

Syntactic Focus and D-Arguments

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Chiefly dealing with (part of) the preposition stranding cases that have been treated in Takami (1988) in terms of a functional concept, I propose a syntactic or at least formalized approach to them by recognizing the syntactic process of focus formation and taking the notion of 'focus' into consideration. I will couch my analysis in the Government-Binding framework or the principles-and-parameters approach to the theory of grammar.

1. Interpretation and Representation of Focus (Rochemont (1986))

Rochemont (1986) is an attempt to define the notion 'Focus' and its proper linguistic characterization. He defines the notion 'c-construable' as follows:

- (1) An expression P is c-construable in a discourse δ iff P is either directly or indirectly c-construable in δ .
- (2) An expression P is directly c-construable in δ iff
 - i) P has a semantic antecedent P' in δ , or
 - ii) the intended antecedent of P in δ has been brought to the attention of the participants in δ .
- (3) An expression P is indirectly c-construable in δ iff
 - i) P is a member of a lexically specified class of scenesetters, or
 - ii) P is an acceptable scenesetter in δ by virtue of the participants' anticipated familiarity with speaker's discourse setting.

He goes on to give the definitions of 'Presentational Focus' and 'Con-

trastive Focus,' like the following:

- (4) An expression a is a Presentational Focus in a discourse δ , $\delta = \{S_1, \dots, S_n\}$, iff
- i) a is an expression in S_i , and
 - ii) at the time of utterance of S_i in δ , a is not c-construable.
- (5) If a/S is directly c-construable, where a/S is the result of extracting a from S , and S is not c-construable, then a is a Contrastive Focus.

He then proposes the Focus Condition as a wellformedness condition on appropriateness in discourse, as follows:

- (6) Focus Condition:
In $\delta = \{S_1, \dots, S_n\}$, S_i is appropriate to δ only if S_i grammatically specifies as a focus every phrase in S_i that meets the conditions of the Focus Rules in (4) and (5).

The Focus Rules (4) and (5) are intended to apply to LF representations, in which grammatically specified focus phrases are uniquely identified, presumably by a process of quantification (Focus Raising; see below).

Rochemont (1986) assumes that prominence (sentence stress) can be assigned prior to S-Structure to any lexical category and that such assignment of prominence necessarily results in the interpretation of this item as focus, as stated in (7):

- (7) If α is prominent, then α is [+focus].

He goes on to propose the operation of Focus Assignment (FA) as syntactic operation consisting of the obligatory rule in (7) and the optional rules in (8), applying in the derivation of S-Structure:

Focus Assignment (FA):

- (7) If α is prominent, then α is [+focus].
- (8) i) If α is [+focus] and α is X^i , then X^j is [+focus].

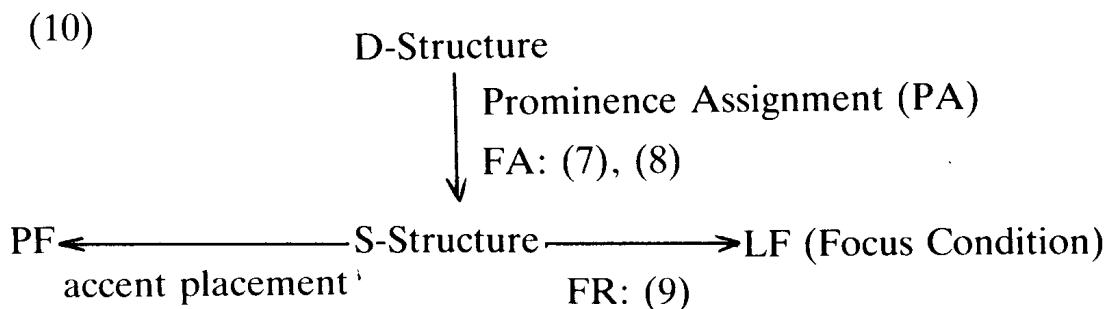
- ii) If α is [+focus] and α is an argument of X^0 contained in X^n , then X^0 is [+focus].
- iii) If X^0 is [+focus] and α is an adjunct of X^0 , then α is [+focus].

He also assumes that S-Structures derived by FA are operated on by an LF interpretive rule of Focus Raising (FR), based on Quantifier Raising (QR) of May (1977) and *Wh* Raising of Aoun, Hornstein, and Sportiche (1981). FR yields quantified representations at LF by adjoining [+focus] elements to the root CP.

(9) Focus Raising (FR):

$$\begin{array}{c} [_{CP} \dots \alpha \dots] \rightarrow [_{CP} \alpha_i [_{CP} \dots t_i \dots]] \\ [+focus] \end{array}$$

It is assumed that FR yields LF representations that are subject to the Focus Condition in (6). That is, if α in CP in a given context meets the conditions of either the Presentational or the Contrastive Focus rules (see (4) and (5)), then α must appear as a focus quantified expression in the relevant LF representation. The following is the schematic organization of the grammar assumed by Rochemont (1986):



2. Focus Formation and D-Arguments

There are a number of processes of focus formation in the grammar. I assume that there are three major ways of focus formation: phonological, syntactic, and semantic ones. Rochemont's (1986) optional rule of Prominence Assignment, which assigns prominence (sentence

stress) to any lexical category prior to S-Structure (see (10)), is a major phonological process of focus formation. The syntactic operations of focus formation may include such productive grammatical processes as *wh*-movement, FOCUS-Movement in Hungarian in the sense of Horvath (1986), *it*-clefts, pseudo-clefts, QR of May (1977), and such ‘constructional focus’ operations in the sense of Rochemont (1986) as PP Extraposition from NP, Relative Clause Extraposition from NP, Directional Adverb Preposing with subsequent Subject Simple Verb Inversion, Locative Adverb Preposing with subsequent Subject Simple Verb Inversion, PP Substitution, Comparative Substitution, Participle Preposing, Heavy NP Shift, and Presentational *there* Insertion (see Rochemont (1986), Ross (1967), and Emonds (1976)). For a semantic (in terms of thematic notions) mode of focus formation see Suzuki (1990).

I assume the existence of D(avidsonian)-arguments in the sense of Kratzer (1988) with stage-level predicates.¹ D-arguments are base-generated in VP as the other arguments of the verb and later adjoined to VP for modification reasons. I assume that modification is a kind of predication in the sense of Williams (1980) and that mutual c-command obtains between the modifier and modifiee (see also Travis (1988)); in this case, between a D-argument and VP. Actually all of Takami’s (1988) examples involve a stage-level predicate and hence a D-argument. Then the canonical VP at S-Structure is as follows:

$$(11) \quad [{}_{VP} [{}_{VP} V \text{ Arg}_1, \dots, \text{ Arg}_n] \text{ D-Arg}]$$

In (11) I assume that when $n \geq 2$ the rightmost argument in the inner VP (Arg_n) is assigned [+focus] and that this mode of focus formation may be subsumed under the syntactic operations of focus formation since this is carried out even without Prominence Assignment (although, of course, some phonological process(es) such as accent placement may be relevant at PF) or the kind of thematic restrictions discussed in Suzuki (1990). And in (11) the usual situation may be that the D-argument is assigned [+focus], due to something like Chomsky and Halle’s (1968) Nuclear Stress Rule that requires the assignment of nuclear stress to the rightmost lexical category in S (see the discussion in Rochemont (1986)).

3. Syntactic Process of Focus Formation

In section 2 I claimed that when $n \geq 2$ the rightmost argument in the inner VP (Arg_n) is assigned [+focus] and that this mode of focus formation is syntactic, like the following:

- (12) a. ($[_{\text{VP}}]$) $[_{\text{VP}}$ V $\text{Arg}_1, \dots, \text{Arg}_n$] (D-Arg])
 [+focus]

Consider the following examples:

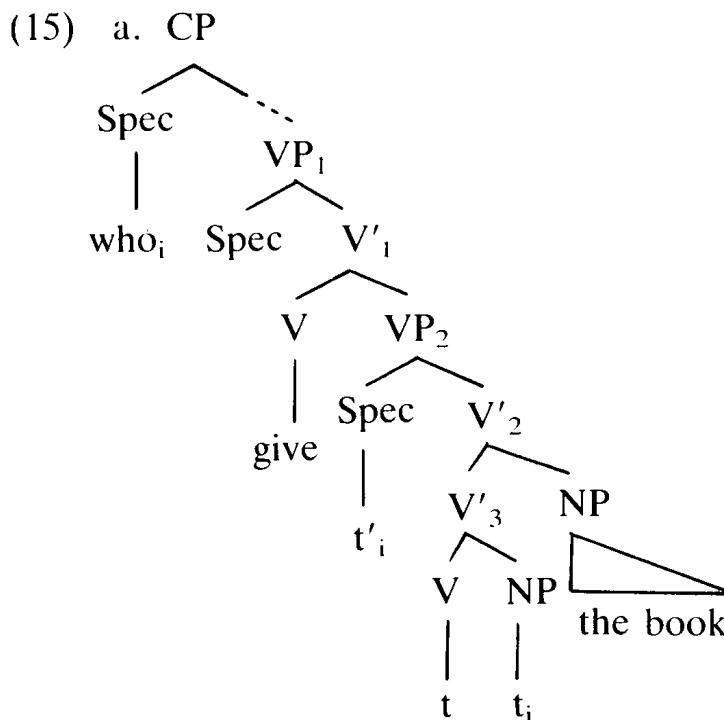
- (13) a. The woman he_i loved saw John_i .
 b. *The woman he_i loved saw JOHN_i .
 c. ?*The woman he_i loved gave the book to John_i .
 d. *The woman he_i loved gave the book to JOHN_i .
 e. ?*The woman he_i loved bought the car for John_i .
 f. *The woman he_i loved bought the car for JOHN_i .

(Basically I use the convention of upper case to indicate phonologically focused elements.) (13b) is a standard case of weak crossover violation involving a (phonologically) focused element. While we do not see anything wrong with (13a), we find some degree of ungrammaticality in (13c,e). In both cases the number of arguments associated with the relevant predicate is two and the relevant arguments (*to John* in (13c) and *for John* in (13e)) correspond to Arg_n in (12). I assume that *to John* in (13c) and *for John* in (13e) are assigned [+focus] and are subject to Focus Raising at LF (see (9)), thus creating a weak crossover violation configuration.²

Note that the above assumption has interesting consequences for the analysis of the following example that has resisted neat explanation so far:

- (14) *Who_i did you give t_i the book?

Following Larson (1988) and others, I assume the S-Structure of (14) as follows (irrelevant details omitted):



b. $[_{VP_1} \text{Spec } [_{V'_1} \text{give } [_{VP_2} t'_i [_{V'_2} [_{V'_3} t \quad t_i] \text{the book}]]]]$
 [+focus]

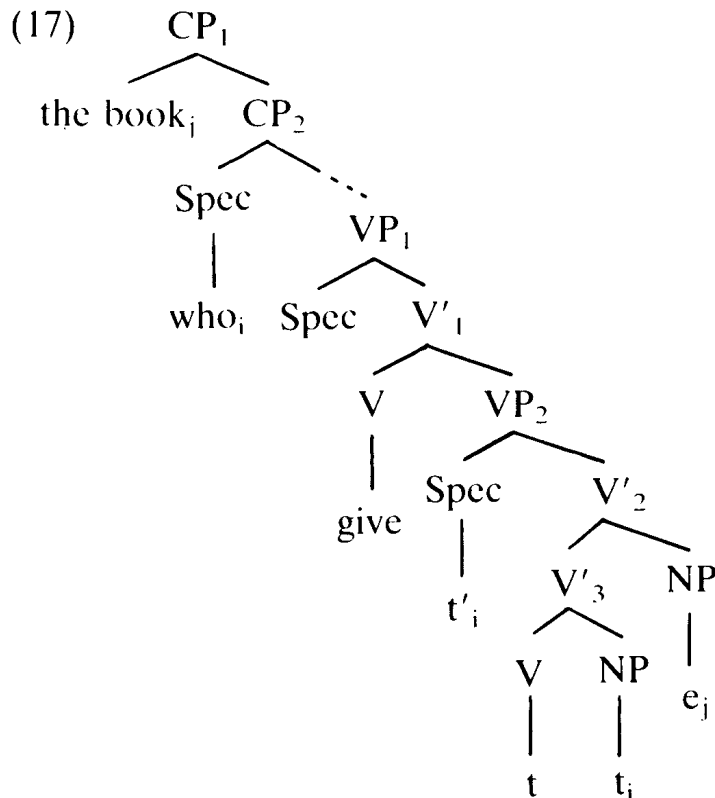
I assume that *the book* in (15) satisfies the necessary requirements to count as Arg_n in (12) and thus to be assigned [+focus] as in (15b). Traces are also assumed to serve as arguments for the purposes of (12). Now Pesetsky (1982) proposes what he calls the Path Containment Condition (PCC), like the following:

(16) Path Containment Condition

If two paths overlap, one must contain the other.

A *path* is a set of successively immediately dominating categorial nodes connecting a bindee to its \bar{A} -binder.

I follow May (1985) in including non-maximal projection categories among path members. Now the LF structure of (14) after FR of *the book* is as follows:



$$\text{path}(i) = \{V'_3, V'_2, VP_2, V'_1, VP_1, \dots, CP_2\}$$

$$\text{path}(j) = \{V'_2, VP_2, V'_1, VP_1, \dots, CP_2, CP_1\}$$

We see that in (17) the two paths overlap, but neither of them contains the other, violating the PCC.³ So I assume the reason for the ungrammaticality of (14) to be a violation of the PCC (at LF). The example in (18) can be accounted for in a similar fashion:

(18) *Who_i did you buy t_i the car?

Notice that Johnson (1986) points out contrasts of the following sort, although in a different context:

- (19) a. Who_i did you see a sister of t_i?
 b. Who_i did you buy a story about t_i?

- (20) a. ??Who_i did you give a book to a sister of t_i?
 b. ??Who_i did you put a glass on a story about t_i?

According to the above assumptions, *to a sister of t* in (20a) and *on a story about t* in (20b) correspond to Arg_n in (12) and hence are

assigned [+focus]. Then we get the following LF structures for (20a,b):

- (21) a. $[_{CP} [\text{to a sister of } t_i]]_i [_{CP} \text{who}_i \text{ did you give a book } e_j]]$
 b. $[_{CP} [\text{on a story about } t_i]]_i [_{CP} \text{who}_i \text{ did put a glass } e_j]]$

Assuming Reinhart's (1976) original definition of c-command in terms of the 'first branching node,' we see that in (21a,b) *who* cannot c-command its trace and thus cannot bind it, leading to a violation of the principle of no vacuous quantification (NVQ), one of the principles of Full Interpretation applying at LF that requires that all quantifiers bind a variable (see Chomsky (1986a)).

Then consider the following:

- (22) a. ?*The woman he_i loved sang the song in front of $John_i$.
 b. *The woman he_i loved sang the song in front $JOHN_i$.

On the basis of (22) I assume that the D-argument is assigned [+focus] in the following structure (see section 2):

- (23) $[_{VP} [_{VP} V \text{ Arg}_1 (\dots, \text{Arg}_n)] \text{ D-Arg}]$
 [+focus]

In the following section we will see a number of examples that have bearing on the proposed syntactic processes of focus formation in (12) and (23).

4. The PCC at LF

In this section I present more data in support of the assumptions in section 3 (see (12) and (23)) in terms of the PCC as an LF condition. In the last section I gave some empirical evidence supporting the claim that when $n \geq 2$ the rightmost argument in the inner VP is assigned [+focus] in (12) and that the D-argument is assigned [+focus] in the structure in (23). First let us see the following contrasts:

- (24) a. Which $park_i$ did you find the rabbit in t_i ?
 b. Which $city_i$ did the president make his inaugural speech

- in t_i ?
- c. Which state_{*i*} did they build the highway through t_i ?
- (25) a. ?*Which party_{*i*} did Mary put her engagement ring on the table after t_i ?
- b. ?*What day_{*i*} did John talk to Harry about Mary on t_i ?

In all the examples in (24) the structure of VP is as follows:

- (26) $[_{VP} [_{VP} V \text{ Arg}] \text{ D-Arg}]$
[+focus]

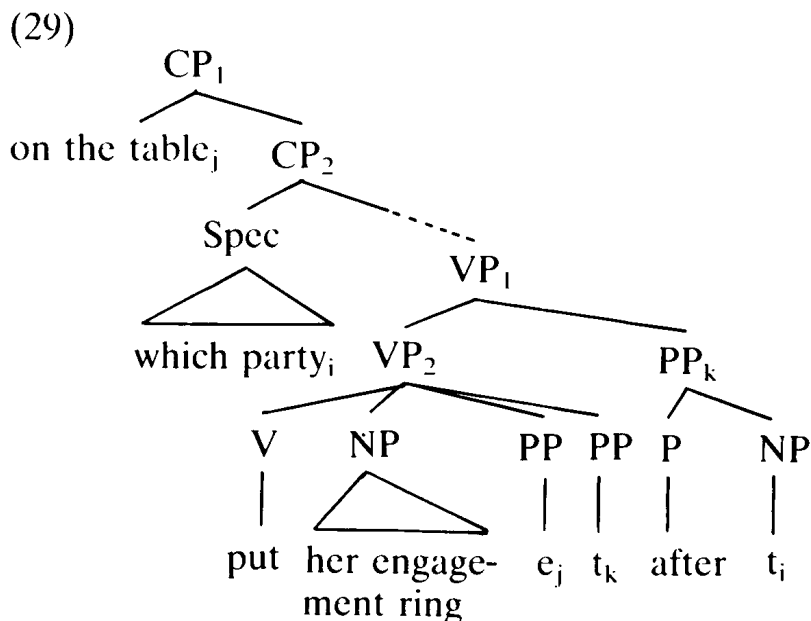
I assume that in (26) the D-argument is assigned [+focus] (see (23)). In actual fact the entire PP (*in t* in (24a), for example) should be raised to the CP-adjoined position by FR at LF, but I assume that FR does not apply in these cases in the absence of a ‘focusable’ element(s) in the PPs (see Jackendoff (1972)). So the structures in (24) remain without problems at LF. Now the structure of VP in the examples in (25) is assumed to be like the following:

- (27) $[_{VP} [_{VP} V \text{ Arg}_1 \text{ Arg}_2] \text{ D-Arg}]$
[+focus] [+focus]

The rightmost argument in the inner VP (Arg_2) and the D-argument are both assigned [+focus] (see (12) and (23)). Then we get the following LF structures for (25a,b):

- (28) a. $[_{CP} \text{ on the table}_j [_{CP} \text{ which party}_i \text{ did Mary put her engagement ring } e_j \text{ after } t_i]]$
- b. $[_{CP} \text{ about Mary}_j [_{CP} \text{ what day}_i \text{ did John talk to Harry } e_j \text{ on } t_i]]$

Let us see the structure in (28a), as in the following:



$$\text{path}(i) = \{\text{PP}_k, \text{VP}_1, \dots, \text{CP}_2\}$$

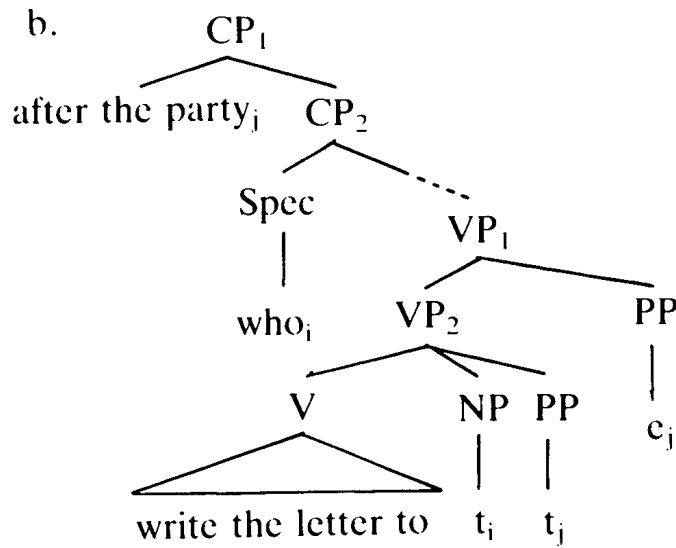
$$\text{path}(j) = \{\text{VP}_2, \text{VP}_1, \dots, \text{CP}_2, \text{CP}_1\}$$

When see that in (29) the two paths overlap, but neither of them contains the other, violating the PCC. Basically the same is true of (25b). Thus we can attribute the ungrammaticality of (25a,b) to a violation of the PCC. The following contrast pointed out in Takami (1988) can be accounted for in a similar fashion:

- (30) a. *Which party_i did John write the letter to Mary after t_i?
 b. Who_i did John write the letter to t_i after the party?

The rightmost arguments in the inner VP (*to Mary* in (30a) and *to t* in (30b)) and the D-arguments (*after t* in (30a) and *after the party* in (30b)) are both assigned [+focus] (see (27)). (30a) can basically be accounted for along the lines of (25a). Now let us see (30b). I assume that something like Hornstein and Weinberg's (1981) notion of reanalysis is involved in this case. It roughly states that in the domain of VP, a V and any set of contiguous elements to its right can form a complex V. Reanalysis is assumed to be optional and apply at D-Structure. Then we get the following LF structure for (30b):

(31) a. [_{CP} after the party_j [_{CP} who_i did John [_V write the letter to] t_i e_j]]

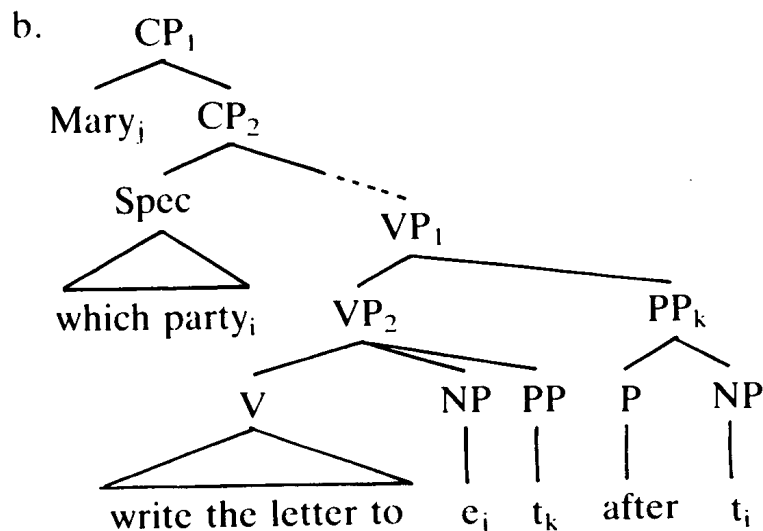


path(i) = {VP₂, VP₁, ..., CP₂}

path(j) = {VP₂, VP₁, ..., CP₂, CP₁}

In (31b) the two paths overlap and path(j) contains path(i), thus satisfying the PCC. In (31b) it is indicated that the D-argument originates in the inner VP. I assume in this case that a path is constructed from the D-Structure position of the relevant element (see footnote 3). Now, given reanalysis, let us see what can be done to (30a), whose LF representation may be as follows:

(32) a. [_{CP} Mary_j [_{CP} which party_i did John [_V write the letter to] e_j after t_i]]



$$\begin{aligned} \text{path}(i) &= \{\text{PP}_k, \text{VP}_1, \dots, \text{CP}_2\} \\ \text{path}(j) &= \{\text{VP}_2, \text{VP}_1, \dots, \text{CP}_2, \text{CP}_1\} \end{aligned}$$

We see that in (32b) the two paths overlap, but neither of them contains the other, violating the PCC. Given reanalysis, (25a,b) can basically be accounted for along the lines of (32). Then consider the following contrast:

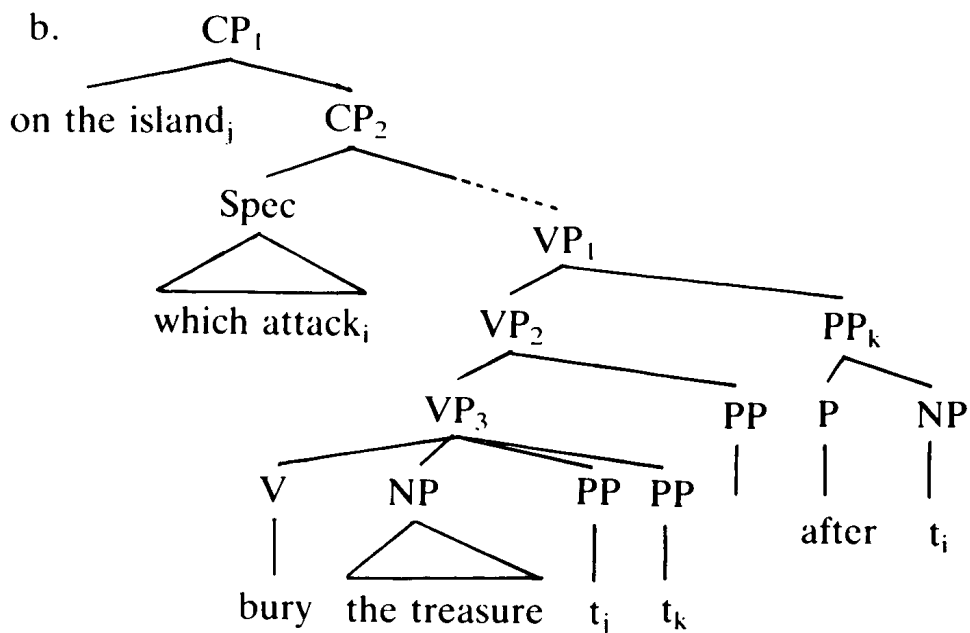
- (33) a. *Which attack_i did the pirates bury the treasure on the island after t_i?
 b. Which island_i did the pirates bury the treasure on t_i after the attack?

I assume that in the structure in (34) both of the D-arguments are assigned [+focus]:

- (34) $[_{VP} [_{VP} \text{VP D-Arg}] \text{D-Arg}]$
 $[\text{+focus}] [\text{+focus}]$

First let us see the LF structure of (33a):

- (35) a. $[_{CP} \text{on the island}_j [_{CP} \text{which attack}_i \text{ did the pirates bury the treasure } e_j \text{ after } t_i]]$

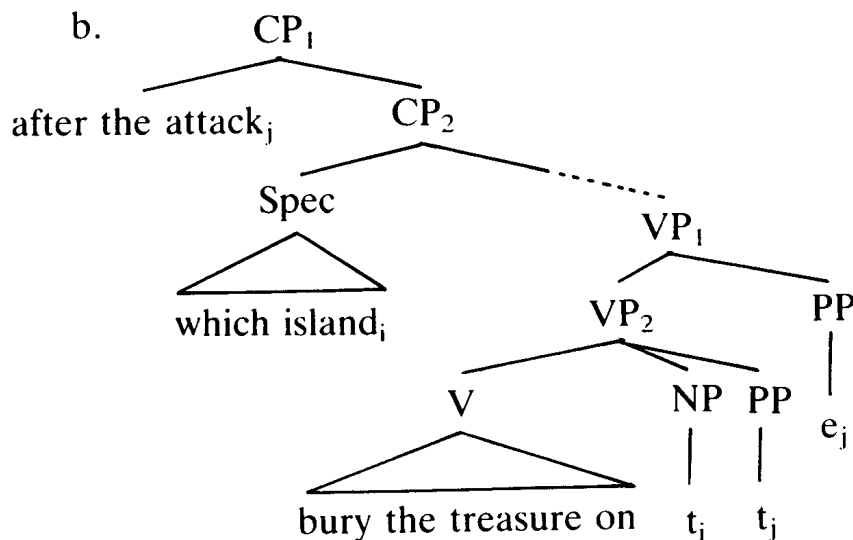


$$\text{path}(i) = \{\text{PP}_k, \text{VP}_1, \dots, \text{CP}_2\}$$

$$\text{path}(j) = \{\text{VP}_3, \text{VP}_2, \text{VP}_1, \dots, \text{CP}_2, \text{CP}_1\}$$

In (35b) the two paths overlap, but neither of them contains the other, thus violating the PCC. Now let us see the LF structure of (33b). I assume that in (33b) reanalysis in the sense of Hornstein and Weinberg (1981) has applied, as in (36):

- (36) a. $[_{\text{CP}} \text{ after the attack}_j [_{\text{CP}} \text{ which island}_i \text{ did the pirates } [_{\text{V}} \text{ bury the treasure on}] t_i e_j]]$



$$\text{path}(i) = \{\text{VP}_2, \text{VP}_1, \dots, \text{CP}_2\}$$

$$\text{path}(j) = \{\text{VP}_2, \text{VP}_1, \dots, \text{CP}_2, \text{CP}_1\}$$

In (36b) the two paths overlap, and $\text{path}(j)$ contains $\text{path}(i)$, thus satisfying the PCC. But we see a potential problem with respect to modification here. I have assumed that *on which island* in (33b) is a D-argument that modifies VP. Then there has to exist a mutual c-command relation between *on which island* (or *on t*) and *bury the treasure*. But no such relation obtains in (36b). Here I follow Haegeman and Riemsdijk (1986), Haegeman (1988), and Riemsdijk (1988) in assuming that several syntactic structures may be simultaneously assigned to a single sentence. I assume without going into any detail that in a theoretical framework adopted by Haegeman and Riemsdijk (1986) and others we can obtain a representation where requirements

from modification theory mentioned above can be met.⁴

Why, then, can it not be the case that in (33a) reanalysis applies and we get the complex V *bury the treasure on the island after*, making the sentence grammatical? Note that I have assumed in (34) that the D-arguments are assigned [+focus]. Focused elements have to be subject to FR in order to get proper interpretation. But once reanalysis applies to *bury the treasure on the island after*, it becomes a complex V, that is, a word. Extraction out of a word is generally impossible. Then the D-argument *on the island* cannot be extracted out of the complex V and hence cannot get proper interpretation, violating the Focus Condition in (6).⁵ Now let us see the following grammatical example:

(37) Which party_i did John write Mary the letter after t_i?

Following Stowell (1981), I assume that in double object constructions the first postverbal NP is incorporated to form a complex V, as in [_V write Mary]. Then *the letter* does not qualify as Arg_n in (12) and hence is not assigned [+focus], accounting for the grammaticality of (37). Now what about (14)? In (14) *who* has further moved to the CP Spec position. I assume that NP-incorporation in the sense of Stowell (1981) is optional.⁶ And since extraction out of a word is generally impossible, we see that NP-incorporation has not applied in (14). Then my analysis of (14) in terms of (15) and (17) goes through.

Footnotes

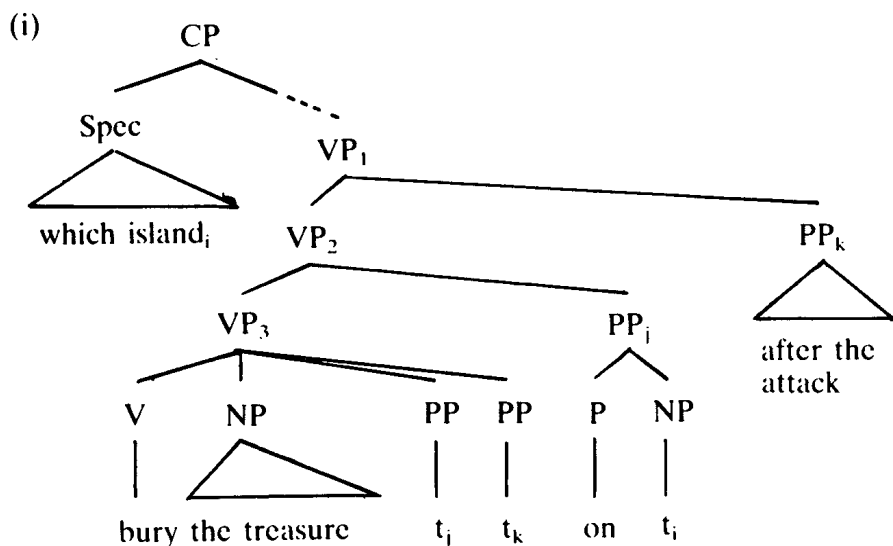
1. According to Kratzer (1988), stage-level predicates and individual-level predicates differ in argument structure, the former being 'Davidsonian' in that they have an extra argument position for spatiotemporal location. And temporal and spatial expressions are analyzed as predicates of the 'Davidsonian' argument. In the text I systematically refer to the spatiotemporal expression itself as 'D-argument' for expository purposes, the Davidsonian argument itself being implicit in some sense. As for movement of the spatiotemporal expression I assume that it leaves a trace. So there is no problem with the assumption that predication takes place at S-Structure (see Nakajima (1989)).
2. Koji Fujita (personal communication) points out that (13c,e) may not constitute weak crossover violations if the whole PP (*to John in* (13c) and *for John in* (13e)) moves, as in the following:
 - (i) *to John_i the woman he_i loved gave the book e_j*

(i) does not violate the Bijection Principle in the sense of Koopman and Sportiche (1982/1983), for example. I may follow Rochemont (1986) in positing a kind of reconstruction that put elements without the feature [+focus] in their original S-Structure position, assuming that in the unmarked case prepositions are among those elements which are excluded from focused elements for semantic reasons (see Jackendoff (1972)). Then we get the following LF structure:

(ii) John_i the woman he_i loved gave the book to e_i

(ii) violates the Bijection Principle.

3. Koji Fujita (personal communication) has pointed out that a path may not be generated from a locally A-bound position, t_i in (17) being such a position. Here I assume following Kim and Larson (1989) and departing from May (1985) that a path may be calculated from an NP-trace position.
4. Note that the relevant representation would be as follows:

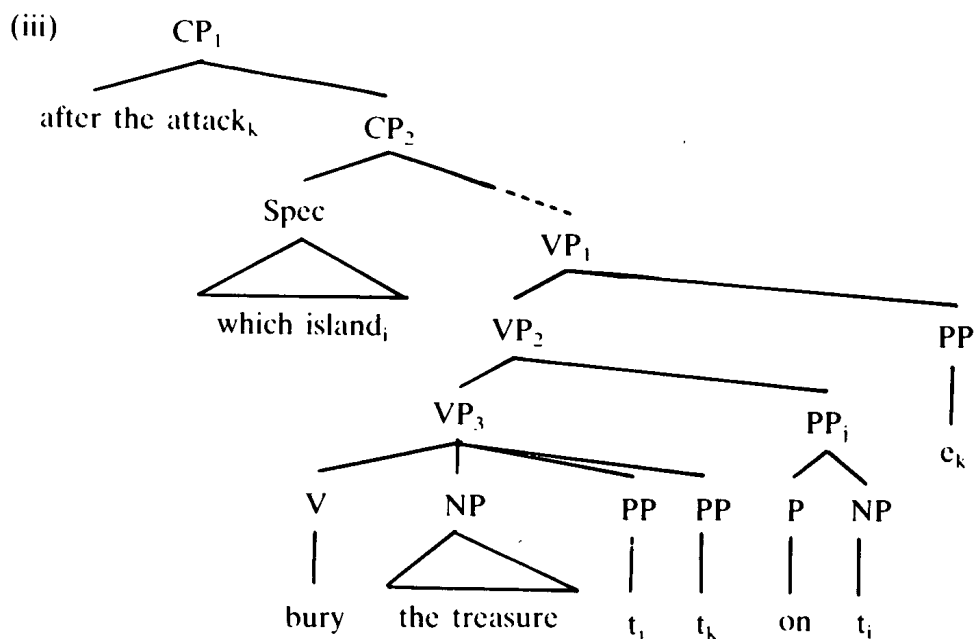


Haegeman and Riemsdijk (1986) (and others) seem to assume that more than one structure may be simultaneously available for a single sentence and that it is reanalysis that is instrumental in deriving different structures. I depart from Haegeman and Riemsdijk (1986) (and others) in assuming that Affect α in the sense of Lasnik and Saito (1984) may also be instrumental in creating different structures for the purposes of the multidimensional approach. Then consider the following in the light of the above assumption:

- (ii) a. +WH you *past* buy what
 b. What_i did you buy t_i?
 c. What did you buy?

One might think that if Affect α is instrumental in creating different structures for the purposes of the multidimensional approach traces should be unnecessary,

because a D-Structure representation (such as (iia)) should be available as a member of the simultaneous set of syntactic representations. But note that we have an independently motivated principle, NVQ, which requires that all quantifiers bind a variable. Then (iic) would be a violation of NVQ. As for (iia), I assume that it (a D-Structure) has an independent status as the interface with the lexicon (see Chomsky (1989)). Turning to (i), requirements from modification theory are met there. But notice that (i) would result in a PCC violation in case FR should apply to *after the attack*, like the following:



$$\text{path}(i) = \{\text{PP}_i, \text{VP}_2, \text{VP}_1, \dots, \text{CP}_2\}$$

$$\text{path}(k) = \{\text{VP}_3, \text{VP}_2, \text{VP}_1, \dots, \text{CP}_2, \text{CP}_1\}$$

In (iii) the two paths overlap, but neither of them contains the other, violating the PCC. I assume that in fact (iii) is not derived; that is, that (i) is enough for the purposes of modification theory. I also assume that PP_k in (i) is not assigned [+focus]; that is, [+focus] assignment (in the sense of (34), in this case; but in other cases as well) is carried out with respect to at least one representation associated with each relevant sentence. In other words, one representation is enough for each specific interpretation purpose (see Suzuki (1990)). So for the purposes of focus interpretation (36b), which satisfies the PCC, comes into play (see Suzuki (1990)).

5. Rochemont's (1986) Focus Condition only covers the Focus Rules in (4) and (5). Since I am proposing syntactic operations of focus formation in the text, the Focus Condition is assumed to be extended so that it can appropriately cover the text cases as well. Note also that in the case of (33b) we have (i) of footnote 4 for modification theory and (36b) for focus interpretation. And in the case of (33a) we have (35b) both for modification theory and for focus interpretation. It

might be the case that (35b) is successful for modification if its derivation should stop before FR, thus avoiding the PCC effects (see footnote 4 and Suzuki (1990)). But (35b) is clearly not enough for focus interpretation because it violates the PCC after FR. As discussed in the text, the reanalyzed structure of (33a) (with [_v bury the treasure on the island after]) cannot serve for focus interpretation, either. So we see that (33a) is ruled out by the Focus Condition in (6).

6. Part of Stowell's (1981) motive for NP-incorporation in double object constructions derives from his concern over the adjacency condition on Case assignment. The latter condition may somehow make NP-incorporation obligatory in these cases. But I follow Larson (1988) with respect to Case assignment to double objects, thus leaving NP-incorporation optional.

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