see, in which a *like* following the focused element is acceptable for us. One such example is (23b).

- (23a) What sort of thing might appear, if we say this spell?
- (23b) A DEMON might like appear.

As far as we know, pauseless *like* can follow the focused element in this specific context only: The focus is on the subject noun phrase (NP), and *like* follows the tensed auxiliary. When *like* is further away from the subject, as in (22b) through (22d), we know of no speakers who accept the sentences.

Let us now turn to a consideration of the positions in which *like* can appear in sentences such as (16) and (17), where the focused NP is not a subject. The relevant facts appear in (24) and (25), respectively.

- (24a) Like they are sending EGGS to Marie.
- (24b) *They like are sending EGGS to Marie.
- (24c) They are like sending EGGS to Marie.
- (24d) They are sending like EGGS to Marie.
- (24e) *They are sending EGGS like to Marie.

- (24f) *They are sending EGGS to like Marie.
- (24g) *They are sending EGGS to Marie like.
- (25a) Like they are sending eggs to MARIE.
- (25b) *They like are sending eggs to MARIE.
- (25c) They are like sending eggs to MARIE.
- (25d) *They are sending like eggs to MARIE.
- (25e) They are sending eggs like to MARIE.
- (25f) They are sending eggs to like MARIE.
- (25g) *They are sending eggs to MARIE like.

Initially, this distribution of asterisks is puzzling, but we believe the basic principles are fairly simple. First, the ungrammaticality of (24e), (24f), (24g), and (25g) is due to the subpart of principle (14) which states that *like* must precede the focus. We formulate this law as in (26).

- (26) "Like" First (LF)
Pauseless *like* must precede the element it modifies (except that for some speakers, *like* may follow a tensed auxiliary, yet be modifying a focused subject).

However, if *like* could appear anywhere to the left of the focused element, the sentences (24b), (25b), and (25d) would all be well formed. We believe that the reason for their ill-formation is a stronger law, given in (27).

- (27) The "Like" as a Left-Bracket Condition (LLBC)
Pauseless *like* must open a constituent that dominates the focused element.

Condition (27) will explain the ungrammaticality of (24b) and (25b), under the assumption that sentences with auxiliaries are ternary branching, as suggested in (28), which is presented in Fig. 11.1.

It is immaterial to our analysis whether there is a node auxiliary (Aux) that is distinct from verb (V), whether there is a node verb phrase (VP) or not. All that is required for the LLBC to explain why *like* can follow but not precede *are* is a structure that assigns constituency to the string of words from *sending* to *MARIE* and does not assign such status to the string of words from *are* to *MARIE*. Because this last node, NP₃, is the focused element (we have circled it for dramatic effect), the LLBC will allow *like* to open NP₃ itself, or S₂ or S₁. Because V₁ is not one of these, *like* cannot precede it, cf. *(24b) and *(25b), and the same is true of NP₂, which explains the badness of *(25d).

A fairly clear argument for the correctness of Condition (27) is provided by the structures of (29a) and (29b):

- (29a) red and white and blue
- (29b) red, white, and blue.

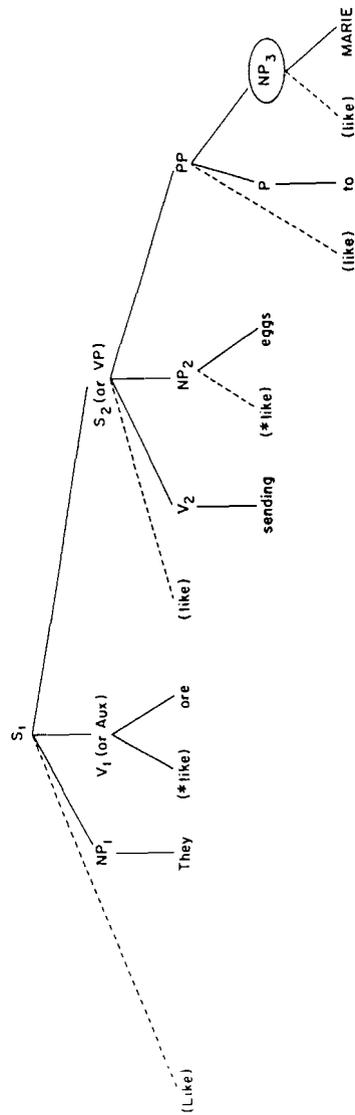


FIG. 11.1. Example (28)

We assume that (29a) can be assigned the coordinate, ternary-branching structure shown in (30), which is demonstrated in Fig. 11.2, as well as the two binary-branching structures shown in (31), presented in Figs. 11.3 and 11.4. This claim of a three-way structural ambiguity for (29a) is uncontroversial, as far as we know, as is the claim, embodied in (32), that only the first of these structures, (30), can lose its first *and* by the operation of *Conjunction Deletion*.

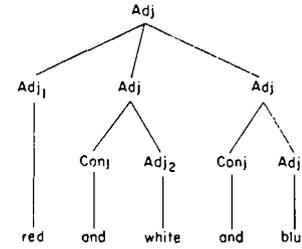


FIG. 11.2. Example (30)

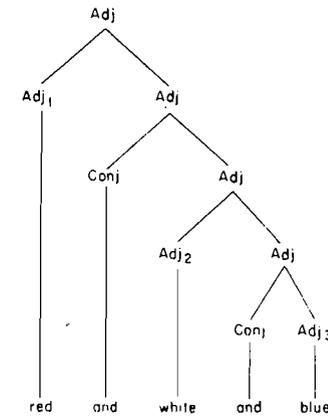


FIG. 11.3. Example (31a)

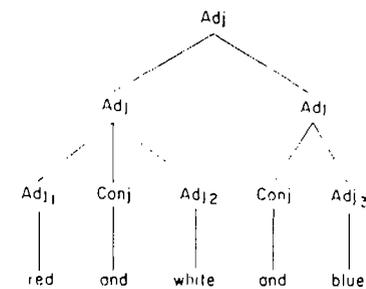


FIG. 11.4. Example (31b)

(32) *Conjunction Deletion*

When n elements of a coordinate structure, $n \geq 3$, are separated by $n - 1$ occurrences of coordinating conjunctions, such as *and* or *or*, the first $n - 2$ of these may be deleted and replaced by a (sometimes optional?) "comma intonation."

Supposing, now, we focus on *blue* in (29), by forming the echo questions shown in (33).

(33a) red and white and WHAT?

(33b) red white and WHAT?

We assume that although the first of these is still three-ways structurally ambiguous, the second has only the coordinate structure corresponding to that in (30). Under this assumption, the differential behavior of *like* in (33) can be explained: cf. (34).

(34a) (like) red and (like) white and (like) WHAT?

(34b) (like) red, (*like) white and (like) WHAT?

The LLBC will only allow a *like* before *white* if *white and WHAT* is a constituent, as is the case in a structure such as (31a). However, in order for *Conjunction Deletion* to be able to remove the first *and* of (33), its structure must have been like (30), and in this structure, a *like* before *white* could not open a constituent that dominates *WHAT*. Thus, it appears that the LLBC properly characterizes a major constraint on *like*'s occurrence.

PAUSE-BOUNDED *LIKE*

In summary, pauseless *like* precedes the focused element and opens the constituent containing this element. Let us turn now to *like* as it occurs with an accompanying pause. Recall that in sentences (24) and (25), the focused elements could be immediately preceded, but not followed, by pauseless *like*. In sentence (35), however, we see that the same focused elements can be followed, but not preceded, by pause-bounded *like*:

(35a) THEY, like, are sending eggs to Marie.

(35b) They are sending EGGS, like, to Marie.

(35c) They are sending eggs to MARIE, like.

In general, whenever pauseless *like* can immediately precede the focused element, we can find a synonymous grammatical sentence in which pause-

bounded *like* immediately follows the focused element. To account for this highly systematic distribution, we propose the following transformational rule:

(36) "*Like*" Hopping

	X	<i>like</i>	A	Y	
Structural					OPTIONAL
Description	1	2	3	4	=====>
Structural					
Change	1	0	3+, +2+, 4		

Condition: A is a constituent that contains the focused element (as determined by the LLBC)

For a clear demonstration that hopped *like* must follow the focused element, reconsider sentence (25d), reproduced below:

(25d) They are sending like eggs to MARIE.

Now note that if *like* is hopped around *eggs*, the sentence is still ungrammatical: cf. (37).

(37) *They are sending eggs, like, to MARIE.

Contrast (37) with (25e), which we have repeated for convenience as (38).

(38) They are sending eggs like to MARIE.

Despite the fact that (37) and (38) contain the same sequence of words, we see that they differ in grammaticality because, although the pauseless *like* of (38) can only be associated with a following focused element, the pause-bounded *like* of (37) can only be associated with a preceding focused element, and in (37) *MARIE* follows pause-bounded *like*.

The same point can be made another way: In (39b), we give the sentence that would result if we applied "*Like*"-Hopping to (24d), which we repeat as (39a).

(39a) They are sending like EGGS to Marie.

(39b) They are sending EGGS, like, to Marie.

In *(40), we have repeated the ungrammatical *(24e), which is identical to (39b), except that there are no commas bounding *like*.

(40) *They are sending EGGS like to Marie.

The generalization that emerges from these two pairs of string-identical sentences (actually, all four are identical if we disregard intonational factors) is stated in (41).

- (41) Pauseless *like* must precede the focused element it is associated with; pause-bounded *like* must follow it.

Condition (41) predicts that *like* must be pauseless when it appears in sentence-initial position, whereas it must be bounded by a pause in sentence-final position. The prediction for sentence-final position is confirmed by (42).

- (42) George and I are leaving tomorrow* (,) like.

the prediction for sentence-initial position fails, however, as shown in (43).

- (43) Like (,) George and I are leaving tomorrow.

We suspect that the pause allowable in (43) is a hesitation pause, distinguishable from the pause normally accompanying *like* when it is hopped, although we cannot at present provide any support for such a distinction. We believe that the pause in (43) would be empirically distinguishable by its longer duration, compared with the duration of pauses that accompany hopped *like*.

Thus, it appears that, in general, pause-bounded *like* must directly follow the constituent that contains the focused element: This is the only kind of situation that our hopping rule (36) allows. Thus, (36) will account for the badness of *(44d).

- (44a) Who is working on Greek?
 (44b) Like BOB is working on Greek.
 (44c) BOB, like, is working on Greek. (from [40b], via "Like" Hopping)
 (44d) *BOB is, like, working on Greek.

Note, however, that (44a) can be answered by (45).

- (45) BOB is working on Greek, like.

If *like* BOB is a constituent, an NP, in (44b), "Like" Hopping will be unable to apply to produce (45). Suppose, however, that *like* is not attached to BOB, but merely opens the sentence, as shown in (46), shown in Fig. 11.5.

The LLBC, (27), would allow *like* to be associated with BOB, in this case, yet "Like" Hopping would still be unable to produce (45). The only way to generate (45) by (36), while preserving the LLBC, would be to postulate that

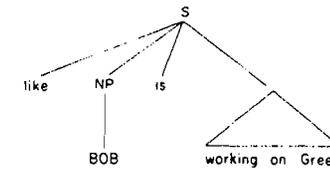


FIG. 11.5. Example (46)

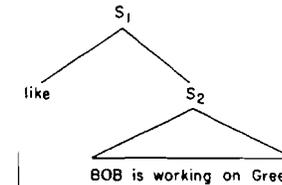


FIG. 11.6. Example (47)

"BOB is working on Greek" can be a constituent in (44b), presumably in some structure such as (47), shown in Fig. 11.6.

The conclusion that an immediately self-dominating structure is necessary to allow "Like" Hopping to operate correctly can be supported by simpler cases of hopped *like*. Consider (48b), the hopped version of (48a), which is an alternate answer to (44a).

- (48a) Like THE LINEBACKER is working on Greek.
 (48b) The LINEBACKER, like, is working on Greek.

Again, if the formulation in (36) is correct, the subject of (48a) must have a structure such as that shown in (49b); (49a) would not provide a constituent for *like* to hop over (see Fig. 11.7).

Let us return now to the prediction implicit in our formulation of "Like" Hopping: That a pause-bounded *like* must immediately follow a focus-containing constituent. This prediction correctly excluded *(44d), and, similarly, it can explain why (50c) cannot be used as a *like*-hopped version of (50b), in replying to (50a).

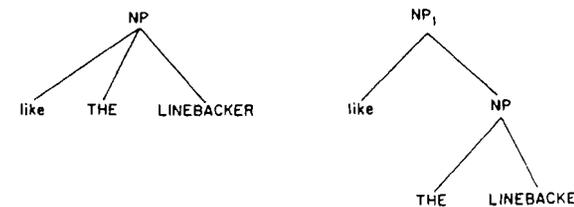


FIG. 11.7. Example (49a) left and (49b) right

- (50a) How should we get the onions to my sister?
 (50b) Why don't we like MAIL your sister the onions?
 (50c) *Why don't we MAIL your sister, like, the onions?

Similarly, (51c) is not a possible *like*-hopped version of (51b):

- (51a) How can I get my aunt off of the dock?
 (51b) Why don't you like PUSH your aunt off?
 (51c) *Why don't you PUSH your aunt, like, off?

Nonetheless, the prediction seems to be too strong, in some cases. Sentence (50a) can be replied to by (52a), and it seems to us as if (52b), which contains a pause-bounded *like*, can also be used, despite the fact that the focused element, *MAIL*, is not immediately followed by the pause-bounded *like*.

- (52a) Why don't we like MAIL the onions to your sister?
 (52b) Why don't we MAIL the onions, like, to your sister?

We have not found any satisfactory account of the difference between *(44d), *(50c), and *(51c), on the one hand, and the unexpectedly acceptable (52b), on the other.

There is one final factor that influences the operation of "*Like*"-Hopping. Consider the (b) versions of (53) through (56), which are answers to the (a) versions. From all that we have said to date, we should expect *like*-hopped variants to exist. Nonetheless, the predicted (c) versions are all blemished, to a greater or lesser extent.

- (53a) Whose wallet is this?
 (53b) That's like BOB's wallet.
 (53c) *That's BOB's, like, wallet.³
 (54a) How heavy was that wallet?
 (54b) It was like UNEXPECTEDLY heavy.
 (54c) *It was UNEXPECTEDLY, like, heavy.
 (55a) How should we position the microphones with respect to the bridge?
 (55b) Why don't you put them like UNDER the bridge.
 (55c) ??Why don't you put them UNDER, like, the bridge.

³We have asterisked (53c) only as a *like*-hopped answer to (53a). There are circumstances under which the same string of words as (53c) can be used, with a pause after *like*, but not before, to suggest that the speaker is not sure whether *wallet* is the correct word to use to describe the odd steel and sandstone device that he knows Bob carries around his money in. We might punctuate this sentence as in (i). "That's Bob's like ---wallet." We believe this type of "hesitation-*like*," to give it a name, to have different properties from hopped *like*, but we have not studied this question in any detail.

- (56a) How should we get the onions to my sister? [=50a]
 (56b) Why don't you like MAIL the onions to your sister. [=50b]
 (56c) ??Why don't you MAIL, like, the onions to your sister.

Note that the focused elements in these sentences are all on left branches.

It is, thus, almost generally true that *like* may not be hopped over a constituent, if the constituent that is hopped over opens a larger constituent. We have qualified with "almost" because, for reasons we do not understand, *like* can hop over a subject NP, despite the fact that the subject is on a left branch.

Another case where *like* seems not to be able to hop over a left branch is in coordinate structures:

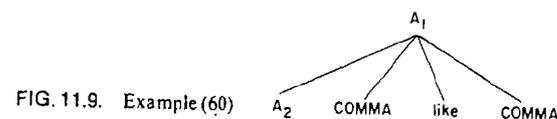
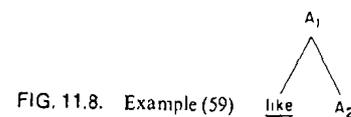
- (57a) Who is similar to you?
 (57b) Like TOM and I are similar.
 (57c) ??TOM, like, and I are similar.

To account for (54) through (57), we introduce the following restriction.

- (58) *The Left-Branch Hopping Ban*: "*Like*"-Hopping is blocked if term 3 of (36) is a left branch of any node type other than S.

Armed with the observations concerning hopped *likes*, let us return to the LLBC. If we are correct in our claim that *like* can only hop over constituents, then it is most probable that when *like* precedes a constituent, it forms a structure such as that of (59) (see Fig. 11.8), to which "*Like*"-Hopping will always be able to apply, unless A_1 is a left branch. After it has applied, the resulting structure will be as shown in (60) (see Fig. 11.9). In this formulation, we assume arbitrarily that such "nodes" as COMMA (which signal the rules that assign intonation contours to produce high F_0 on both sides of *like*) are sisters of *like*.

Now we see that another way of formulating the relationship between *like* and the elements it is associated with is to use the relationship of C-command (Constituent command), introduced and argued for by Reinhart (1976). Node



- (68a) His proposal was almost like laughable.
 (68b) I nearly like strangled him.

Although we remain puzzled by the within-NP constraint on *like*, it is possible that this restriction may be understood in terms of speaking rate. We noted earlier that the occurrence of *like* is partly dependent on moderate to fast speech rates, and it might reasonably be argued that *like* is prohibited within an NP because NPs represent constituents that speakers typically utter as integral (cases of hesitation represent a clear departure from this generality) rhythmic units. The insertion of *like* within the NP would break up the normal moderate-to-fast rate at which the NP could be uttered, accounting for the otherwise ad hoc restriction.

The prohibiting of *like* within simple NPs has a consequence for the analysis of prepositional phrases. Note that *like* can occur between a preposition and its head, as in (69), as well as before the entire prepositional phrase.

- (69) I studied architecture χ in χ Chicago.

If prepositional phrases are analyzed as PP \rightarrow P + NP (see Jackendoff, 1973), then *like*'s occurrence between preposition and head requires no modification of the constraint prohibiting *like* within simple NPs. However, if prepositional phrases are viewed as NPs analyzed as NP \rightarrow P + NP, then the restriction on *like* would need to be modified to prohibit *like* only within NPs that do not dominate NP.

LIKE AND ITS NEIGHBORS

Even

When one examines a wider range of lexical items in English, to try to find parallels to the behavior of *like*, *even* immediately presents itself. This obstreperous word has been the subject of scrutiny in a number of syntactic and semantic studies, among them Kuroda (1965), Horn (1969), Anderson (1972), Fauconnier (1975), Fraser (1971), and Jackendoff (1972).

Pauseless "Even". Possibly the most salient parallel to *like* is the fact that *even* can only be associated with a focused element. Thus, because the pronoun *it* cannot ever be stressed,⁶ it cannot be preceded by *even*:

⁶Except, for some reason, when *it* appears as a first conjunct:

- (i) The table tipped over, but $\left\{ \begin{array}{l} \text{it and the vase} \\ \text{?the vase and it} \end{array} \right\}$ both survived the fall.

- (70) We could wash even $\left\{ \begin{array}{l} *it \\ \text{that} \end{array} \right\}$.

Thus, when we return to the three questions of (15a) through (17a), which are repeated for convenience as (71a), (71b), and (71c), respectively,

- (71a) Who is sending eggs to Marie?
 (71b) What are they sending to Marie?
 (71c) Who are they sending eggs to?

we find that by replacing *like* by *even* in (21), which contains three possible answers to (15), (16), and (17), grammaticality is preserved: cf. (72).

- (72a) Even THEY are sending eggs to Marie.
 (72b) They are sending even EGGS to Marie.
 (72c) They are sending eggs to even MARIE.

In (22), we showed the results of repositioning *like* in (21a); in (73), we see an almost identical pattern of grammaticalities for the reorderings of the *even* in (72a).

- (73a) THEY are even sending eggs to Marie.
 (73b) *THEY are sending even eggs to Marie.
 (73c) *THEY are sending eggs even to Marie.
 (73d) *THEY are sending eggs to even Marie.

The one puzzling disparity is in the contrast between the fully grammatical (73a) and the controversial (22a): Although not all speakers always allow post-auxiliary *like* to be associated with a focused subject, this never seems to be objectionable in the case of *even*.

Proceeding with our comparison of *like* and *even*, we find that just as the unstarred sentences of (24) can serve as answers to question (16a) [= (71b)], so can the unstarred sentences of (74), which exhibit the results of systematically repositioning the *even* in (72b).

- (74a) *Even they are sending EGGS to Marie.
 (74b) They even are sending EGGS to Marie.
 (74c) They are even sending EGGS to Marie.
 (74d) They are sending even EGGS to Marie. [= (72b)]
 (74e) *They are sending EGGS even to Marie.⁷
 (74f) *They are sending EGGS to even Marie.
 (74g) *They are sending EGGS to Marie even.⁷

⁷These examples are to be read with pauseless *evens*. The behavior of pause-bounded *even* will be discussed later.

Finally, just as (74) parallels (24), (75) parallels (25): if one repositions *even* in (72c), the following results:

- (75a) *Even they are sending eggs to MARIE.
 (75b) They even are sending eggs to MARIE.
 (75c) They are even sending eggs to MARIE.
 (75d) *They are sending even eggs to MARIE.
 (75e) They are sending eggs even to MARIE.
 (75f) They are sending eggs to even MARIE. [= (72c)]
 (75g) They are sending eggs to MARIE even.⁷

The only important differences between (24) and (74), and (25) and (75), are in the (a) and (b) versions: Although *like* is good before subjects and bad after them, *even* shows the opposite behavior. This complementary behavior can be described well by either of the following transformational rules:

- (76) "Even" In

$$X - \left[\begin{array}{ccccc} \text{even} & [& \text{NP} & - & \text{V Y} &] & - & \text{Z} \\ & \text{s} & & \text{s} & & \text{ss} & & \\ 1 & 2 & 3 & 4 & 5 & & \text{OBL} \\ & & & 3+2 & 4 & 5 & \Rightarrow \end{array} \right.$$
- (77) "Like" Out

$$X - \left[\begin{array}{ccccc} \text{NP} & - & \text{like} & - & \text{V Y} &] & - & \text{Z} \\ & \text{s} & & \text{s} & & & & \\ 1 & 2 & 3 & 4 & 5 & & \text{OBL} \\ 1 & 3\# & [2 & 0 & 4 &] & 5 & \Rightarrow \\ & \text{s} & & & 5 & & \end{array} \right.$$

The question that confronts us here is: Which one of these candidates for transformationhood is the correct rule for English? Should we start out by generating both *like* and *even* sentence-initially, and then move *even*, rightwards, as in (76), or should we instead say that *like* and *even* start out to the right of subjects, with *like* being moved obligatorily to the left, as in (77)?

There is some evidence that favors the adoption of an "Even" In analysis, but as it is complex, involving the structure of the auxiliary, we will defer its presentation until the section *The Constituent Structure of the English Auxiliary*.

Having argued for the conclusion that *like* and *even* are identical in distribution, except for the difference produced by one of the rules in (76) and (77), let us now attack this conclusion, for in fact, there are many cases where *like* is possible, but *even* is not. Some are cited in (78) through (86).

- (78) Before postnominal modifiers, full or reduced:

- (78a) The kids $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ who were in THE LIVING ROOM were quiet.
 (78b) The kids $\left\{ \begin{array}{l} \text{like} \\ ? \text{even} \end{array} \right\}$ in THE LIVING ROOM were quiet.
 (78c) Somebody who was $\left\{ \begin{array}{l} \text{like} \\ \text{even} \end{array} \right\}$ INSANE must have attacked this lemon meringue pie.
 (78d) Somebody $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ who was INSANE must have attacked this lemon meringue pie.
 (78e) Somebody $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ INSANE must have attacked this lemon meringue pie.⁸
 (79) One "even" per surface clause, multiple likes:⁹
 (79a) [Only hard-core male supremacists would stoop to reading girlie mags. But there appear to be some sexist pigs even among the most intelligent members of our group. Bob, whose IQ is 120, reads even *Hustler*. And Tony's IQ is higher: 159.]
 *And even Tony reads even *Hustler*.
 (79b) Q: What kind of bike was Hobo ridin', man?
 A: Like he was like riding like a huge BSA, like.
 (80) Before contrastively stressed auxiliary complexes:
 (80a) It $\left\{ \begin{array}{l} \text{like} \\ \% \text{even}^{10} \end{array} \right\}$ IS possible that we'll win.
 (80b) James Bond $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ was NOT working for Smersh.
 (81) Before the focus of a cleft or pseudo-cleft sentence:
 (81a) It was $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ PETER that I meant.
 (81b) (The one) who I meant was $\left\{ \begin{array}{l} \text{like} \\ * \text{even} \end{array} \right\}$ PETER.
 (82) Before universally quantified NPs:

⁸Note that whereas the ungrammaticality of (78a) and (78d) could be attributed to a failure to undergo the obligatory rule of "Even" In, no such account can explain the "?" of (78b) and the * of (78e).

⁹This important observation, which is due to Kuroda (1965), is also discussed insightfully by Anderson (1972).

¹⁰One of the authors does not have this contrast in his (sloppy) speech.

- (82a) We are fingerprinting $\left\{ \begin{array}{l} \text{like} \\ *even \end{array} \right\} \left\{ \begin{array}{l} \text{EACH} \\ \text{EVERY STUDENT} \\ \text{ANY STUDENT(S)} \\ \text{NO STUDENTS} \\ \text{ALL STUDENTS} \end{array} \right\}$.
- (82b) $\left\{ \begin{array}{l} \text{Like} \\ *Even \end{array} \right\}$ when were you in East Berlin?
- (83) *After degree modifiers:*
- (83a) Jefferson was $\left\{ \begin{array}{l} \text{like} \\ \text{even} \end{array} \right\}$ AFRAID of the mouse.
- (83b) Jefferson was $\left\{ \begin{array}{l} \text{very} \\ \text{extremely} \\ \text{somewhat} \\ \text{quite} \\ \text{etc.} \end{array} \right\} \left\{ \begin{array}{l} \text{like} \\ *even \end{array} \right\}$ AFRAID of the mouse.
- (84) *Before (most ? all?) indefinite quantifiers:*
- (84a) The Feds nabbed SOME protesters, and the local cops busted $\left\{ \begin{array}{l} \text{like} \\ *even \end{array} \right\} \left\{ \begin{array}{l} \text{SEVERAL} \\ \text{MANY} \end{array} \right\}$.
- (84b) We don't subscribe to MANY magazines, but we do subscribe to $\left\{ \begin{array}{l} \text{like} \\ *even \end{array} \right\}$ SOME.
- (85) *Before sentence adverbs:*
- (85a) It is $\left\{ \begin{array}{l} \text{like} \\ \text{even} \end{array} \right\}$ POSSIBLE that he'll be back at 5.
- (85b) $\left\{ \begin{array}{l} \text{Like} \\ *Even \end{array} \right\}$ POSSIBLY, he'll be back at 5.
- (86) *Before adverbs that do not end in -ly:*
- (86a) Sarah picked me $\left\{ \begin{array}{l} \text{like} \\ *even \end{array} \right\}$ RIGHT UP.
- (86b) They have been working $\left\{ \begin{array}{l} \left\{ \begin{array}{l} \text{like} \\ \text{even} \end{array} \right\} \\ \left\{ \begin{array}{l} \text{like} \\ ?*even \end{array} \right\} \end{array} \right\} \left\{ \begin{array}{l} \text{STRENUOUSLY} \\ \text{HARD} \end{array} \right\}$
- (86c) He might show up here $\left\{ \begin{array}{l} \left\{ \begin{array}{l} \text{like} \\ \text{even} \end{array} \right\} \\ \left\{ \begin{array}{l} \text{like} \\ ?*even \end{array} \right\} \end{array} \right\} \left\{ \begin{array}{l} \text{FREQUENTLY} \\ \text{OFTEN} \end{array} \right\}$

With this impressive array of differences (most, as far as we know, unexplained by previous analyses of *even*), one might be tempted to generalize as in (87).

(87) Wherever *even* is possible, *like* is, but not the converse.

But (87) is also incorrect, as shown by (88).

(88a) He realized $\left\{ \begin{array}{l} ?*like \\ \text{even} \end{array} \right\}$ that HE was unpopular.

(88b) The mail $\left\{ \begin{array}{l} *like \\ ?even \end{array} \right\}$ Jimmy CARTER gets is opened.

(88c) TOM must have gone by now, and JANE may $\left\{ \begin{array}{l} *like \\ \text{even} \end{array} \right\}$ have, too.

At present, we must be content to state that, while (87) cannot be maintained, *like* is generally freer than *even*.

Pause-Bounded "Even". In the immediately preceding section, we showed how pauseless *even* exhibits strong parallels to pauseless *like*, with respect to the structural configurations in which an *even* can appear when it is not adjacent to the focused element. Interestingly, the behavior of pause-bounded *even* also shows an exact parallel to the behavior of pause-bounded *like*. This parallel can be accounted for by the account of *even* provided by Anderson (1972), (see later discussion), which has the same empirical consequences as our LCC restriction for *like*.

The sentences in (35) were the *like*-hopped variants of the sentences in (21). The sentences in (72), which are the result of replacing the *likes* in (21) by *evens*, can also undergo hopping, with the sentences in (89) being the result.

(89a) THEY, even, are sending eggs to Marie.

(89b) They are sending EGGS, even, to Marie.

(89c) They are sending eggs to MARIE, even.

Just as we argued that pause-bounded *like* must immediately follow a constituent containing the focused element, so we argue for pause-bounded *even*. Above, in *(44d), this condition was violated for pause-bounded *like*; in *(90d), a corresponding ungrammaticality has arisen.

(90a) Was EVERYBODY working on Greek?

(90b) Yeah—even BOB was working on Greek.

- (90c) Yeah—BOB, even, was working on Greek.
 (90d) *Yeah—BOB was, even, working on Greek.

And just as pause-bounded *like* can appear sentence-finally, in (45), so we find a final pause-bounded *even* in (91).

- (91) Yeah—BOB was working on Greek, even.

And just as hopping *like* around left branches of constituents other than S produces varyingly unhappy results (such as *[53c], *[54c], ?*[55c] and ??[56c]), so does hopping *even* in similar sentences: cf. (92c) through (95c) below.

- (92a) Did they weigh EVERYBODY'S wallet?
 (92b) Yeah—they weighed even BOB'S wallet.
 (92c) *Yeah—they weighed BOB'S, even, wallet.
 (93a) Was the wallet VERY heavy?
 (93b) Yeah—it was even ALARMINGLY heavy.
 (93c) *Yeah—it was ALARMINGLY, even, heavy.
 (94a) Should we put microphones EVERYWHERE—ALL AROUND the bridge?
 (94b) Yeah—why don't you put them even UNDER the bridge.
 (94c) ??Yeah—why don't you put them UNDER, even, the bridge.
 (95a) Should we use ANY MEANS to get the onions to my sister?
 (95b) Yeah—you might even MAIL the onions to your sister.
 (95c) ??Yeah—you might MAIL, even, the onions to your sister.

It, thus, seems fairly clear to us that our rule (36) is stated too narrowly: It must be generalized to apply to *even* as well as to *like*. However, we are not much nearer to understanding *like*-Hopping merely because we can show that one other similar item hops. Indeed, if being associated with the focused element is the only criterion of similarity, then we might expect any element that shares this property with *like* and *even* to hop similarly. Not so. Let us widen our field of view and examine the behavior of some other focus-linked items: *only* and *just*, on the one hand, and *also* and *too* on the other.

"Only" and "Just." The words *only* and *just* parallel the behavior of *like* and *even* in many ways, as can be seen by comparing (96), used as an answer to (71), with (72).

- (96a) $\left\{ \begin{array}{l} \text{Only} \\ \text{Just} \end{array} \right\}$ THEY are sending eggs to Marie.
 (96b) They are sending $\left\{ \begin{array}{l} \text{only} \\ \text{just} \end{array} \right\}$ EGGS to Marie.

- (96c) They are sending eggs to $\left\{ \begin{array}{l} \text{only} \\ \text{??just} \end{array} \right\}$ MARIE.

And just as we can find *even* to the left of MARIE in (75), so we also find *only* and *just* in the same kinds of environments: cf. (86).

- (97a) * $\left\{ \begin{array}{l} \text{Only} \\ \text{Just} \end{array} \right\}$ they are sending eggs to MARIE.
 (97b) They $\left\{ \begin{array}{l} \text{only} \\ \text{just} \end{array} \right\}$ are sending eggs to MARIE.
 (97c) They are $\left\{ \begin{array}{l} \text{only} \\ \text{just} \end{array} \right\}$ sending eggs to MARIE.
 (97d) *They are sending $\left\{ \begin{array}{l} \text{only} \\ \text{just} \end{array} \right\}$ eggs to MARIE.
 (97e) They are sending eggs $\left\{ \begin{array}{l} \text{only} \\ \text{just} \end{array} \right\}$ to MARIE.

However, when we try to hop these words, we find radically different patterns from those we encountered with *like* and *even*. First of all, it appears that there are no contexts whatsoever in which *just* can hop: compare *(97), as answers to (71), with (96).

- (98ai) *THEY (,) just (,) are sending eggs to Marie.
 (98aii) *THEY are just sending eggs to Marie.
 (98b) *They are sending EGGS (,) just (,) to Marie.
 (98c) *They are sending eggs to MARIE (,) just.

A further indication that *just* never hops is the fact that it never occurs sentence-finally.

- (99) *THEY are sending eggs to Marie, just.

In general (and for reasons we do not understand) *just* is much more limited in its distribution than *only*, as was already apparent in (96c). A further point of difference is the fact that there are contexts in which a pause-bounded *only* can appear sentence-initially, with roughly the sense of "There's only one thing: X."

- (100) $\left\{ \begin{array}{l} \text{Only} \\ * \text{Just} \end{array} \right\}, \left\{ \begin{array}{l} \text{he wasn't in his room last night.} \\ \text{be careful where you put the H}_2\text{SO}_4. \\ \text{where can we get some Kool-aid to mix with it?} \end{array} \right\}$

As is evident from the asterisk in (100), this is another case where *only* but not *just* can appear. The following generalization seems to obtain:

- (101) Wherever *just* can appear with the sense of *only* that is described in Horn (1969), *only* can also appear.

An exception to (101) appears in (102), which shows that *only just* can appear before imperatives, although not with the most common meaning of *only* as described in Horn (1969).

- (102) $\left\{ \begin{array}{l} *Only \\ Just \end{array} \right\} \left\{ \begin{array}{l} \text{get lost} \\ \text{be quick about it!} \\ \text{give me that} \end{array} \right\}$

Let us turn now to an examination of the hopping behavior of *only*. First of all, the most typical intonation for a post-focus *only* has no pauses, as can be seen in (103), which corresponds to (96).

- (103a) $\left\{ \begin{array}{l} 2 \quad 1 \\ \text{THEY ONLY} \\ 1 \quad 1 \\ ??\text{THEY, ONLY,} \end{array} \right\}$ are sending eggs to Marie.
- (103b) They are sending $\left\{ \begin{array}{l} 2 \quad 1 \\ \text{EGGS ONLY} \\ 1 \quad 1 \\ ??\text{EGGS, ONLY,} \end{array} \right\}$ to Marie.
- (103c) They are sending eggs to $\left\{ \begin{array}{l} 2 \quad 1 \\ \text{MARIE ONLY} \\ 1 \quad 1 \\ ??\text{MARIE, ONLY} \end{array} \right\}$.

That is, the standard hopped *only* is pauseless. This may be connected with the fact that hopping *only* around a left branch always produces solid stars, whereas *like* and *even* hop around some left branches without totally destroying the sentence. Thus, compare the (c) versions of (104) through (107) below with the (c) versions of (92) through (95).

- (104a) Did they weigh EVERYBODY'S wallet?
 (104b) No, they weighed only BOB'S wallet.
 (104c) *No, they weighed BOB'S only wallet.
 (105a) Was the wallet VERY heavy?
 (105b) No, it was only SOMEWHAT heavy.
 (105c) *No, it was SOMEWHAT only heavy.

- (106a) Should we put microphones EVERYWHERE—ALL AROUND the bridge?
 (106b) No—why don't you put them only UNDER the bridge.
 (106c) *No—why don't you put them UNDER only the bridge.
 (107a) Should we use ANY MEANS to get the onions to my sister?
 (107b) No—why don't you only MAIL the onions to your sister.
 (107c) *No—why don't you MAIL only the onions to your sister.

Also and Too

Having compared the hopping behavior of *like* and *even* with that of *only* and *just*, let us turn to the focus-bound elements *also* and *too*. When these words are associated with subjects, as in answers to a question such as (108), their syntactic behavior is as shown in (109).¹¹

- (108) Were only THE DOBBASES sending eggs to Marie?
 2 1
- (109ai) No, ALSO THE PILLINGS were sending eggs to Marie.
 1 2
- (109aai) *No, THE PILLINGS ALSO were sending eggs to Marie.
 2 1
- (109aiii) No, THE PILLINGS ALSO were sending eggs to Marie.
 2 1
- (109aiv) No, THE PILLINGS were ALSO sending eggs to Marie.
 2 1
- (109av) *No, THE PILLINGS were sending ALSO eggs to Marie.
 2 1
- (109avi) No, THE PILLINGS were sending eggs to Marie ALSO.
 (109bi) **No, TOO THE PILLINGS were sending eggs to Marie.
 1 2
- (109bii) *No, THE PILLINGS TOO were sending eggs to Marie.
 1 1
- (109biii) ?No, THE PILLINGS TOO were sending eggs to Marie.
 (109biv) *No, THE PILLINGS were TOO sending eggs to Marie.
 (109bv) **No, THE PILLINGS were sending TOO eggs to Marie.
 2 1
- (109bvi) No, THE PILLINGS were sending eggs to Marie TOO.

The salient points about *also* and *too* include the following.

¹¹We mark the location of primary and secondary sentence stress in some of the following examples with a superscripted "1" and "2" above the appropriate syllables. This notation is, thus, in the spirit of the notation of Chomsky and Halle (1968).

- (110a) In contrast with *like*, *even*, *just* and *also*, *too* may never precede the focused element. [cf. *(109bi)]
- (110b) In contrast with *like* and *even*, post-focus *only* and post-focus *also* and *too* must carry main sentence stress. [cf. the contrasts in *(109a_{ii}) and (109a_{iii}) and *(109b_{ii}) and (109b_{iii}).]
- (110c) *Also* can appear adjacent to the focused element, in post-tensed-auxiliary position or sentence-finally. *Too* can appear only immediately after the focused element, or sentence-finally.

When we extend our investigation to answers to questions such as (111) and (112), in which the focused constituents are direct and indirect objects, respectively, it appears that the generalizations stated in (110) stand. Sentence (113) answers (111), and (114) answers (112).

- (111) Were they sending only EGGS to Marie?
 (112) Were they sending eggs to only MARIE?
- (113ai) ?No, ALSO they were sending BANANAS to Marie.
 (113a_{ii}) No, they ALSO were sending BANANAS to Marie.
 (113a_{iii}) No, they were ALSO sending BANANAS to Marie.
 (113a_{iv}) ?No, they were sending ALSO BANANAS to Marie.
 (113av) *No, they were sending BANANAS ALSO to Marie.
 (113a_{vi}) ?No, they were sending BANANAS ALSO to Marie.
 (113a_{vii}) No, they were sending BANANAS to Marie ALSO.
 (113bi) **No, TOO they were sending BANANAS to Marie.
 (113b_{ii}) **No, they TOO were sending BANANAS to Marie.
 (113b_{iii}) **No, they were sending TOO BANANAS to Marie.
 (113b_{iv}) No, they were sending BANANAS TOO to Marie.
 (113bv) No, they were sending BANANAS to Marie TOO.
 (114ai) ?No, ALSO they were sending eggs to MARIE.
 (114a_{ii}) No, they ALSO were sending eggs to MARIE.
 (114a_{iii}) No, they were ALSO sending eggs to MARIE.

- (114a_{iv}) *No, they were sending ALSO eggs to MARIE.
 (114a_v) No, they were sending eggs ALSO to MARIE.
 (114a_{vi}) ??No, they were sending eggs to ALSO MARIE.
 (114a_{vii}) *No, they were sending eggs to MARIE ALSO.
 (114a_{viii}) No, they were sending eggs to MARIE ALSO.
 (114bi) **No, TOO they were sending eggs to MARIE.
 (114b_{ii}) **No, they TOO were sending eggs to MARIE.
 (114b_{iii}) **No, they were TOO sending eggs to MARIE.
 (114b_{iv}) **No, they were sending TOO eggs to MARIE.
 (114b_v) **No, they were sending eggs TOO to Marie.
 (114b_{vi}) **No, they were sending eggs to TOO Marie.
 (114b_{vii}) *No, they were sending eggs to MARIE TOO.
 (114b_{viii}) No, they were sending eggs to MARIE TOO.

A few additional comments about (109), (113), and (114) are in order here. First, the ungrammaticality of *(109a_v), *(109b_v), and *(114a_{iv}) shows that *also* (and *too*) are similar to *like* and *even* in obeying the LCC. Furthermore, the ungrammaticality of *(97d) shows that *only* and *just* are also subject to this constraint. As far as we know, therefore, the generalization stated in (115) can be maintained.

(115) All focus-linked elements obey the LCC.

Second, we note from examples such as ?(113a_i) and ?(114a_i) that, in contrast with *only* and *just*, sentence-initial *also* is not totally excluded. Because *only* and *just* must, like *even*, be ruled out in sentence-initial position [cf. *(97a)], we will have to generalize our rule of "Even" *In* so that *only* and *just* will also be moved obligatorily to post-subject position, and a condition will need to be added that specifies that such a repositioning rightwards is preferable for *also*, although not mandatory.¹²

Third, for reasons that remain opaque to us, of all the focus-linked elements that can ever precede the focus, *also* most strongly resists being inserted between a preposition and an NP [cf. ??(114a_{vi}) and (116)].

¹²Alternatively, we can generalize "Like" *Out* so that it applies obligatorily to *like* and half-heartedly to *also*. Both solutions look messy. We find it hard to invest much in either.

- (116) I was talking to $\left. \begin{array}{l} \text{like} \\ \text{even} \\ \text{only} \\ \text{?just} \\ \text{?*also} \end{array} \right\} \text{MORGAN about that.}$

Let us return now to the issue of the stress on *also*. Examining the (a) versions of (109), (113), and (114), a clear pattern emerges:

- (117) Regardless of the relative order of *also* and the focused element, the rightmost of these two bears the primary sentence stress, with the leftmost bearing the second highest stress in the sentence.

This is a particularly interesting generalization, for it is unstatable as a phonological rule in any framework that we know of. Therefore, rather than trying to construct a totally new type of phonological rule, we tentatively propose a syntactic solution.

We assume that the stress dependence of *also* and the focused element is an indication that they once were members of the same phrase. If they are reordered by a generalized rule of *Intensifier-Hopping*, which is ordered before the Nuclear Stress Rule,¹³ then the rightmost element will receive the highest stress.

So far, we have succeeded only in accounting for the stress differences of (109ai)/(109aiii), ?(113aiv)/(113avi), and ??(114avi)/(114aviii). But what about the fact that in (113ai), *also* has [2 Stress], while it bears [1 Stress] in (113avii)? These sentences are synonymous, as indeed all sentences in (113) are. What we propose to do is to account for this synonymy by deriving the sentences in (113) in which *also* precedes *bananas* from (113aiv), and (113avii), in which it follows *bananas*, from (113avi), by the following rule:

- (118) "*Also*" *Climb*
 $W - [{}_B X - [\text{also} - A] - Y_B] - Z$
 1 2 3 4 5 6 OPT
 \Rightarrow
 13# [{}_B 2 0 4 5_B] 6

This rule will Chomsky-adjoin an *also* which precedes its focus to the left of any higher node.¹⁴ The rule must follow the two rules of *Intensifier-Hopping* and the *Nuclear Stress Rule*, as shown in (119).

¹³For a description of this process, see Chomsky and Halle (1968). The suggestion that this rule should precede certain syntactic operations appeared first in Bresnan (1971).

¹⁴Obviously, this is only half of the required rule, which must also raise *alsos* that follow their focus and adjoin them to the *right* of any higher node. That is, rule (102) should be rewritten as a mirror-image rule (cf. Langacker [1969] for discussion).

- (119) *Rule ordering*
 A. *Intensifier-Hopping* (OPT)
 B. *Nuclear Stress Rule*
 C. "*Also*" *Climb* (OPT)

Given this system, (113aiii) and (113avii) will be derived as in (120) and (121), respectively.¹⁵

- (120a) No, they were [sending ALSO BANANAS to Marie] NSR
 \Rightarrow
 (120b) No, they were [sending ALSO BANANAS to Marie] "*Also*"
Climb
 \Rightarrow
 (120c) No, they were [ALSO [sending BANANAS to Marie]]
 \Rightarrow
 (121a) No, [they were sending ALSO BANANAS to Marie] *Intensifier-*
 S *Hopping*
 \Rightarrow
 (121b) No, [they were sending BANANAS ALSO to Marie] NSR
 \Rightarrow
 (121c) No, [they were sending BANANAS ALSO to Marie] "*Also*"
Climb
 \Rightarrow
 (121d) No, [[they were sending BANANAS to Marie] ALSO]

The other derivations in (109), (113) and (114) will proceed similarly.

We return to the rules in (119) below in subsection *Conclusions on "Like" and Intensifiers*, where we propose extending them to handle much of the distribution of intensifiers. First, however, let us examine the behavior of *also* when it is hopped around left branches.

Sentences (122) through (126) show that hopping *also* around left branches results in sentences that are totally unacceptable, as was the case with *only*.

- (122a) Did they weigh only ZEKE'S wallet?
 (122b) No, they weighed also BOB'S wallet.
 (122c) *No, they weighed BOB'S also wallet.
 (123a) Do you mug only EXPENSIVELY dressed men?
 (123b) No, I mug also POORLY dressed men.
 (123c) *No, I mug POORLY also dressed men.
 (124a) Should we put microphones only ON the bridge?

¹⁵We have drawn in the brackets surrounding the constituent to which *also* attaches, although we have not labeled them, for the issue as to whether they should be called Ss or VPs is irrelevant here.

- (124b) No—why don't you put them also UNDER the bridge.
 (124c) *No—why don't you put them UNDER also the bridge.
 (125a) Should we only CARRY the onions to my sister?
 (125b) No, why don't you also MAIL the onions to your sister.

(125c) ?*No, why don't you $\left. \begin{array}{c} 2 \quad 1 \\ \text{MAIL ALSO} \\ 1 \quad 2 \\ \text{MAIL ALSO} \end{array} \right\}$ the onions to your sister.

Summary of rules for intensifiers. Let us summarize the discussion of the section "Like" and its Neighbors up to this point. We have found the following similarities in the behavior of intensifiers, i.e., of focus-linked items:

- (126a) All obey the LCC.
 (126b) All (except *just*) can appear to the right of the focused element (*too* can only appear there).
 (126c) All obey the LBHB.

We noted in (117) a generalization about the interaction of *also* and the location of primary sentence stress, suggesting that a syntactic treatment, involving the ordering of the Nuclear Stress Rule before a syntactic rule of "Also" *Climb*, was preferable to the creation of a new type of phonological rule. This leaves us in a rather redundant situation with respect to the LCC for the following reason. The rule of "Also" *Climb* makes it unnecessary to state the LCC for *also*, for the output of any sentence with a climbed *also* will necessarily obey the LCC. Thus, for *also*, the LCC can be dispensed with, in favor of the rule of "Also" *Climb*.

The trading relationship between the LCC and "Also" *Climb* in the case of *also* immediately suggests that the same type of relationship may obtain in the case of the other intensifiers, given their widespread similarities in distribution. That is, for the other intensifiers, we are naturally led to look to see if there is any independent reason to choose the LCC over a solution that would involve climbing intensifiers other than *also*.

As far as we have been able to ascertain, no such evidence exists. And because the stress facts noted in (117) above can be accounted for, given a climbing solution, but cannot be accounted for merely by the LCC, we conclude that the LCC can be dispensed with entirely, in favor of the following rule, which should also be construed as a mirror-image rule, as discussed in Footnote 14.

(127) *Intensifier Climb*

W - [_BX - [_A Intensifier - Á_A] Y -] Z

1	2	3	4	5	6	OPT
1 3# [_B	2	0	4	5 _B	6	⇒

Condition: If 3 + 4 is the NP object of a preposition, the rule is obligatory if 3 = *also*, and is preferred if 3 = *just*. [Cf. (116)]

The variables in this rule deserve much more study than we have been able to carry out. Such questions as the following arise:

- (128a) Is *Intensifier Climb* a bounded rule? That is, can intensifiers climb out of clauses?
 (128b) Is *Intensifier Climb* subject to constraints on movement rules, such as those proposed by Ross (1967)?
 (128c) Are there asymmetries in the climbing behavior of intensifiers that are on left branches vis-à-vis those that are on right branches?

Our answer to the first question is a blunt "yes and no." Intensifiers seem to be able to climb out of all (?) nonfinite complements and out of some tensed clauses: the (b) and (c) versions of (129) through (131) are synonymous answers to the (a) versions:

(129a) Did he $\left. \begin{array}{c} \text{want} \\ \text{begin} \\ \text{hope} \\ \text{etc.} \end{array} \right\}$ to translate anything else into French?

(129b) Yeah, he $\left. \begin{array}{c} \text{wanted} \\ \text{began} \\ \text{hoped} \\ \text{etc.} \end{array} \right\}$ to translate even YOUR LETTERS into French.

(129c) Yeah, he even $\left. \begin{array}{c} \text{wanted} \\ \text{began} \\ \text{hoped} \\ \text{etc.} \end{array} \right\}$ to translate YOUR LETTERS into French.

(130a) Did they $\left. \begin{array}{c} \text{avoid} \\ \text{stop} \\ \text{plan on} \\ \text{etc.} \end{array} \right\}$ kicking only MORTON?

(130b) No, they $\left. \begin{array}{c} \text{avoided} \\ \text{stopped} \\ \text{planned on} \\ \text{etc.} \end{array} \right\}$ kicking also YOUR UNCLE.

(130c) No, they also $\left. \begin{array}{c} \text{avoided} \\ \text{stopped} \\ \text{planned on} \\ \text{etc.} \end{array} \right\}$ kicking YOUR UNCLE.

(131a) Do the bosses $\left. \begin{array}{l} \text{think} \\ \text{believe} \\ \text{hope} \\ \text{say} \end{array} \right\}$ that only ZACK was at the rally?

(131b) No, they $\left. \begin{array}{l} \text{think} \\ \text{believe} \\ \text{hope} \\ \text{say} \end{array} \right\}$ that $\left. \begin{array}{l} \text{?also OSCAR} \\ \text{OSCAR also} \end{array} \right\}$ was at the rally.

(131c) No, they also $\left. \begin{array}{l} \text{think} \\ \text{believe} \\ \text{hope} \\ \text{say} \end{array} \right\}$ that OSCAR was at the rally.

However, it does not seem possible to climb intensifiers out of factive clauses, with strong factives like *surprised* blocking such a putative reordering more clearly than do weak factives like *know*. Thus, whereas (132a) and (132b) are *probably* impossible to read as synonymous, (133a) and (133b) seem to us to *definitely* not be synonymous.

- (132a) Do the police know that Dr. Hunger also IRRADIATES us?
 (132b) Do the police also know that Dr. Hunger IRRADIATES US?
 ?
 [≠ (132a)]
 (133a) Are the police surprised that Dr. Hunger also IRRADIATES us?
 (133b) Are the police also surprised that Dr. Hunger IRRADIATES us? [≠ (132a)]

Thus, it appears to us that *Intensifier Climb* will have to be made subject to the type of nondiscrete constraints on variables that are discussed in Ross (1975), where a number of other processes are cited that behave differentially with respect to complements of verbs such as *think* as opposed to complements of verbs such as *surprise*.

The answer to the second question in (123) appears to us to be extremely unclear at present, despite the fact that Anderson (1972) cited such Complex-NP-constraint violating cases as (134) [= Anderson's (9a)], (135) [= Anderson's (17a)], and (135) [= Anderson's (10)]

- (134) You can do a lot of things with Skrunkies; I even know a guy who SMOKES them.
 (135) I even included a problem that FRESHMEN could solve.
 (136a) John even has the idea that HE is tall for a Watusi.
 (136b) John even has the idea that he is tall for a WATUSI.

and such cases as (137) [= Anderson's (12)], for which *even* would have to climb out of a sentential subject.

- (137a) Jones' wife considers him absolutely honest; I imagine his even THINKING such a thing would amaze her.
 (137b) Jones' wife considers him completely honest; I even imagine his THINKING such a thing would amaze her.

Although we agree in general with Anderson's (1972) grammaticality judgments here (although we find (137b) more dubious than he does), we note that *have the idea that* does not make very strong islands: whereas questioning out of a following S is difficult (cf. (138a)), relativizing often seems acceptable [cf. (138)]:

- (138a) ?What does John have the idea that he should build?
 (138b) The problems that John has the the idea that he can solve are all exceedingly trivial anyway.

Thus, (136) does not provide solid evidence that the Complex NP Constraint should be viewed as having been violated. Nonetheless, *even* cannot climb out of a sentential subject, in (139b), (which corresponds to (139a), except that the *even* has made a similar climb), as the Sentential Subject Constraint would predict.

- (139a) It's likely that there will be pictures of lots of planets; I'd say that there being a picture of even PLUTO is possible.
 (139b) ?*It's likely that there will be pictures of lots of planets; I'd even say that there being a picture of PLUTO is possible.

Anderson's (1972) strongest cases, then, are (134) and (135). We agree that, if *even* leaves the relative clauses in these cases, via *Intensifier Climb*, it will be violating the Complex NP Constraint. Our feeling, however, is that (134) and (135) may be atypical, for note that the (b) versions of sentences below should all be variants of the corresponding (a) versions, if the Complex NP Constraint is never involved in the relationship between *even* and its focus.

- (140a) He ridiculed your hypothesis that we could even DETECT this radiation.
 (140b) He even ridiculed your hypothesis that we could DETECT this radiation. [a ≠ b]
 (141a) This compound dissolved the plastic that even THE AQUA REGIS left unblemished.
 (141b) This compound even dissolved the plastic that THE AQUA REGIS left unblemished [a ≠ b].

Thus, we have not been able to ascertain whether *even* can or cannot generally climb out of complex NPs. It does, however, seem to obey the Coordinate Structure Constraint wholeheartedly:

- (142a) I'll invite both Beth and Marge, and even TOMMY, to the party.
 (142b) *I'll even invite both Beth and Marge, and TOMMY, to the party.

In sum, then, the rule of *Intensifier Climb* presents a mixed picture with respect to constraints on variables. Our present belief is that the theory advanced by Ross (1967), which sought, basically, to develop only constraints that all rules of all languages would abide by, is too inflexible. Rather, there appear to be stronger and weaker constraints and stronger and weaker rules. The Complex NP Constraint is a weaker constraint than the Coordinate Structure Constraint; and the rule of *Question Formation* is a weaker rule than the rule of *Relative Clause Formation* (which accounts for the contrast in (117) above).¹⁶ The rule of *Intensifier Climb* appears to be even stronger than the rule of *Relative Clause Formation*, but not so strong as to be absolutely constraintless, as Anderson (1972) seems to suggest.

Turning briefly to the third question in (128), we can see immediately that, although it is possible for intensifiers to move leftwards across nonfinite clause boundaries [cf. (129c) and (130c), and maybe (137b)], they appear not to be able to move across right-clause boundaries: Thus, (143a) cannot become (143b).

- (143a) Your even SUGGESTING it to Doris was stupid.
 (143b) Your SUGGESTING it to Doris was stupid, even.

Thus, although it is not clear what sort of constraints should be imposed on the variable in Term 2 of rule (127), it does seem that this rule obeys the Right Roof Constraint that was proposed by Ross (1967): An intensifier that climbs from a right branch must command any nodes it is to climb over.

THE CONSTITUENT STRUCTURE OF THE ENGLISH AUXILIARY

"Even" In vs. "Like" Out

Let us now examine the consequences of our rule of *Intensifier Climb* for the analysis of auxiliary verbs. Consider (144a), a question that has a maximally complex auxiliary, and a possible answer, (144b):

- (144a) Could Fay Wray have been being gripped by only RODAN?
 (144b) No, she could have been being gripped by even KONG.

If we now try to climb *even* in (144b), we find that it can attach to the prepositional phrase *by KONG*, and also that it can appear to the left of *gripped*, or to the left of any of the preceding auxiliaries,

- (145a) She even could have been being gripped by KONG.
 (145b) She could even have been being gripped by KONG.
 (145c) She could have even been being gripped by KONG.
 (145d) She could have been even being gripped by KONG.
 (145e) She could have been being even gripped by KONG.
 (145f) She could have been being gripped even by KONG.

If the rule of *Intensifier Climb* is correct, these facts require that auxiliaries be assigned a right-branching structure such as that shown in (146), Fig. 11.13.

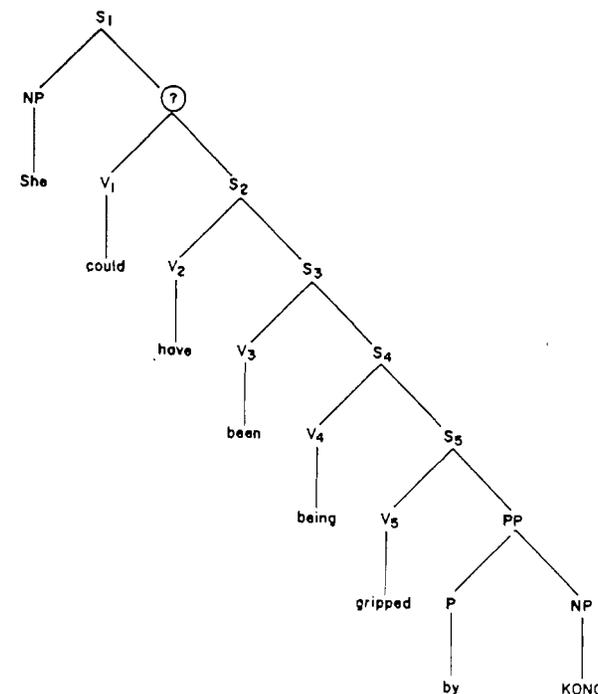
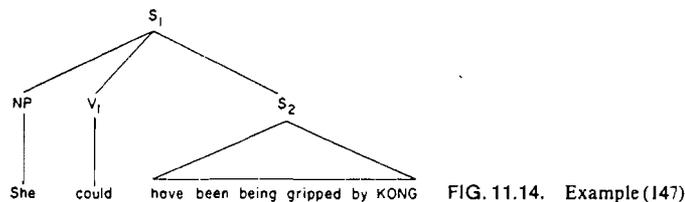


FIG. 11.13. Example (146)

¹⁶For some discussion of a nondiscrete treatment of constraints on variables, see Ross (1975)



We need not be overly concerned with certain details yet. In particular, the *Intensifier Climb* analysis is compatible with a structure with the nest of right-branching nodes all being sentences, as in (146), or with them all being VPs.¹⁷

We have designated the right sister of the subject NP in (146) with the cryptic emblem “?”, because we wish to argue that, in fact, there should be no node dominating the sub-string starting with *could* and ending with *KONG*. Rather, we wish to maintain a ternary-branching analysis of S₁, as in (147), Fig. 11.14.

The reason that we find this preferable to the binary analysis of (146) has to do with the behavior of *like*, which seems to reveal more of the structure of auxiliaries than does the behavior of the other intensifiers. And we find, as possible answers to (148a), a large number of the family of sentences that are abbreviated by the parentheses in (148b):

- (148a) Who could Fay Wray have been being gripped by?
- (148b) (Like) she (*like) could (like) have (like) been (like) being (like) gripped (like) by (like) KONG.

The fact that *like* is only impossible before *could* in (148b) would follow from our formulation of *Intensifier Climb*, if (148b) had the structure shown in (149), Fig. 11.15.

We do not wish to claim that all of these *likes* must have originated from a copying process that would proliferate a single *like* that is adjacent to *KONG* in remote structure. This could be the case here, but is arguably not the case in other multiple-*like* sentences. For the present discussion, let us restrict our attention to the variants of (148b) that have only one *like*, which we will assume to have been moved, by *Intensifier Climb*, from being under its source node, the circled NP' of (149), to being Chomsky-adjoined to any of the six higher nodes, as shown in (149).

Note that if there were some node dominating the whole string from *could* to *KONG*, namely, the node “?” of (124), we would predict that *like* could also attach to “?”, which would yield the asterisked variant of (148b).

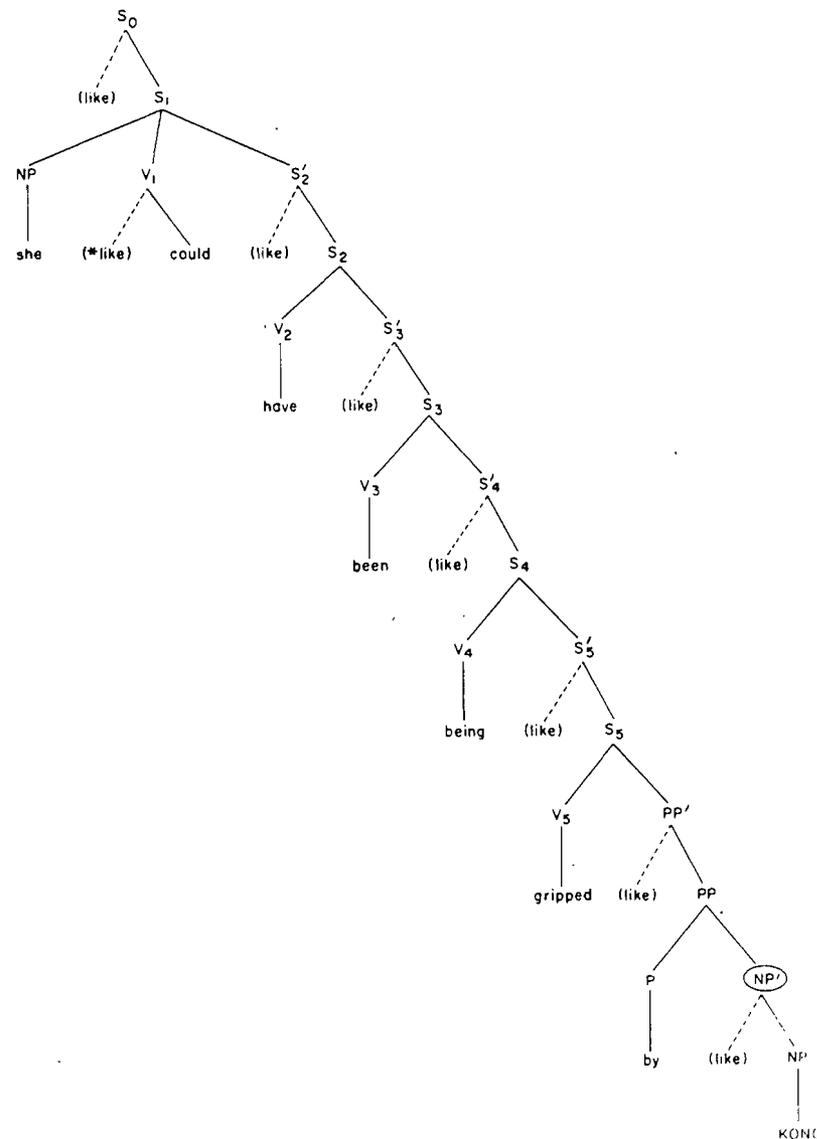


FIG. 11.15. Example (149)

¹⁷For previous treatments of auxiliaries in which they are analyzed as right-branching constructions, see Ross (1969) and Keyser and Postal (1976).

Let us return to (144b) for a moment, to note that one place that *even* cannot appear is to left of the whole sentence:

(150) **Even* she could have been being gripped by KONG.

Thus, although *like* can precede subjects, but not follow them, *even* (and the other intensifiers) have the opposite restriction.

We noted earlier in the subsection *Pauseless "Even"* that this situation could be accounted for in either of two ways: by postulating that the situation with *even* was basic, positioning *like* initially after the subject, and obligatorily moving it leftwards (by "*Like*" Out) analysis, or by postulating that the situation with *like* was basic, with an obligatory rule of "*Even*" In.

The following puzzle suggests to us that this latter course is correct; What, in a "*like*" Out analysis, would rule out *(150)? Evidently, it would have to be some condition on Intensifier Climb, something to the effect of (151).

(151) Condition: if $2 + 3 + 4 + 5 = S$, and if $3 = \textit{even}$, *only*, *just* and (weakly) *also*; the rule blocks.

That is, *even*, *only*, *just*, etc. would have to be prevented from being attached to S.

There are, however, sentences that seem to indicate clearly that (151) is too strong and that *even* must be able to be attached to S. Consider (152).

(152) It is possible *even* that she could have been being gripped by KONG.

Disregarding the question at issue at present, namely, what the structure of the complement of (152) is, the structure of the matrix clause is generally agreed to be representable as in (153a) or (153b), Fig. 11.16 (where the issue as to whether S_2 is part of the VP of S_1 is not germane to the present discussion). That is, it is agreed that what follows *possible* in (152) is a sentence, but not an NP.¹⁸

But, if (152) shows that *even* can indeed be *Intensifier Climbed* to be Chomsky-adjointed to S, then what explains the difference between (152) and the ungrammatical *(150)? Our hypothesis is that the complementizer is responsible. Note that if *that* is deleted in (152), as is generally permitted with

¹⁸The only theory of complementation with which we are familiar that would claim that the *that*-clause of (152) retains its NP status is the theory of relational grammar that is presently under development by Perlmutter and Postal (1978). In this theory, it would be claimed that the *that*-clause is an NP, a *chômeur*, that has been produced by the insertion of the dummy *it* in subject position. Until we are more familiar with the details of this theory, in particular with the evidence for the claim that extraposed clauses must retain their NP status, we continue in the familiar assumption that extraposed clauses are only dominated by S.

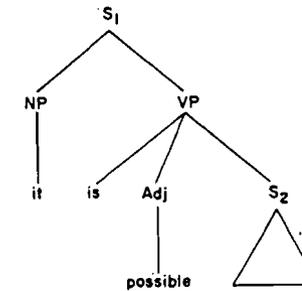
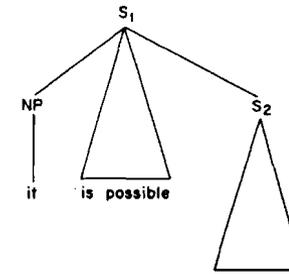


FIG. 11.16. Example (153a) top and (153b) bottom

adjectives such as *possible*, *afraid*, *sure*, *lucky*, *likely*, etc. [see (154)], the result is ungrammatical [cf. *(155a)], unless *even* is moved after the subject, as in (155b).

(154) $\left. \begin{array}{l} \text{It's possible} \\ \text{I'm afraid} \\ \text{We're sure} \\ \text{It's lucky} \\ \text{It isn't likely} \end{array} \right\} \text{(that) you'll survive a week in Las Vegas.}$

(155a) *It is possible *even* she could have been being gripped by KONG.

(155b) It is possible she *even* could have been being gripped by KONG.

A related case shows the importance of complementizers for the formal statement of the rule that moves *even* rightward. Consider the following sentences, which indicate that the direct object NP of *report* can be modified by *even*, as we would expect:

(156a) She reported *even* HER PRIVATE INCOME.

(156b) She reported *even* THERE HAVING BEEN A BROWN-OUT.

(156c) She reported *even* THAT SHE COULD HAVE BEEN BEING GRIPPED BY KONG.

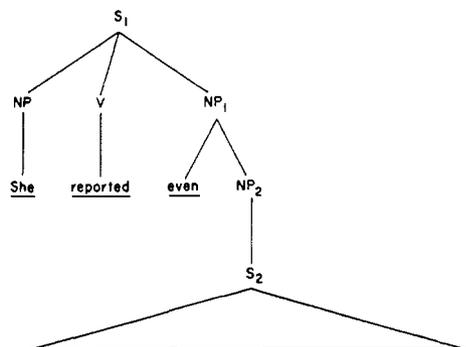


FIG. 11.17. Example (157)

We will assume that in these cases, the *even* is Chomsky-adjoined to the direct object NP of *reported*, as in (157), Fig. 11.17.

Like the adjectives in (132), *report* allows deletion of *that*.

(158) She reported (that) we were being followed by a sasquatch.

The question is, what would happen if the rule of "That"-Deletion were to delete the *that* which introduces *S*₂ in (157)? The result would be *(159).

(159) *She reported [even [[SHE COULD HAVE BEEN
NP₁ NP₂ S₂
BEING GRIPPED BY KONG]]]
S₂ NP₂ NP₁

It might be thought that this could be saved by repositioning the *even* to the right of *she*. However, although the result, (160), is grammatical, it does not seem to us to have the same meaning as (156c); i.e., although (156c) can be used as an answer to (161), (160) cannot, in the same sense.

(160) She reported she even could have been being gripped by Kong.

(161) Did she report anything else?

It would seem that there are only two ways of avoiding *(159): The first would be to make the rule of *Intensifier Climb* obligatory here, and the second would be to block the rule of "That" Deletion, if there is a preceding *even*. The first "solution" has nothing to recommend it. The second, although it initially sounds dreadfully ad hoc, may be on the right track, for note that it is often impossible to delete *that* unless the *that*-clause immediately follows the predicate of which it is the complement [cf. (162) and (163) below].

(162a) It was reported (that) they had found a solution.

(162b) It was reported {in *The Times*} *(that) they had found a solution.
by Harold

(163a) I believe (that) we will win from the bottom of my heart.

(163b) I believe from the bottom of my heart *(that) we will win.

(164a) I believe (that) we will win, and you believe (that) we will lose. *Gapping*

⇒

(164b) I believe (that) we will win, and you *(that) we will lose.

(165) What I believe is *(that) Horton may have a point.

So although there are some cases of constituents that can intervene between a verb and a deleting *that* [cf. the underlined elements of (166)], the asterisked sentences in (162) through (165) provide some independent motivation for an adjacency-to-matrix-predicate condition that might be appealed to in order to prevent (157) from becoming (159).

(166a) He told *us* (that) we were fools.

(166b) It seemed *to us* (that) you were wrong.

(166c) I figured *out* ?(that) my phone was bugged.

Note, however, that if *that* cannot delete after *even* in (157), it will also be blocked from being deleted in (152), at least by the simplest statement of the rule. Thus, our earlier assertion that (152) can be converted into (155a), and later, by "Even" *In*, to (155b), turns out, upon inspection, to require qualification.

What (152) shows is that *even* can be attached to the node *S*. The fact that (152) is synonymous with (155b) will, thus, have to be accounted for by a rule that moves intensifiers to post-subject position, over an optional complementizer. If the complementizer is present, the rule is optional; if nothing intervenes between the intensifier and the subject, the rule is obligatory. The rule that has this effect is formulated in (167).

(167) *Intensifier In*

$$X - \left[\begin{array}{l} \textit{just} \\ \textit{only} \\ \textit{even} \\ \textit{also} \end{array} \right] - \left[\left(\begin{array}{l} \textit{that} \\ \textit{for} \end{array} \right) - \text{NP} - \text{V Y} \right] - Z$$

S S S S

OPT

1	2	3	4	5	6	
1	0	3	4+2	5	6	⇒

Condition: If Term 3 is null, the rule is obligatory for all intensifiers except *also*, for which it is preferred, and *like*, for which it blocks (in our idiolects).

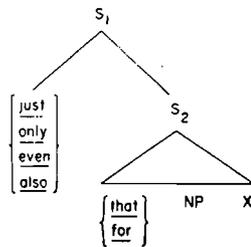


FIG. 11.18. Example (168)

It appears necessary to require that intensifiers only move inward when in such structures as (168), see Fig. 11.18, (i.e., when they are immediately dominated by an S-node that immediately dominates another S-node), for otherwise, *even* would be able to move after *she* in (157), producing a sentence, (169), that is grammatical, but which, like (160) above, does not have the same meaning as (156c).

(169) She reported that she even could have been being gripped by Kong.

Let us recapitulate the points we have made, for they are complex. We have argued that all intensifiers must be allowed to be Chomsky-adjoined to S, on the basis of sentences such as (152), and that all intensifiers except *like* must subsequently be allowed to be moved to the post-subject position, by rule (167). Thus, we have rejected "Like" Out, and adopted (essentially) "Even" In (see subsection *Pauseless "Even"*) concluding, therefore, that the behavior of *like* is more indicative of the base structure of sentences than is the behavior of the other intensifiers. And *like* suggests that sentences must be ternary branching at the highest node, not binary (thus, we reject (146) in favor of (147)), and right-branching thereafter. We believe the structure of the maximally complex auxiliary, therefore, to be as it is diagrammed in (149).

Previous Analyses of *Even*

Jackendoff's Analysis. We now treat two of the previously proposed accounts of the distribution of *even* bearing most directly on the issue of the structure of the auxiliary.

Jackendoff (1972) proposed the following condition (p. 249):

(170) If *even* is directly dominated by a node X, X and all nodes dominated by X are in the range of *even*. [= Jackendoff's (6.93)]

Jackendoff cited the following type of case in support of this principle. In (171), the noun *BICYCLE* is not in the range of *even*, so the sentence is ungrammatical.

(171) *John gave even his daughter a new BICYCLE. [in Jackendoff's (6.91)]

Jackendoff observed that if *even* is dominated by the NP that dominates *his daughter*, his principle, (170), accounts for this ungrammaticality, for *even* would not C-command *BICYCLE*.

We find one difficulty with Jackendoff's proposal, namely, if *even* were not attached to *his daughter* in (171), but instead were directly dominated by VP, as in (172), see Fig. 11.19, then sentence (171) would incorrectly be ruled acceptable. The question is, can structures such as (172), in which *even* is a daughter of VP, be excluded in principle?

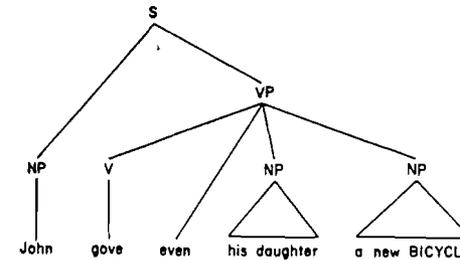


FIG. 11.19. Example (172)

Jackendoff (1972) was not very explicit about where *even* is to be introduced in remote structure; the only comment he made on this topic was:

(173) These words [i.e., *even*, *only*, and *just*—JRR&WEC] can occur before NPs and in the auxiliary. (p. 247).

However, one of the sentences that he cited allows us to infer that there must be some *evens* that are immediately dominated by VP. The sentence, Jackendoff's (6.97), is repeated in (174);

(174) John will have even given his DAUGHTER a new bicycle.

Jackendoff remarked in connection with (174): "The following examples bear this out: *even* after the second auxiliary is unacceptable with subject focus, although other foci are possible [p. 251]."

We agree with Jackendoff (1972) that *even* is linked to *DAUGHTER* in (174), but note that, although it might be true for some theories of the English auxiliary (e.g., in the classical analysis of Chomsky's *Syntactic Structures*, in which the node Aux is expanded as in (175),

(175) Aux → C (M) (have-en) (be-ing) (be-en)

that *even* in (174) is occurring "in the auxiliary"), this is not the case for the analysis of the auxiliary that Jackendoff adopted in his chapter on adverbs. There, on p. 76, he proposed the following rules:

- (176a) $S \rightarrow NP - Aux - VP$ [Jackendoff's (3.122)]
 (176b) $Aux \rightarrow Tense - (Modal)$ [Jackendoff's (3.123)]
 (176c) $VP \rightarrow (have - en) (be - ing) V - (NP) \dots$ [Jackendoff's (3.124)]

There is one more rule that affects the structure of the auxiliary: Jackendoff's rule of "Have-Be" Raising [Jackendoff's (3.127)], which has the effect of putting either *have* or *be* under the node Aux, if that node does not contain a modal and consists entirely of Tense.

Because there is a modal (*will*) in (174), however, "Have-Be" Raising will not be relevant, and the remote structure of (174) would have to be as shown in (177), Fig. 11.20.

The question now arises as to how (173) is to be amended in such a way as to allow (177). If we simply add the words "or in the VP" to the end of (177), we will provide an account for (177), but we will also incorrectly allow *(171) to be generated, as well as a sentence such as *(178a), assuming that it has a structure such as that in (178b), Fig. 11.21.

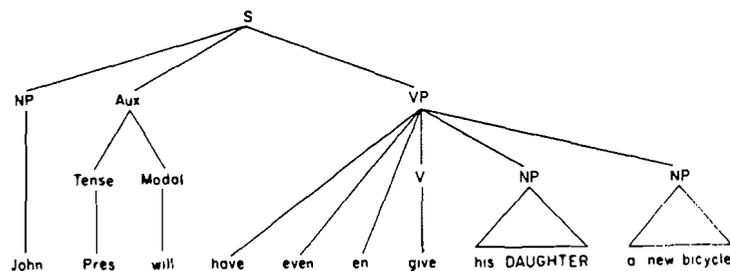


FIG. 11.20. Example (177)

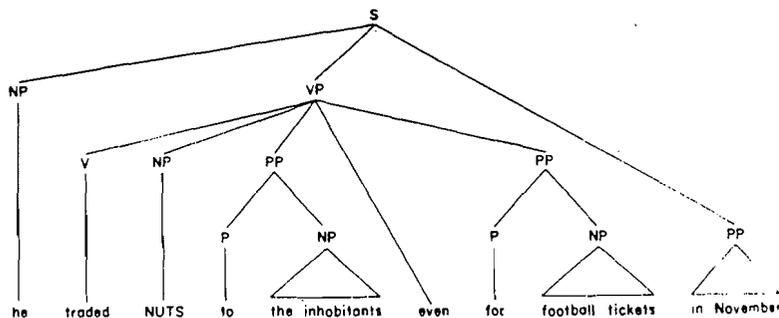


FIG. 11.21. Example (178b)

- (178a) *He traded NUTS to the inhabitants even for football tickets in November.

The alternative would seem to be to replace (173) by a very unsatisfying disjunctive list of categories, such as that in (179):

- (179) The words *even*, *only* and *just* can occur either before [i.e., as left daughters of ?] NP or before [i.e., as left sisters of]:
- en [cf. (177)]
 - ing¹⁹
 - V [cf. (95b) above]
 - VP [for sentences such as "Jim may even have been eating GRAPES"]
 - Aux [for sentences such as "Jim even may have been eating GRAPES"]
 - Adj [for sentences such as "Tex may be even ANGRY at me"]
 - Adv [cf. (93)]
 - P [cf. (94b)]
 - PP [cf. (75e)]
 - Complementizer [cf. (152)]

Possibly some other less disjunctive alternative can be devised that stays within the spirit of Jackendoff's (1972) analysis. We will not search for one here, but rather sketch an approach to the distribution of *even* that seems to be more fruitful to us.

Our basic disagreement with Jackendoff (1972) lies in the fact that such statements as (173), or the more exhaustive (179), are too close to the surface. We propose to replace these with a characterization such as that in (180), which is essentially semantic.

- (180) *Even* can modify any semantic predicate or argument.

This characterization will have the effect of allowing *even* in remote structure to modify any lexical category, namely, nouns, verbs, adjectives, or (meaningful) prepositions, as well as NPs. But it will lead to some surface problems: although (181) is a possible remote structure (because *window* is a noun), it is a bad surface structure.

- (181) *They may fingerprint Ben's even WINDOW.

¹⁹This would be necessary in order to generate sentences such as (i), whose remote structures are parallel to (177) in all relevant respects: (i) "John may be even giving his DAUGHTER a new bicycle."

We propose to make the rule of *Intensifier Climb* obligatory in such cases: *Even* must be adjoined either to the direct object NP of *fingerprint* or to the constituent following *may* in (181), which we would analyze as a clausal remnant, following Ross (1969), not as a VP. The result would be either (182a) or (182b).²⁰

- (182a) They may fingerprint even Ben's WINDOW.
 (182b) They may even fingerprint Ben's WINDOW.

That is, in our view, the surface positions of *even* are most effectively accounted for by adopting a highly restricted semantic characterization of the remote elements that it may modify and then by letting the rule of *Intensifier Climb* (and the subsequent rule of *Intensifier In*) produce surface results that may not reflect the underlying semantic regularities in any direct way.

The most salient problem for this analysis of *even* is the fact, noted by Anderson (1972), that *even* can be associated with surface structure constituents that are not elements of semantic representation. An example is (183).

- (183) Our new boss is a dream; he's pleasant, he doesn't make you take shorthand, he gives half-hour coffee breaks, and he's even easy to get a raise out of, if you wear short enough skirts. [Anderson's (7)]

Under the "Tough" Movement analysis, which we assume to be correct (but any rule making derived subjects would have the same force), *easy to get a raise out of* corresponds to no piece of semantic representation, as Anderson pointed out.

One possible solution within the framework advocated here is to say that the relevant sentence in (183) has a history like that shown in (184).

- (184a) Approximate remote structure: even (for one to get a raise out of him) is easy for one \Rightarrow (via Equi, Deletion of *for one* after *easy* and "Tough" Movement) *Intensifier Climb*
 (184b) He is easy even to get a raise out of. \Rightarrow
 (184c) He is even easy to get a raise out of.

It is extremely unclear to us at present exactly how the difference in meaning between (184a) and (184c) (which is subtle but real, we feel), is to be represented in a formal semantic representation. The latter sentence seems to predicate something of *he*, whereas the former one does not. But how is

²⁰Note that *Intensifier Climb* must be made obligatory in other contexts as well: neither *also* nor *just* can comfortably precede an NP that is the object of a preposition [cf. (96c) and (114a-vi)]

"predication" reflected structurally? If there were some extra semantic primitive, presumably an empty predicate, in the semantic representation of (184c) [something that is not in the representation of (184a)], then possibly *even* could, within the confines of (180), be said to modify this element. Or possibly *even* modifies the complement of *easy* underlyingly, as suggested by the representation in (184a), with the rule of *Intensifier Climb* being globally constrained not to change (184b) into (184c) except in the presence of whatever semantic structure is relevant to producing this predication interpretation. Our present understanding of this area is too limited.

Let us recapitulate our remarks on Jackendoff's (1972) analysis. We have argued that Jackendoff's statement (173) is inadequate to account for the location of *even* in (174) and that there is no simple way to modify (173) in such a way as to account for (174) without also generating (171). And any such list as (179) should be avoided if at all possible. Our suggestion is to adopt the right-branching analysis of the auxiliary that is implicit in (149) and to allow the rule of *Intensifier Climb* to apply to position intensifiers to the left of any auxiliary except the first.

Anderson's Analysis. The basic condition on *even* that Anderson (1972) stated is cited in (185):

- (185) We could accordingly restrict the scope of *even* to constituents that are either directly adjacent to *even*, or dominated by a node that is [p. 899].

Using the notion of C-command introduced by Reinhart (1976), we can recast Jackendoff's (1972) definition [(170)] and Anderson's (1972) as in (186a) and (186b), respectively, which will more clearly bring out their differences.

- (186a) Jackendoff: *even* C-commands any focused element with which it is associated.
 (186b) Anderson: *even* C-commands any focused element with which it is associated, and it must be adjacent to either the focused element, or to some node that dominates the focused element.

Why did Jackendoff, whose work followed Anderson's, adopt a less restrictive condition on *even*? The reason, we believe, is that Anderson did not consider sentences such as (187).

- (187) JOHN will even have given his daughter a new bicycle. [\cong Jackendoff (6.96)]

This sentence is clear evidence against Anderson's adjacency clause in (186b).

On the other hand, such sentences as *(171), “*John gave even his daughter a new BICYCLE,” which are equivalent in all respects to sentences such as (188), are what impelled Anderson (1972) to argue for the adjacency clause. As we have seen, Jackendoff (1972) can apparently only avoid generating sentences such as (171) and (188) by assuming that the *evens* in them are attached to the following NP. However, sentences such as (174) suggest the need for postulating VP-dominated *evens* in Jackendoff’s system, and an unwieldy disjunctive specification soon heaves into view.

(188) *Jones eats even Skrunkies for BREAKFAST. [Anderson’s (13c)]

The way we propose to resolve this conflict is basically in keeping with Anderson’s (1972) condition, for notice that any intensifier that has undergone *Intensifier Climb* will be in an output configuration that will satisfy Anderson’s condition. Because the stress facts with *also* provide independent support for *Intensifier Climb*, we assume that sentence (187) must be accounted for by another rule, because it cannot be produced by *Intensifier Climb* from (189), which we assume to underlie it.

(189) [Even JOHN] will have given his daughter a new bicycle.
NP

If *Intensifier Hop* applies to (189), (190a) will result, and the only place that *even* could climb to is the S node, which would produce (190b).

(190a) [JOHN, even,] will have given his daughter a new bicycle.
NP

(190b) JOHN will have given his daughter a new bicycle, even.

Alternatively, we could apply *Intensifier Climb* directly to (189), producing (191a), to which *Intensifier In* would obligatorily apply to produce (191b).

(191a) [Even [John will have given his daughter a new bicycle]]
S S SS

(191b) JOHN even will have given his daughter a new bicycle.

But no rules yet given can produce the desired (187).

Before we turn to proposing a rule that will, let us take issue with Jackendoff (1972) on a grammaticality judgment. Jackendoff asterisked (187) if the *even* follows *have*. He remarked:

(192) This analysis provides confirmation of the theory of the auxiliary presented in section 3.8, in which it was argued that, in the surface

structure, the first auxiliary is dominated by S and the other auxiliaries are dominated by VP. This analysis predicts that the subject is within the range of *even* only if *even* comes before the second auxiliary, since otherwise *even* would be dominated by VP, not S [pp. 250–251].

However, although we can agree with Jackendoff (1972) in finding *even* after *have* in (187) slightly less acceptable than before *have* [cf. (193)], we would not rate it fully ungrammatical, as he does. Its awkwardness seems to us not to have to do with *even* so much as with *will*: with some other modals, as in (194), the sentence is unexceptionable, to our ears.

(193) ?JOHN will have even give his daughter a new bicycle.

(194) JOHN $\left. \begin{array}{l} \text{should (?n't)} \\ \text{could (n't)} \\ \text{may} \\ \text{might (n't)} \end{array} \right\}$ have even given his daughter a new bicycle.

Other examples confirm this intuition:

(195a) Were OTHER STUDENTS eligible for the grant?

(195b) Yeah, SOPHOMORES could have even applied for it.

(196a) Could only TEX have gotten to see the princess?

(196b) No, SULLY might have even been able to do it.

It seems, then, as if the full set of facts pertaining to *evens* that follow a focused subject are in conflict with even the weaker condition imposed by Jackendoff (1972), for *even* in (194) through (196) will not C-command the subjects, either under Jackendoff’s analysis of the auxiliary or under our right-branching account. Thus, some new rule is needed.

The rule must move not only *even*, but also *also*: cf. (197).

(197a) Could anyone else be indicted?

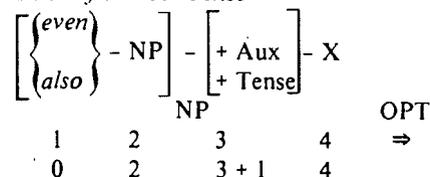
(197b) Yeah—also PROFESSOR BEEBE could be indicted.

(197c) Yeah—PROFESSOR BEEBE could also be indicted.

However, *only* is not affected by the rule [thus (198a) cannot become (198b)], and neither is *like*, for us usually [cf. the previous discussion of (22) and (23)]. Thus, the rule is highly ad hoc: we formulate it as in (199).

(198a) Only HAROLD can get us out of this.

(198b) *HAROLD can only get us out of this.

(199) *Intensifier Post Tense*

Note that this rule produces structures such as (187), which would be forbidden by Anderson's (1972) condition, though not by Jackendoff's (1972). However, as it stands, it will not generate (194) through (196), which would also be blocked by Jackendoff's condition. Thus, it will have to be amended in some way to produce these sentences. As Jackendoff noted, *even* and *also* are barred from being three auxiliaries away from a focused subject (to say nothing of four):

(200a) Could anyone else have been being shadowed?

(200b) *Yeah—JESSICA could have been $\left\{ \begin{array}{c} even \\ also \end{array} \right\}$ being shadowed.

(200c) **Yeah—JESSICA could have been being $\left\{ \begin{array}{c} even \\ also \end{array} \right\}$ shadowed.

It appears, however, that what is involved here is not just a simple counting of auxiliaries, for note that *even* and *also* refuse to follow the bare stem *be*, or the gerund *being* [cf. (201) and (202)].

(201a) Could anyone else be being shadowed?

(201b) *Yeah—JESSICA could be $\left\{ \begin{array}{c} even \\ also \end{array} \right\}$ being shadowed.

(202a) Is anyone else being shadowed?

(202b) **Yeah—JESSICA is being $\left\{ \begin{array}{c} even \\ also \end{array} \right\}$ shadowed.

In fact, they do not even like it very much after *been*:

(203a) Has anyone else been $\left\{ \begin{array}{c} working hard \\ in that room \\ sick \\ a nuisance \end{array} \right\}$?

(203b) Yeah—JESSICA has been $\left\{ \begin{array}{c} even \\ also \end{array} \right\}$ $\left\{ \begin{array}{c} ??working hard \\ *in that room \\ *sick \\ *a nuisance \end{array} \right\}$.

Rather than "ad hoc"-ening rule (199) even more, by inserting an optional (*have*) at the end of Term 3 (which would generate (193) through (196), but would predict that (203b) is totally bad, even with *working hard*, which it is not), we will briefly cite some parallel facts involving quantifiers, which suggest to us that the solution to the problem of what auxiliaries *even* can follow lies elsewhere than in making amendments to (199).

There is a process known as *Quantifier Floating*, which has the effect of converting (204a) into (204b).

(204a) $\left\{ \begin{array}{c} All \\ Both \end{array} \right\}$ of them are snoring.

(204b) They $\left\{ \begin{array}{c} all \\ both \end{array} \right\}$ are snoring.

We would agree with Postal's (1974b) assessment of the way this is effected: *Quantifier Floating* works by ascending the object NP of *of* to make this NP the derived subject of *are snoring*.²¹

We also find *all* and *both* after *are*, and, in fact, after any tensed auxiliary verb:

(205) They are $\left\{ \begin{array}{c} all \\ both \end{array} \right\}$ snoring.

(206a) They could $\left\{ \begin{array}{c} all \\ both \end{array} \right\}$ be snoring.

(206b) They have $\left\{ \begin{array}{c} all \\ both \end{array} \right\}$ $\left\{ \begin{array}{c} taken Benzedrine \\ *work to get done^{22} \end{array} \right\}$.

(206c) They don't $\left\{ \begin{array}{c} all \\ both \end{array} \right\}$ snore.

If the second auxiliary is *have*, we find floated *all* and *both* to its right:

²¹The fairly extensive treatment of *Quantifier Floating* by Postal (1974b) is challenged by Fiengo and Lasnik (1976). See also Maling (1976) for some important related points.

²²This is bad because when *work to be done* follows *have*, *have* is a main verb, not an auxiliary.

(207) They $\left\{ \begin{array}{l} \text{can't} \\ \text{must} \\ \text{should} \\ \text{way} \\ \text{etc.} \end{array} \right\}$ have $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ been lucky.

However, if the second auxiliary is the bare stem *be*, or the gerund *being*, the quantifiers cannot follow it:

(208a) *They $\left\{ \begin{array}{l} \text{will} \\ \text{must} \\ \text{should} \\ \text{may} \\ \text{etc.} \end{array} \right\}$ be $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ spies.²³

(208b) **They are being $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ pests.

With quantifiers, the position after *been* is bad, even if a progressive follows:

(209) *They have been $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ $\left\{ \begin{array}{l} \text{working hard} \\ \text{in that room} \\ \text{Turkish} \\ \text{nuisances} \end{array} \right\}$.²⁴

²³For some reason, after *can't be* and *couldn't be*, things are often looser than with other modals, with *all* being freer to float to the right of *be* than is *both*. Thus, for us, the following contrasts obtain:

(i) They $\left\{ \begin{array}{l} ?\text{can't} \\ ?\text{couldn't} \\ ?*\text{could} \end{array} \right\}$ be all spies.

(ii) They $\left\{ \begin{array}{l} ??\text{can't} \\ ??\text{couldn't} \\ *\text{could} \end{array} \right\}$ be both spies.

We have no explanation for this differential behavior of *can* and *could*.

²⁴For reasons we do not understand, however, some of the sentences in (209) sound better with modals and *all*:

(i) They $\left\{ \begin{array}{l} \text{must} \\ \text{could} \\ \text{should} \\ \text{may} \end{array} \right\}$ have been all $\left\{ \begin{array}{l} \text{working hard} \\ \text{in that room} \\ ??\text{Turkish} \\ *\text{nuisances} \end{array} \right\}$.

(ii) They $\left\{ \begin{array}{l} \text{must} \\ \text{could} \\ \text{should} \\ \text{may} \end{array} \right\}$ have been both $\left\{ \begin{array}{l} ?\text{working hard} \\ ??\text{in that room} \\ ??\text{Turkish} \\ *\text{nuisances} \end{array} \right\}$.

These facts leave us with mouths agape.

The parallels between (201) through (203) and (207) through (209) appear to us to be more important than the differences. Accordingly, we would like to give intensifiers and quantifiers highly similar analyses. In the case of quantifiers, Postal (1974a) has argued that *Quantifier Floating* is a cyclic rule. The motivation for this claim arises from variants of sentences such as (210).

(210) It is likely that it will appear to you that $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ of them are snoring.

Assuming that this sentence is underlain by a remote structure along the lines of (211), see Fig. 11.22, we note that since both *appear* and (*be*) *likely* are *Subject Raising (A-Raising)* triggers,²⁵ NP₃ can be raised once, to become the superficial subject of *appear*, as in (212), or twice to become the superficial subject of (*be*) *likely*, as in (213):

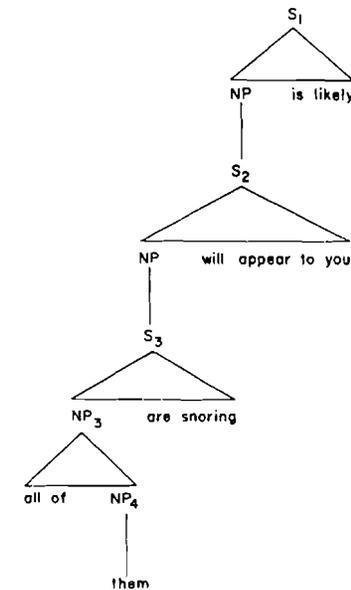


FIG. 11.22. Example (211)

(212) It is likely that $\left\{ \begin{array}{l} \text{all} \\ \text{both} \end{array} \right\}$ of them will appear to you to be snoring.

(213) $\left\{ \begin{array}{l} \text{All} \\ \text{Both} \end{array} \right\}$ of them are likely to appear to you to be snoring.

²⁵For an extensive treatment of the process of *A-Raising*, cf. Postal (1974a).

Now if we assume that *Quantifier Floating*, which converts (204a) to (204b) by ascending *them* to become the superficial subject of (*be*) *snoring*, is an optional cyclic process, then we would expect to find that *all* and *both* could show up before (*be*) *snoring* (whose deep subject they were part of) or *appear* [because the quantified NP can be raised once, to become *appear*'s subject, as in (212)], or before (*be*) *likely* [because the quantified NP can be raised again, as in (213)]. All of these predictions are in fact attested: cf. (214).

- (214a) It is likely that it will appear to you that they all are snoring.
 (214b) It is likely that they all will appear to you to be snoring.
 (214c) They all are likely to appear to you to be snoring.

In fact, although the quantified NP has been raised twice in (214c), there is no necessary correlation between the number of applications of *A-Raising* and the position of *all* in surface structure. If *Quantifier Floating* applies on the first cycle, with *they* subsequently being raised twice, (215a) will ensue, and if *all of them* is raised once before the quantifier is floated, with *they* subsequently being raised once more, (215b) will result.

- (215a) They are likely to appear all to be snoring.
 (215b) They are likely all to appear to be snoring.

Postal (1974a) notes (p. 158, Footnote 18) that, given an analysis of auxiliaries in which each auxiliary is a main verb that undergoes *A-Raising*, the cyclical *Quantifier Floating* analysis would predict that quantifiers should be able to precede any auxiliary. The sentences he cited in (i) of Footnote 18 are reproduced in (216).

- (216a) All of the rockets will have been decaying for some time.
 (216b) The rockets will have been (probably) all decaying for some time.
 (216c) The rockets will have all been decaying for some time.
 (216d) The rockets will all have been decaying for some time.
 (216e) The rockets all will have been decaying for some time.

He observed: "(ib) [= (216b)] without *probably* is bad for many speakers because of an output condition blocking intensed *be* directly before a Q, that is:

*be ($\left. \begin{array}{l} \{ing\} \\ \{en\} \end{array} \right\} Q$ "

We find ourselves in general agreement with the proposed output condition, with the exception that the three conditions abbreviated in Postal's

condition are different in strength. No one we know of tolerates quantifiers after *being*, with the bare stem *be* being only slightly less impossible, perhaps [cf. (208)]. The situation with *been* is non-uniform: Compare (209) with the sentences in Footnote 24.

Although we know of nothing that would completely explain these differences in strength, the following observations may be of some relevance. The passive auxiliary *be* allows its complement, the passive participle, to be deleted by *VP Deletion*, except after *being*.

- (217a) John was arrested, but Christina was not (arrested).
 (217b) John has been arrested, but Christina has not been (arrested).
 (217c) John will be arrested but Christina will not be (arrested).
 (217d) John is being arrested, but Christina is not being *(arrested).

The same paradigm obtains for predicate nouns and adjectives:

- (218a) John was $\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$, but Christina was not ($\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$).
 (218b) John has been $\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$, but Christina has not been ($\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$).
 (218c) John will be $\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$, but Christina will not be ($\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$).
 (218d) John is being $\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$, but Christina is not being * ($\left\{ \begin{array}{l} \text{polite} \\ \text{a pest} \end{array} \right\}$).

This does not seem to be a property only of *being* when it follows the progressive auxiliary: In (219), we find parallel facts when the *-ing* on *be* is induced by the matrix predicate *continue*.

- (219) Tim was polite at first, but he has not continued $\left\{ \begin{array}{l} \text{to be} \\ *being \end{array} \right\}$.

We note that the tight bond between *being* and its object cannot be sundered by ripping rules, either. Note the sentential *which*-clauses related to the sentences in (217).

- (220a) John was arrested, which Christina was not.
 (220b) John has been arrested, which Christina has not been.
 (220c) John will be arrested, which Christina will not be.
 (220d) *John is being arrested, which Christina is not being.

We might propose the following positive output condition:

(221) *The Great Chain of "Being"*

If an instance of the verb *be* appears with the suffix *-ing*, whatever immediately follows this *be* in remote structure must immediately follow it in surface structure.

This constraint will not only block deletions such as those in (217) through (219), and choppings, such as that in (220), from taking place but also such "insertions" as *(200c), *(202b), and *(208b).²⁶

In addition, the constraint may shed new light on the tag question construction, which, despite a 20-year history of investigation within generative grammar, still presents many mysteries [cf. (222)].

- (222a) Hank might have been being bluffed, mightn't he?
 (222b) Hank might have been being bluffed, mightn't he have?
 (222c) ?Hank might have been being bluffed, mightn't he have been?
 (222d) *Hank might have been being bluffed, mightn't he have been being?

It is too early to tell, but it may well be the case that there are conditions on *be* and *been* which are similar to (221), but weaker. If there is in addition an interacting hierarchy of rule strengths, with deletion rules, such as *VP Deletion* being "stronger" (i.e., able to apply in more environments) than chopping rules, such as the one that forms the *which*-clauses of (220), and with chopping rules being in general stronger than insertions, then such differences in acceptability as (217c) or (220c), on the one hand, and (208a), on the other, may find an explanation. The situation, thus, would parallel the general state of affairs in island constraints; in both areas, nondiscrete treatments would be necessary.

However, to pursue these matters further here would take us too far from the task at hand, namely, accounting for the positions in which *even* and *also* can appear in the auxiliary. What makes floating quantifiers relevant to the distribution of *even* and *also* are the parallels between (193) through (196) and (207), or between *(201b) and *(208a), or between *(202b) and *(208b). These sentences show that *even* and *also* can appear roughly where *all* and *both* can.

We must say "roughly," because the parallelism is not perfect: Quantifiers seem to be able to follow *been* slightly better than do intensifiers. Compare

²⁶We have placed quotation marks around *insertions*, because, in line with our acceptance of Perlmutter and Postal's (1978) ascension analysis of floated quantifiers, constraints on surface order of auxiliaries and quantifiers will either have to be expressed as output conditions, as Postal did, or as constraints on *Raising to Subject Position*. For the present, this point of detail is irrelevant, and we continue to speak of "inserting" quantifiers after auxiliaries and other verbs.

(200b) and the sentences in Footnote 24 above. Furthermore, when we examine the behavior of *even* and *also* in nests of Subject-Raising constructions, like (211), we find that quantifiers can be separated by a longer string of Subject-Raising triggers from the subject NP they quantify over than can *even* and *also* be separated from a focused subject with which they are associated. Thus, although (223a) and (224a) can be answered with (223b) and (224b), respectively, for all speakers, and by (223c) and (224c) in many dialects, we know of no speakers who would allow (223d) or (224d).

(223a) Is EVERYBODY likely to appear to me to be snoring?

(223b) Yeah—PRESIDENT HUGHES $\left. \begin{array}{l} \text{even is} \\ \text{is even} \end{array} \right\}$ likely to appear to you to be snoring.

(223c) %Yeah—PRESIDENT HUGHES is likely $\left. \begin{array}{l} \text{even to} \\ \text{to even} \end{array} \right\}$ appear to you to be snoring.

(223d) *Yeah—PRESIDENT HUGHES is likely to appear to you $\left. \begin{array}{l} \text{even to} \\ \text{to even} \end{array} \right\}$ be snoring.

(224a) Is only MRS HUGHES likely to appear to me to be snoring?

(224b) No, PRESIDENT HUGHES $\left. \begin{array}{l} \text{also is} \\ \text{is also} \end{array} \right\}$ likely to appear to you to be snoring.

(224c) %No, PRESIDENT HUGHES is likely $\left. \begin{array}{l} \text{also to} \\ \text{to also} \end{array} \right\}$ appear to you to be snoring.

(224d) *No, PRESIDENT HUGHES is likely to appear to you $\left. \begin{array}{l} \text{also to} \\ \text{to also} \end{array} \right\}$ be snoring.

The (d) versions of the sentences here are to be compared with (215a) and the (c) versions with (215b).

There are, then, two cases that seem to show that the general parallelism between quantifiers and intensifiers is overlaid by a tendency for quantifiers to occur in more environments than intensifiers.

Let us now turn to a detailed examination of (223c) and (224c), for these sentences have an important bearing on the analysis of *even* and *also*: they show that neither Jackendoff's (1972) nor Anderson's (1972) condition on "even" can be true of surface structure. Rather, the range of *even* (and *also*)

seems to have to be determined cyclically. We propose the derivation for (223c) shown in Figs. 11.23 through 11.26.

The only problem that is posed by our cyclical analysis of *even* and *also* is the ungrammaticality of (223d) and (224d). The first of these could arise, for instance, if the optional rule of *Intensifier Climb* were allowed to apply on the S₃ cycle of (225a). *Intensifier In*, an obligatory rule, would then have to apply, and *even* would remain as a constituent of S₃.

At present, the only remedy we can suggest is a global filter, which would mark as ungrammatical any surface structure containing a focused surface subject and an *even* or *also* that is more than one clause down from this subject, if the main verb of the clause in question is not an auxiliary verb.

This is an extremely ad hoc restriction, but the (c) versions of (223) and (224) seem to force a cyclical treatment, and we know of no alternative

(225a) Approximate remote structure

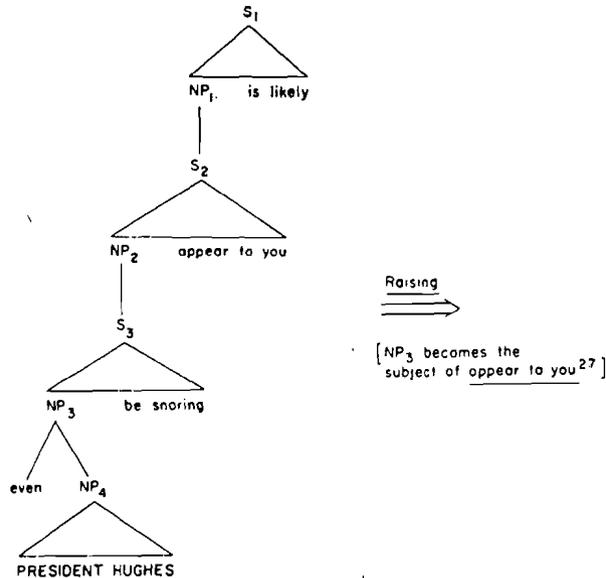


FIG. 11.23. Example (225a)

²⁷When the subject of the complement of *appear* ascends to become the derived subject of *appear*, the remnant of the old complement (*to be snoring*) becomes a chômeur, which we indicate in (225b) by the notation NP₂. See Perlmutter and Postal (1978) for more details.

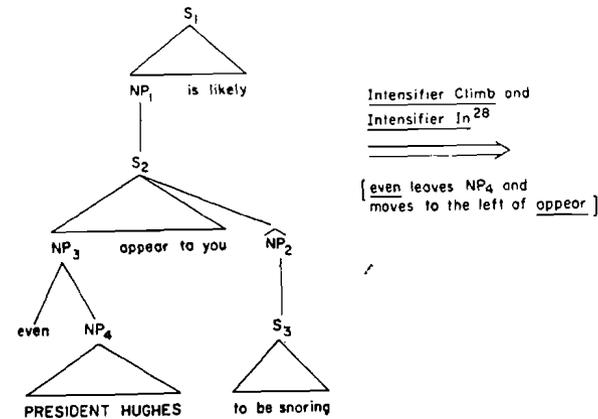


FIG. 11.24. Example (225b)

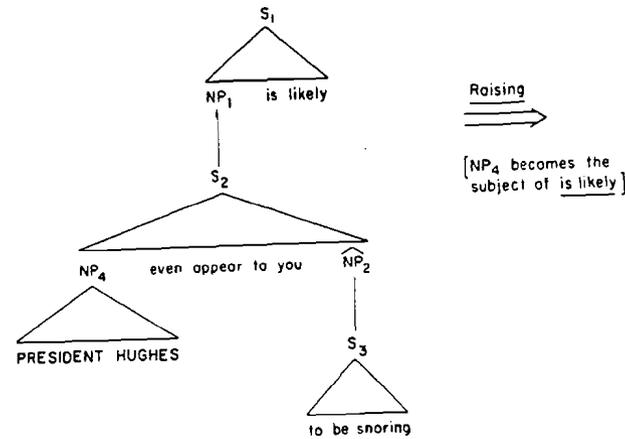


FIG. 11.25. Example (225c)

²⁸It might be thought that it is possible to achieve the effect of the two rules of *Intensifier Climb* and *Intensifier In* by allowing NP₄ to undergo the type of NP-ascension that underlies *Quantifier Floating*. This would convert *even* into a chômeur, and it (and *also*) could be assigned the same position in the linear ordering as *all* and *both*. However, we are dubious. On the one hand, *Intensifier Climb* is needed in objects, independently of what happens in subject position: See the sentences in (74), (75), (97), (113a), and (114a). Furthermore, on the basis of sentences such as (152), we have argued that *even* must be able to be climbed to attach to higher S nodes. This being the case, *Intensifier In* will be necessary to repair sentences such as (150). Thus, we see no advantage to postulating that the conversion of (225b) into (225c) is accomplished by *Quantifier Floating*.

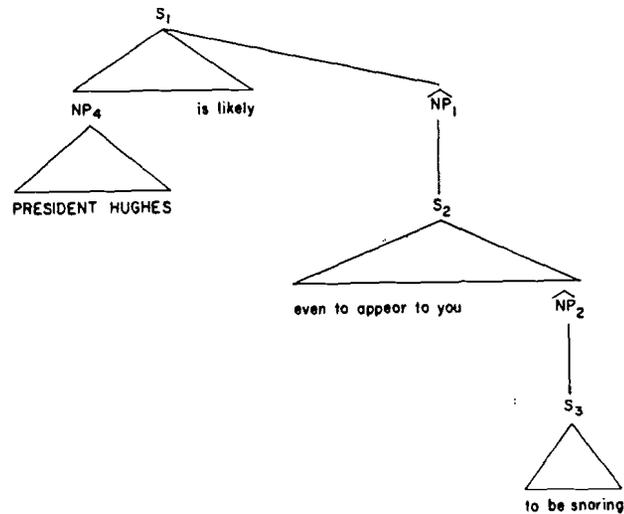


FIG. 11.26. Example (225d)

account in which there is no equally ad hoc condition that would correspond to the global filter that we have adumbrated above.

Some sugar coating for the bitter pill of the global filter is available, however: The cyclical analysis of *even* and *also* obviates the need for the rule of *Intensifier Post Tense* [(199)]. Recall that this rule was postulated in order to account for sentences such as (187), "JOHN will even have given his daughter a new bicycle," because the *even* here violates Anderson's (1972) adjacency clause, which otherwise seems desirable. But if auxiliaries are treated as main verbs, then this sentence will derive from a remote structure such as (226), Fig. 11.27.

This cyclical analysis of nonadjacent subject-linked intensifiers thus kills two birds with one stone: No rule (199) is necessary at all, let alone an ad hoc optional *have* in Term 3 of that rule. Both sentences such as (187), which violates Anderson's adjacency condition, and sentences such as (193) and (194) through (196), which even violate Jackendoff's (1972) weaker C-command condition, drop out of the analysis as a consequence of a main-verb analysis of auxiliaries, coupled with the principle of the transformational cycle.

Further Parallels Between Intensifiers and Quantifiers

Before concluding our discussion of the English auxiliary, which has been based in part on some similarities between intensifiers and floated quantifiers,

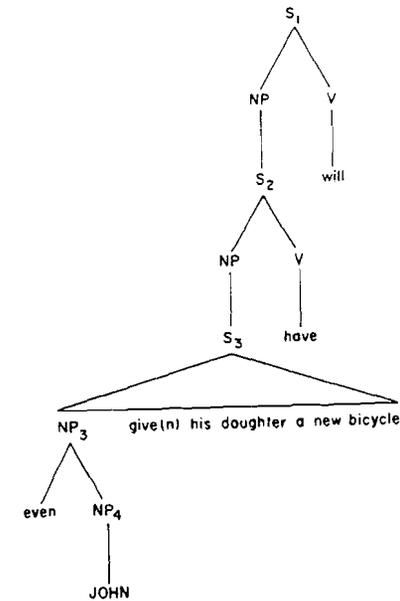


FIG. 11.27. Example (226)

let us draw attention to an additional point of similarity between these two classes of words.²⁹

As we have seen above, *Intensifier Climb* can move *only* from its original location in (204), adjacent to *PLAYBOY*, to Chomsky-adjoin it to any higher constituent.

(227) They could [have [read only *PLAYBOY*]].

Thus, *Intensifier Climb* can by itself produce either (228a) or (228b) from (227), and if *only* is first climbed to be adjoined to the highest S node and subsequently moved to the post-subject position by *Intensifier In*, (229) will result.

(228a) They could [have [only [read *PLAYBOY*]]].

(228b) They could [only [have [read *PLAYBOY*]]].

(229) They only could have read *PLAYBOY*.

²⁹We assume here that the rule that has the effect of moving *even* and *also* rightward from focused subjects can be identified with *Quantifier Floating*, despite the fact that quantifiers are more flexible than intensifiers, as we have noted. Nothing in the discussion rests on this assumption, however.

Thus, in a sentence with an object-linked intensifier, there are usually three positions to the left of that object in which the intensifier can appear.

Let us now consider a sentence with a subject-linked intensifier, such as (230).

(230) Even THE NEPTUNIANS could have read it.

This sentence derives from a structure similar to that in (226): If *Quantifier Floating* applies on the lowest cycle, (231a) will be generated, and if it applies on the next lowest, (231b) will result.

(231a) %THE NEPTUNIANS could have even read it.³⁰

(231b) THE NEPTUNIANS could even have read it.

And if *Intensifier Climb* applies to the remote structure of (230), *Intensifier In* will obligatorily produce (232).

(232) THE NEPTUNIANS even could have read it.

Thus, we see that there are usually also three places to the right of a focused subject in which a subject-linked intensifier can appear.

Consider the situation in which there are *two* intensifiers, one associated with the subject and one with the object. The restriction operative in such cases seems to be as follows: If we imagine crêpe-paper bands running from an intensifier to the focused NP with which it is associated, then such bands may not cross. To see this crossing restriction at work, imagine the possible responses to (233a), all of which are variants of the answer in (233b).

(233a) Could ANY OTHER OUTWORLDERS have been reading only PLAYBOY?

(233b) Yeah—even THE NEPTUNIANS could have been reading only PLAYBOY.

If *even* remains to the left of *THE NEPTUNIANS*, *only* can appear in the normal three places, as is indicated by the three lines from its prenominal location to the carets in (234), Fig. 11.28.

If *even* has undergone *Intensifier Climb* and *Intensifier In*, then there are only two possible locations for *only* (Fig. 11.29).

Note that the variant of (235) in which *only* precedes *even* could be excluded by the proposed constraint, for the crêpe-paper bands from *THE*

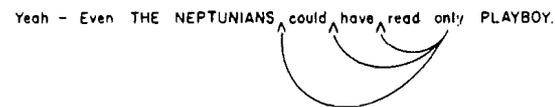


FIG. 11.28. Example (234)

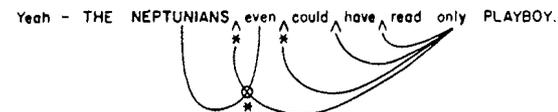


FIG. 11.29. Example (235)

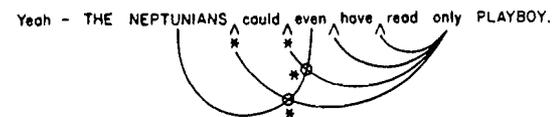


FIG. 11.30. Example (236)

NEPTUNIANS to *even* and from *PLAYBOY* to *only* would have to cross, and such a crossing would be prohibited by the informally stated constraint given above. However, we are inclined to think that this sentence should instead be blocked by some form of "one-per-slot" constraint, because it is also impossible for *only* to immediately follow *even* in (235), despite the fact that no crossing bands can be found. Thus, in what follows, we point out the various occurrences of the one-per-slot constraint as they arise, although we do not propose a formal constraint, because our investigation of its range is at present far too preliminary.³¹

A clearer instance of a band-crossing violation can be seen in (236) (Fig. 11.30), where *even* has quantifier-floated on the second cycle, as in (231b). Here, the reason that *only* cannot precede *could*, as it generally can, is that the *even*-band and the *only*-band³² cross at the *-ed circle.

Some final cases of a band-crossing violation can be seen in (237) (Fig. 11.31), where *even* has been floated on the lowest cycle, as in (231a).

It is worth pointing out that it is not enough for the linear order of the intensifiers to be the opposite of that of the focused elements with which they are associated. This point can be seen on the basis of the sentences in (238b), which are versions of (233b) that would have arisen by applying *Intensifier*

³¹Note, for instance, that whereas *only* cannot precede *even* in (236), it can follow it, yet presumably both are in the "same slot."

³²Here we are considering the band from *even* to *THE NEPTUNIANS* and the band from *only* to *PLAYBOY*, respectively.

³⁰This type of sentence is untarnished for us, but we have prefixed it with a percentage sign to indicate our belief that this is a controversial judgment.

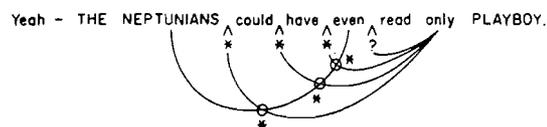


FIG. 11.31. Example (237)

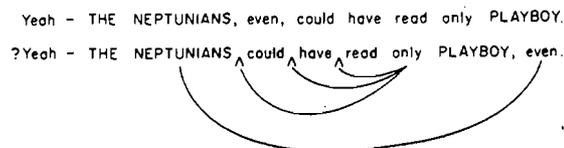


FIG. 11.32. Examples (238a) top and (238b) bottom

Hop to (233b), producing (238a) (Fig. 11.32), to which *Intensifier Climb* would apply to adjoin the hopped *even* to the S node.

These sentences are certainly awkward, but they are not unintelligible. This fact shows that bands, or their functional equivalents, are necessary for any formulation of the restrictions on multiple intensifiers: One could not say anything like (239).

- (239) If there are n foci in a sentence, and n intensifiers associated with these foci, the sentence will be ungrammatical if there is any difference in order between any two foci and their corresponding intensifiers.

The reason that (239) is inadequate is apparent. There are differences in order of the kind mentioned in (239) both in (236) and (237) and in (238), but only those of the former type produce violations. What distinguishes the two types is the notion of *bands*, and of *crossing*, both of which we conclude are essential.

We will now show how the band-crossing constraint interacts with the floating of *all* and *both*. Consider the sentences in (240).

- (240a) Both (of) the Neptunians could have read only *PLAYBOY*.
 (240b) The Neptunians both could have read only *PLAYBOY*.
 (240c) The Neptunians could both have read only *PLAYBOY*.
 (240d) The Neptunians could have both read only *PLAYBOY*.

These sentences show the widest set of environments for floated quantifiers. However, as was the case with a subject-linked *even* that was not adjacent to the subject, we find that if *only* undergoes *Intensifier Climb*, *both* cannot freely float to its right. This restriction is documented in sentences

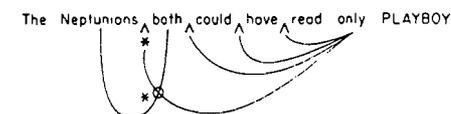


FIG. 11.33. Example (241)

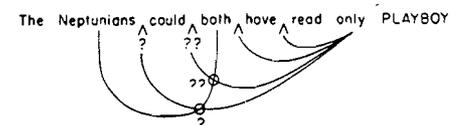


FIG. 11.34. Example (242)

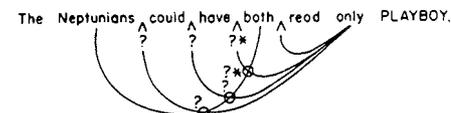


FIG. 11.35. Example (243)

(241) through (243), Fig. 11.33, 11.34, and 11.35, where the designated circles again denote band-crossing violations of the type encountered above.

What is immediately apparent here is that although quantifiers and intensifiers can produce band-crossing violations, they are much milder than those produced by two intensifiers.

One might be tempted to conclude that this is a transderivational fact; after all, although (244b) is ungrammatical when read as a band-crossing variant of (244a) (see Fig. 11.36), it is fine as a variant of (245).

- (245) Only *BILLY* was writing even *FRENCH* poems.

And it could be pointed out that although in English, nonadjacent quantifiers can show up to the right of the NP they modify, they cannot show up to its left³³ (see Fig. 11.37). Thus, it might be said, since *both* in (241) through (243) can only be linked to *The Neptunians*, no ambiguity can arise, so the sentences are all uniformly better than intensifier-crossed examples like (236) and (237). That is, it might be held that band-crossing violations are essentially a kind of no-ambiguity constraint.³⁴

³³There is no general prohibition against such a situation arising. In French, (i) can become (ii), via the rule of *L-Tous* (cf. Kayne, 1975).

- (i) Henri a voulu lire tous d'eux.
 Henry has wanted to read all of them.
 [=wanted]
 (ii) Henri a tous voulu les lire.
 Henry has all wanted them to read.

³⁴See Hankamer (1973) for discussion bearing on the avoidance of ambiguity.

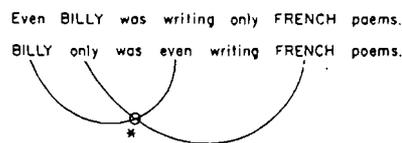


FIG. 11.36. Example (244a) top and (244b) bottom



FIG. 11.37. Example (246)

However, such a conclusion would be hasty. For if we recall that *only* cannot undergo *Quantifier Floating* [thus (247a) cannot become (247b)], we can see that there is a version of (237) that has no reading at all. It is given in (248).

- (247a) Only WIDENER is opposite from Schoenhof's.
 (247b) *WIDENER is only opposite from Schoenhof's.
 (248) *THE NEPTUNIANS could only have even read *PLAYBOY*.

Here, although *even* could be linked to *PLAYBOY*, *only* could not have been floated away from *THE NEPTUNIANS*, as *(247b) shows. Thus, *(248) is not starred on a band-crossing reading merely because of the existence of a stronger reading that would not entail band-crossing; (248) is ungrammatical on all readings.

Our conclusion, then, is not that (241) through (243) are better than (236) and (237) for transderivational reasons, but rather that quantifiers are less subject than intensifiers to band-crossing constraints, which is due to the fact that quantifiers are more flexible than are intensifiers, as regards being separated by raising from a subject to which they are linked. This difference in flexibility we have noted already, in connection with examples (223) and (224).

The point of this section lies in the (less than perfect) parallelism between (236) and (237) and (241) through (243). The fact that both intensifiers and quantifiers can give rise to band-crossing violations is an indirect piece of evidence for our analysis of *even* and *also*, which we argue come to be nonadjacent to, and to the right of, focused subjects by the same processes that have this effect in the case of quantifiers.

Summary Remarks on Auxiliaries

Our conclusion is that the distribution of intensifiers with respect to auxiliary verbs is best accounted for if auxiliaries are analyzed as main verbs that trigger *A-Raising*. Our assessment of previous work on intensifiers suggests

that Anderson's (1972) more restrictive adjacency condition (186b) is to be preferred to the less restrictive C-command condition proposed by Jackendoff (1972) (186a), but that neither condition is adequate, if formulated in terms of surface structure. Rather, based on the grammaticality of such sentences as (193) through (196) and (224c), we argued for a cyclic analysis of *even* and *also*, in which these words are moved rightward from focused subjects by an expanded rule of *Quantifier Floating*. The rules in question are stated in the following section.

Conclusions on *Like* and Intensifiers

We can summarize the discussion of *like* and its neighbors by observing that the similarities in behavior among *like*, *even*, *also*, *only*, *just*, and *too* far outweigh the differences. In fact, a very large amount of otherwise inexplicable data can be handled by the ordered application of the following general rules:

(249) 1. *Intensifier Hopping*

X	Intensifier	A	Y	
1	2	3	4	OPT
1	0	3+, +2+, 4		⇒

- Conditions: (a) blocked if A is on a left branch of some other constituent than S.
 (b) obligatory for *too*
 (c) blocks for *just*
 (d) A is a constituent that contains the focused element

(249) 2. *Nuclear Stress Rule*

Vowel → [1 stress] / [##[1 stress] Y##]

Condition: Y ≠ [1 stress]

- (249) 3. *Quantifier Floating* (optional and cyclic): In subject position, a NP that is "modified by" *all*, *both*, *each*, *even*, or *also* can ascend to become the derived subject, with the former modifiers being attached to the verb.³⁵

(249) 4. *Intensifier Climb*

A. W - [X - [Intensifier - Λ] - Y] - Z

	B	A	Λ	B		
1	2	3	4	5	6	OPT
13#[2		0	4	5]	6	⇒

³⁵This rule is stated in words, rather than as a transformation, because it is intended as an approximation to a relational ascension rule. For the formal apparatus for stating relation-changing laws, see Perlmutter and Postal (1978).

B. W - [X - [A - Intensifier] - Y] - Z

	B	A	A	B		
1	2	3	4	5	6	OPT
1	[2	3	0	5]#4	6	⇒

Conditions: (a) obligatory for *just* and *also* in PPs
 (b) obligatory for all intensifiers if 3 + 4 = N
 (c) Rule 4B cannot apply if term 4 = *only*

(249) 5. *Intensifier In*

X - [Intensifier [NP - V Y]] - Z

	S	S	S	S		
1	2	3	4	5		
1	0	3+2	4	5		⇒

Conditions: (a) obligatory for *even* and *only*
 (b) blocks for *like*
 (c) preferred for *also*

The ordering relations that obtain among these rules are shown by the lines drawn in (250):

(250) $\left\{ \begin{array}{l} 1. \\ 2. \\ 3. \\ 4. \\ 5. \end{array} \right.$

where a line between two rules means that the two rules must apply in the order given in (250), and where no line means that the rules can apply in either order. Rules 1 and 4 and 4 and 5 are intrinsically ordered, but it appears that Rules 1 and 2 must be extrinsically ordered.

We wish to extend the claim in (180) about the remote structure location of *even* to all intensifiers except *like*:

(251) The intensifiers *even*, *also/too*, and *only/just* can modify any semantic predicate or argument.

The reason for excluding *like* is that it appears to be able to modify in remote structure an even wider class of items than can the other intensifiers [cf. (252)].

(252) Jenny picked it $\left\{ \begin{array}{l} \text{like} \\ *even \\ *also \\ *only \end{array} \right\} *(right) up.^{16}$

¹⁶We note in passing that verbal particles such as *up*, *away*, *out*, *in*, *along*, etc. can only be modified by *like* if they are preceded by *right*. We have no explanation for this puzzling fact.

In addition, although we assume that tenses are to be represented in semantic structure as predicates and should thus be modifiable by all intensifiers, some are worse than others:

(253) Helen $\left\{ \begin{array}{l} \text{like} \\ \text{only} \\ ?just \\ ??also \\ ??even \end{array} \right\}$ WAS a spy.

The general tendency seems to be for *like* to be able to occur in all environments where the other intensifiers can and in some others as well. In particular, it appears that *like* is freer than other intensifiers, in that it can be associated with any type of constituent, including NP, VP, N, V, Adj, Adv, Prep, Det, and Aux. Some of the more exotic of *like*'s associations follow.

(254a) He's not only A bass player, he's like THE bass player.

(254b) Jill's not ABOVE the car, she's like UNDER it.

(254c) Tom gambled yesterday, and he like WILL gamble tomorrow.

Other intensifiers can be associated with most types of constituents, but not the full range exemplified by *like*, as shown below:

(255) Bob's $\left\{ \begin{array}{l} \text{like} \\ *even \\ *also \\ *only \end{array} \right\}$ FATHER went to Chicago with us.
 (association with N)

We noted at the outset of this paper that *like* can sometimes take the meaning of *approximately*, as in (256).

(256) I left at like nine o'clock.

Thus, *approximately* or *about* could replace *like* in (255) without a change in meaning. *Approximately* and *about* are more restricted than is *like*, however, in that they cannot modify a relational term, as in (257).

(257) I left $\left\{ \begin{array}{l} \text{like} \\ *approximately \\ *about \end{array} \right\}$ early.

On the other hand, fillers having similar meaning such as *kinda*, *sorta*, and *really* require a relational term.

(258a) I left $\left\{ \begin{array}{l} \text{kinda} \\ \text{sorta} \end{array} \right\}$ early.

(258b) *I left at $\left\{ \begin{array}{l} \text{kinda} \\ \text{sorta} \end{array} \right\}$ nine o'clock.

It, thus, appears that *like* as a filler meaning *approximately* is less restricted than other words having the same meaning. This parallels the less restricted behavior of *like* as an intensifier as compared with *even*, *only*, *just*, *also*, and *too*.³⁷

LIKE AND MOVEMENT RULES

If *like* is associated with focus, as argued here, then its behavior should provide a litmus test for focus assignment in cases for which such assignment is debatable. In most of our examples to this point, we have relied on question-answer sentences where the focus is generally agreed upon. Now, however, we wish to extend the analysis of *like* to cases in which the location of the primary focus is less clear.

Langacker (1974), among others has claimed that fronting and backing rules serve complementary functions. Whereas fronting rules place focus on the moved constituent, backing rules reduce focus. Based on the prior discussion of *like*'s association with focus, we predict that pauseless *like* should be allowed to precede moved constituents when fronted, but not when backed. This prediction is confirmed below in the case of left- vs. right-dislocation.

(259a) Like John's stereo, it really bothers me.

(259b) *It really bothers me, like John's stereo.

Also consider topicalization (fronting) vs. heavy noun-phrase shift (backing).

(260a) Like these trivial points I'd never bring to Morgan's attention.

(260b) ??I'd never bring to Morgan's attention like these trivial points.

A preference for *like* with fronted constituents is also observed for some adverbs, as shown below; but, for reasons that we do not understand, *like* can occur equally well with fronted vs. nonfronted prepositional phrases:

³⁷It seems particularly difficult to distinguish *only* and *just* semantically, yet we have observed striking differences in their behavior. If a relevant semantic difference cannot be found, we must turn to phonology for an explanation of their different behavior. In this regard, note that hopped *like* and *even* require pauses, whereas hopped *also*, *only*, and *too* do not. The members of the latter group each terminate in an open syllable, unlike members of the former. We do not dare, however, suggest that the phonological distinction between open and closed syllables will lead to an account of why only some hopped intensifiers, in fact, require pauses.

(261a) Like maybe we should leave tomorrow.

(261b) *We should leave tomorrow like maybe.

(262a) Like in Chicago I'll attend the hardware convention.

(262b) I'll attend the hardware convention like in Chicago.

Using *like* as a means of ascribing focus has thus produced support (although not unanimous) for Langacker's claim about the functional distinction between fronting and backing rules.

SPEECH PROCESSING

At the outset, we hoped that the study of *like*, occurring as a filler in casual speech, would shed light on the nature of the speaker's code. Our findings suggest that this code contains an intricate syntactic component, similar to one required for intensifiers found in both speech and writing.

From the standpoint of speech production, the salient feature of this study is the systematic relation between *like*'s position and the presence or absence of pausing. This finding, also generalized to intensifiers, raises the question: "Why is *like* accompanied by pausing when it follows the focused element but not when *like* precedes?" We have not been able to arrive at a satisfactory answer, although an account of this highly systematic relation must surely be included in any comprehensive theory of speech production. One possibility is that the pausing that accompanies hopped *like* and most intensifiers is produced as a consequence of the speaker's programming a relatively low fundamental frequency for these hopped words. Typically, the focused element carries a relatively high fundamental frequency (F_0), bearing stress, and the speaker might need to insert a short pause in order to make the laryngeal adjustments required for a subsequent low F_0 (for a review of these laryngeal adjustments, see Halle & Stevens, 1971). In order for this account to hold, it must also explain why *like* is not accompanied by pauses in most circumstances when it precedes the focused element. To handle this fact, it would be necessary to motivate a principle stating that abrupt F_0 lowering (of the kind that accompanies hopped *like*) requires more time to make laryngeal adjustments than the gradual F_0 raising that accompanies pauseless *like*. No strong motivation is apparent, however, and, even if it were obtained, the account would leave unexplained why a pause also occurs just after *like* when it follows the focused element.

The pauses that occur both before and after hopped *like* seem related to the pauses that accompany parentheticals. As with *like*, parenthetical expressions such as "I guess" are bounded by pauses when such expressions follow the constituent they are associated with, as in (263b).

(263a) I guess HARRY flunked the writing exam.

- (263b) HARRY, I guess, flunked the writing exam.
 (263c) Harry is I guess FLUNKING the writing exam.
 (263d) Harry is FLUNKING, I guess, the writing exam.

In short, it seems like a principled account, of why pausing accompanies hopped *like* and intensifiers should also be capable of handling the pausing that accompanies "hopped" parentheticals (Cooper, in press; Emonds, 1976).

The present study also appears to have implications for speech perception. In some circumstances, *like* may be inserted by speakers as an aid to listeners, signalling focus. *Like*'s occurrence in such instances might produce a momentary heightening of attention in listeners, enabling them to process the focused element more efficiently (whether this element has just entered the perceptual system, as with hopped *like*, or is about to be entered, as with pauseless *like*). The listeners' heightened attention might be revealed experimentally during the performance of perceptual tasks such as phoneme-monitoring (Foss, 1969) or listening for mispronunciations (Cole, 1973). It is also possible that *like*'s insertion, especially during very fast speech, serves as an aid to listeners by allowing them an extra fraction of a second to catch up in processing the input, as might be revealed in performance on tasks such as those utilized by Chodorow (Chapter 3, this volume).

Finally, speakers themselves might be more likely to insert *like* when they are speaking to listeners who appear generally inattentive. With some stalwart *like* users, this possibility does not hold. For them, *like* is inserted during fast speech regardless of how the speaker perceives the listener's inattentiveness (in some cases, the speaker may not even be aware of the listener's state). But for those speakers who use *like* less frequently and who are sensitive to their listeners' attentiveness, *like* may be inserted as an attention-getting device. This possibility can be tested experimentally by examining conversations in which the listener's attentiveness is systematically varied.

In summary, this chapter has raised a number of questions about speech processing, and certain of these questions have been sufficiently well defined to permit subjecting them to empirical test. An ongoing interplay between armchair and laboratory seems to be the most promising way of continuing this study of casual speech. And so the moment has arrived for us to don our laboratory whites.

REFERENCES

- Anderson, S. R. How to get *even*. *Language*, 1972, 48, 893-906.
 Baker, C. L. Stress level and auxiliary behavior in English. *Linguistic Inquiry*, 1972, 2, 167-181.
 Boomer, D. S. Hesitation and grammatical encoding. *Language and Speech*, 1965, 8, 148-158.
 Bresnan, J. W. Sentence stress and syntactic transformations. *Language*, 1971, 47, 257-281.
 Chodorow, M. S. Time compressed speech and the study of lexical and syntactic processing. In W. E. Cooper & E. C. T. Walker (Eds.), *Sentence processing: Psycholinguistic studies presented to Merrill Garrett*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.
 Chomsky, N. Deep structure, surface structure, and semantic interpretation. In D. Steinberg & L. Jakobovitz (Eds.), *Semantics: An interdisciplinary reader in philosophy, linguistics, and psychology*. New York: Cambridge University Press, 1971.
 Chomsky, N., & Halle, M. *The sound pattern of English*. New York: Harper & Row, 1968.
 Cole, R. A. Listening for mispronunciations. *Perception & Psychophysics*, 1973, 14, 153-156.
 Cooper, W. E. Syntactic-to-phonetic coding. In B. Butterworth (Ed.), *Language production*. New York: Academic Press, in press.
 Emonds, J. E. *A transformational approach to English syntax*. New York: Academic Press, 1976.
 Fauconnier, G. Do quantifiers branch? *Linguistic Inquiry*, 1975, 6, 555-567.
 Fiengo, R. W., & Lasnik, H. Some issues in the theory of transformations. *Linguistic Inquiry*, 1976, 7, 182-191.
 Foss, D. J. Decision processes during sentence comprehension: Effects of lexical item difficulty and position upon decision times. *Journal of Verbal Learning and Verbal Behavior*, 1969, 8, 457-462.
 Fraser, B. J. An analysis of 'even' in English. In C. Fillmore & D. T. Langendoen (Eds.), *Studies in linguistic semantics*. New York: Holt, Rinehart, & Winston, 1971.
 Fromkin, V. A. The non-anomalous nature of anomalous utterances. *Language*, 1971, 47, 27-52.
 Garrett, M. F. The analysis of sentence production. In G. Bower (Ed.), *Advances in learning theory and motivation* (Vol. 9). New York: Academic Press, 1975.
 Goldman-Eisler, F. *Psycholinguistics: Experiments in spontaneous speech*. New York: Academic Press, 1968.
 Halle, M., & Stevens, K. N. A note on laryngeal features. *Quarterly Progress Report of the M.I.T. Research Laboratory of Electronics*, 1971, 101, 198-213.
 Hankamer, J. Unacceptable ambiguity. *Linguistic Inquiry*, 1973, 4, 17-68.
 Horn, L. R. A presuppositional analysis of *only* and *even*. In R. I. Binnick, A. Davidson, G. Green, & J. Morgan (Eds.), *Papers from the fifth regional meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society, 1969.
 Jackendoff, R. S. *Semantic interpretation in generative grammar*. Cambridge, Mass.: MIT Press, 1972.
 James, D. *The syntax and semantics of interjections in English*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor, 1973.
 Kayne, R. *French syntax: The transformational cycle*. Cambridge, Mass.: MIT Press, 1975.
 Keyser, S. J., & Postal, P. M. *Beginning English grammar*. New York: Harper & Row, 1976.
 King, H. V. On blocking the rules for contraction in English. *Linguistic Inquiry*, 1970, 1, 134-136.
 Klima, E. S. Negation in English. In J. A. Fodor & J. J. Katz (Eds.), *The structure of language: Readings in the philosophy of language*. Englewood Cliffs, N.J.: Prentice-Hall, 1964.
 Kuroda, S.-Y. *Generative grammatical studies in the Japanese language*. Unpublished doctoral dissertation, MIT, 1965.
 Langacker, R. W. Mirror image rules I: Syntax. *Language*, 1969, 45, 575-598.
 Langacker, R. W. Movement rules in functional perspective. *Language*, 1974, 50, 630-664.
 Maling, J. Notes on quantifier-postposing. *Linguistic Inquiry*, 1976, 7, 708-718.
 Martin, J. G. Some acoustic and grammatical features of spontaneous speech. In D. J. Horton & J. J. Jenkins (Eds.), *The perception of language*. Columbus, Ohio: C. E. Merrill, 1971.
 Perlmutter, D. M., & Postal, P. M. *Relational grammar*. Book in preparation, 1978.
 Postal, P. M. *On raising: One rule of English grammar and its theoretical implications*. Cambridge, Mass.: MIT Press, 1974. (a)

- Postal, P. M. On certain ambiguities. *Linguistic Inquiry*, 1974, 5, 367-424. (b)
- Reinhart, T. *The syntactic domain of anaphora*. Unpublished doctoral dissertation, MIT, 1976.
- Ross, J. R. *Constraints on variables in syntax*. Unpublished doctoral dissertation, MIT, 1967.
- Ross, J. R. Auxiliaries as main verbs. In W. Todd (Ed.), *Studies in philosophical linguistics—Series one*. Evanston, Ill.: Great Expectations, 1969.
- Ross, J. R. Clausematiness. In E. L. Keenan (Ed.), *Formal semantics of natural language*. New York: Cambridge University Press, 1975.
- Shattuck-Hufnagel, S. Remarks on an aspect of a sentence production model based on speech-error patterns. In W. E. Cooper & E. C. T. Walker (Eds.), *Sentence processing: Psycholinguistic studies presented to Merrill Garrett*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.
- Stampe, D. *How I spent my summer vacation*. Unpublished doctoral dissertation, University of Chicago, 1972.
- Zwicky, A. M. Auxiliary reduction in English. *Linguistic Inquiry*, 1970, 1, 323-336.

12 Three Cheers for Propositional Attitudes (Some Reflections on D. C. Dennett's "Intentional Systems")

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The belief that P has fallen upon hard times.¹ Here is how it came about. Many respectable philosophers used to think that substitution instances of the scheme *y believes that P (=S)*, together with their friends and logical relations, are eliminable from English *salva* the expressive power of the language. Roughly, each sentence generated by substitution in *S* was to be replaced by some (logically equivalent, perhaps synonymous) sentence in which the predicate expresses a form of behavior or a disposition to behave. Insouciance prevailed; nobody actually provided the analyses, and there were those who seemed to glory in not providing them. So, Ryle (if I read him right) held both that talking about propositional attitudes is just a way of talking about behavior or behavioral dispositions *and* that nothing that can be (finitely) said about behavior or behavioral dispositions can, in the general case, exhaust the content of the ascription of a propositional attitude. A darkish doctrine, no doubt, but those were darkish times.

At their very worst, however, the *facticity* of such ascriptions went unimpugned. If, after all, claims about the belief that *P* are claims about the

¹I use 'believe' as my paradigm of a verb of propositional attitude, but sometimes vary the verb to break the tedium. What I assume that all such verbs have in common (insofar as they engage the topic of this paper) is their tendency to establish opaque (specifically, intentional) contexts. Opaque contexts are, for example, those in which the substitution of coreferring expressions fails to preserve truth. That is a miserably imprecise characterization of the class of cases at issue, but no more precision is needed for the purposes at hand.

A note on orthography: I use 'intensional' to mean, in effect, *opaque*, and I use 'intentional' to mean *opaque and psychological*. Some intensional contexts are thus nonintentional in this usage: whereas, all intentional contexts are ipso facto intensional.

