

Verb phrase deletion in English: a base-generated analysis¹

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1. INTRODUCTION

Sentences (1) and (2) have traditionally been related by a process that is called Verb Phrase Deletion (VPD).

- (1) If I wanted to collect bottles, I would collect bottles.
- (2) If I wanted to collect bottles, I would.

The earliest analyses of this phenomenon suggested that (2) was derived from (1) by a syntactic deletion rule (hence the 'deletion' in the name of the process – cf. Ross (1969a)). Later (Jackendoff, 1972; Wasow, 1972; Fiengo, 1974; and Williams, 1977a, among others), it was suggested that a null anaphor was generated in the base following *would* in (2), and that the semantic component read this anaphor as meaning *collect bottles*, hence accounting for the synonymy of (1) and (2). A third possibility is that (2) is generated in the base with nothing following *would*, *would* itself serving as a proform for *would collect bottles*. And fourth, (2) could be derived from (1), leaving *would* as a proform, in a process resembling pronominalization more than deletion (perhaps 'proverbialization').

In this paper I compare the first two possible analyses to the third, showing that the analysis that takes *would* as a proform has significant advantages over the analysis which posits a deletion site after *would* and offers at least as adequate an explanation of the syntactic and semantic behaviour of the relevant construction as that which the null anaphor analysis offers, while having the theoretical advantage of being less abstract (in that it does not posit syntactic and/or semantic entities that have no phonological reality). Furthermore, the analysis that takes *would* as a proform allows us to capture cross-categorical generalizations in a natural way. I will not here discuss the fourth possible analysis, that of proverbialization, for two reasons. First, there are significant theoretical and empirical inadequacies of substitution rules of

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this sort (as pointed out in Bresnan, 1970; Bach, 1970; Carden & Miller, 1970, and several following works), so much so that recent theories do not even include substitution rules among their possible rules. Second, the advantages of this analysis as far as I can see form a proper subset of the advantages of the third analysis. Thus, my treatment of the third analysis should allow anyone interested to see the advantages of the fourth analysis, and I will not specifically point them out.

The fact that it is customary to refer to the phenomenon in (2) as Verb Phrase Deletion makes it awkward to introduce a new term. In an effort to avoid proliferation of new terms for well-studied phenomena, I will refer to the structure in (2) as a VPD structure. I will also use the abbreviation Aux for auxiliary verb and discuss its categorial status in Section 6 below.

1.1 VPD sentences

It is useful to begin with a brief survey of the types of sentences which need to be accounted for by VPD and the types which, although similar, are taken care of by other rules. I will make the minimal and reasonable assumption that if a structure can be produced by other independently motivated rules, we need not call it a VPD structure.

In (2) we see that the predicate of a VPD structure may consist of a single Aux. In (3) we see that more than one Aux may appear, with the Aux's having the same order in VPD structures as they have in full VPs.

- (3) I know Caspar would have been admitted, and I think Maxwell would (have (been)).

In embedded infinitival VPs, VPD may again have multiple Aux's, or just infinitival *to*.

- (4) Fabrice wanted to have been admitted, but I didn't want to (have (been)).

We will, in fact, see in Section 3 that all VPD structures end in an Aux. VPD requires no intrasentential antecedent.

- (5) Q. Has Vera been growing?
A. Yes, she has (been).

Sentences with reduced or missing parts in their predicates which do not have a VP ending with an Aux or *to* are not VPD sentences, but exemplify the phenomena known as Gapping² (as in (7)), Answer Deletion³ (as in (9)), and missing complement sentences⁴ (as in (11)).

[2] Levin (1979a) shows that gapping is a distinct phenomenon from VPD. But see Section 3 below, where I discuss differences between Levin's and my analyses of VPD.

[3] See Morgan (1973) and Yanofsky (1978) for contrasting analyses.

[4] See Napoli (1983) and (1985) for evidence that missing complement sentences are base generated in (11) and that the verb in such sentences is not an anaphor, unlike the Aux of VPD.

- (6) Tony would have preferred to eat pizza and Marcel would have preferred to eat snails.

- (7) Tony would have preferred to eat pizza and Marcel, snails.

- (8) Q. Who has been growing? Q. Who(m) have you been seeing?

- A. Vera has been growing. A. I've been seeing Vera.

- (9) Q. Who has been growing? Q. Who(m) have you been seeing?

- A. Vera. A. Vera.

- (10) He started to leave. I know she's coming.

- (11) He started. I know.

Sentences with VPs containing an Aux and some complement of the V but no nonauxiliary V can be produced by Pseudogapping⁵ (as in (12)). Conjoined clauses in which the predicate in each conjunct ends in an Aux and a complement of the V follows a pause after the last conjunct can be produced by Right Node Raising⁶ (as in (13)). These two sentence types also should not be confused with VPD structures.

- (12) Bill might write a play and Sue might a poem.

- (13) Bill might, but Sue never would, insult the minister like that.

1.2 Outline

The analysis of VPD presented here shows that the pro-predicate Aux of VPD structures is parallel to other proforms, such as the pronoun and pro-sentence. Thus this analysis allows us to capture a cross-categorical relation between left-branch specifiers and proforms. The work here builds directly upon Schachter's (1978) seminal study and on Chapter 1 of Pope (1976). Should the base analysis of VPD be shown to be descriptively correct for English, there are several major consequences for both the analysis of specific constructions in English (such as relative clauses) and for universal grammar (with regard to phrase structure rules, in particular).

Section 2 shows that infinitival *to* is an Aux. Section 3 shows that VPD phenomena involve a VP-final Aux, while Section 4 shows that VP-final Aux is the proform of the VP in VPD structures. Section 5 refutes arguments for a deletion rule of VPD. Section 6 outlines some of the advantages and reverberations of a base analysis for VPD structures. Section 7 shows how VP-final Aux as pro-predicate is similar to other proforms.

[5] Levin (1978) shows that Pseudogapping is a distinct phenomenon from VPD.

[6] Maling (1972) gives good evidence that RNR is a distinct phenomenon from VPD.

2. INFINITIVAL *to*

Pullum (1981, 1982) argues that infinitival *to* is a pro-auxiliary. That is, it is a proform which fills an embedded tenseless auxiliary verb slot. This conclusion is also arrived at in Hudson (1982) and Fiengo (1980:194, fn. 23). I agree with this conclusion, and add that a pro-auxiliary is an auxiliary just as a pronoun is a noun. Thus, infinitival *to* is an auxiliary.

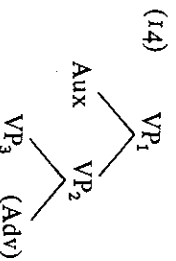
Pullum's arguments involve gapping, VPD, the stranding of *to*, the placement of *not*, *to*-contraction, the fact that a head of a category in English is leftmost within its category, and the types of complements V and *to* take.

To Pullum's arguments at least one other can be added. Between a subject NP and its following V string, only certain adverbials (including parentheticals) and *to* can intervene. If *to* is the first element of the VP, then the list of possible intervenors forms a natural class which excludes *to*. If Aux is the first element of VP, then if *to* is an Aux, the facts here are as expected.

In conclusion, infinitival *to* is an auxiliary verb. Since either infinitival *to* or an auxiliary must occur in a VPD structure, we can conclude further that all VPD structures involve auxiliaries.

3. VPD VERB PHRASES END IN AUXILIARY

Kuno (1975, 163), assuming a deletion rule of VPD, proposes a structural constraint to the effect that VPD applies to VP in VP-final position only. In a VP which branches as shown in (14), VP₂ can delete, since it is final in VP₁, but VP₃ cannot delete if Adv is present.⁷



Kuno's constraint will rule out VPD sentences like that in (15A).

- (15) Q. Where did Joe raise chickens?
A. *He did in Nevada.

Grosu (1975) proposes a reformulation of Kuno's constraint, to the effect that only VP's which are sisters to an auxiliary can be deleted by VPD.

[7] The Aux of VPD may be followed by material which is completely outside the VP, such as sentential adverbs.

(i) - Did Joe raise chickens?

- Yes, he did, regrettably.

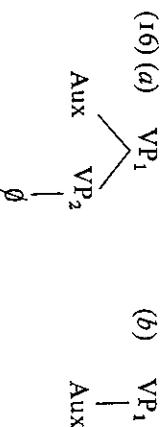
Recall that I am thus far taking VPD to be a separate phenomenon from Pseudogapping (as in Levin, 1978).

Bresnan (1976) supplants both Kuno's and Grosu's constraints with the more general and independently needed Relativized A-Over-A Principle (RAOAP), which according to her, interacts with the Recoverability of Deletion (ROD) principle to guarantee that VPD will apply to the maximal recoverable VP. Sag (1976) offers an explanation of the constraint on VPD building on Bresnan's but differing in that ROD and RAOAP do not interact.

An insightful discussion of the above debate as to the proper constraint on VPD, with probing critiques and well-chosen examples, is found in Levin (1979a: Chapter 3, see pp. 114-18 for particularly telling examples). Levin, building on a lecture by John Robert Ross at the 1974 Linguistic Institute (see p. 124 of Levin), proposes that 'the scope of reference of VPD is essentially the verb phrase'. She points out that any type of VP, including stative ones, may undergo VPD. This is in contrast to predicate anaphors like *do it* and *do so* which, because they are anaphors only of the V and those constituents the V strictly subcategorizes (not the entire VP), must be sensitive to properties such as stativity (127-8).

While Levin sees VPD structures as ending in an Aux followed by a null anaphor (the result of deletion), none of her arguments about the referential scope of VPD crucially depends upon a deletion or null anaphor analysis of VPD. Her observations are also compatible with base generation of VPD structures and with the notion that Aux's can themselves be (non-null) anaphors.

Deletion analyses of VPD must, one way or another, constrain the deletion so that the resulting structure is a VP whose final constituent is an Aux. (As shown in Section 2, the Aux, if there is only one, may be infinitival *to*.) In determining the interpretation of a VPD structure, the material to be recovered, in a deletion analysis, is always a VP. In Levin's analysis, this fact is captured by positing a null anaphor whose referential scope is VP₂ (as in (16a)). In our analysis, Aux is the anaphor, and its referential scope is VP₁ (as in 16b)).



That VPD structures end in Aux is not uniformly accepted in the literature. Huddleston (1978) claims that Aux need not be the final element in VPD structures, citing examples like:

- (17) (a) Is John unkind then?
Not usually, but he is being _____ at the moment.
(b) Had they any children?
I don't know; they may not have had _____.

- (c) Let's go and see John.
Oh, yes, do let's!_1
- (d) Had I better tell him?
Yes, you'd better._
- (e) Would you rather stay here?
Yes, I'd rather._

(Example (17*a*) is actually used by Huddleston to make a different point, but it is relevant to the question at hand, as well.) However, none of the examples in (17) is convincing. There are certainly arguments for analyzing the time adverbial in (17*a*) as being outside the VP (as Williams (1977*a*: 110) does and as Levin argues (1979*a*: Ch.3)). As for (17*b*), which is acceptable in the British dialect Huddleston is reporting, but is odd (perhaps archaic) in many American varieties of English, the fact that *have* in its MAIN VERB SENSE can undergo Subject Auxiliary Inversion, as seen in the question, shows that it behaves syntactically as an auxiliary for this dialect. Therefore, it is not inconsistent with our analysis to call the second *had* of the answer in (17*b*) an auxiliary, since we are using the term to denote a class of verbs with a certain syntactic behaviour (such as participating in Subject Auxiliary Inversion, being able to appear in tag questions, not requiring *do* support when a negative occurs, etc.). (17*c-e*), however, present a different sort of problem for our analysis since in none of these cases is it obvious that the final word can be called an auxiliary nor can the final words be analyzed as not belonging to the same VP that the preceding word belongs to. With regard to (17*c*), we dare not enter here into an analysis of the *let's* construction since it would take us far afield of our present study. Furthermore, we have no informants on hand who get the answer in (17*c*), although without *do* the *S* is good for the author. Still, we suggest that *let's* may belong to Aux on the basis of the placement of *not* in sentences like *Let's not go*.

Regrettably, I leave further discussion of *let's* to future work, and turn to (17*d-e*), which are not as problematic as they may seem at first.

The *better* of (17*d*) occurs only in the presence of auxiliary *have*, and then in the VP slot immediately following *have* (**You had leave better now*, **You had leave now better*, **You better had leave now*). The only exception to this is when *better* occurs in a 'missing *have*' sentence: *You better leave now*. Negative placement results in *not* after *better* and never after *have*.

- (18) You had better not leave.
*You had not better leave.
You better not leave.
- (Cf. You will often not smile.
You will not often smile.
*You often not smile.)

It appears, then, that the *had better* construction is unique precisely in that for some rules (such as negative placement) it is analyzable as a unit – in fact, an auxiliary unit. And, as Nigel Vincent has pointed out to me, some British children go through a stage in which they use *better* in tag questions where

only Aux is otherwise allowed (*I better go to bed now, bettern't I?*). Thus in (17*d*), I propose that the structure does, after all, end in an auxiliary for the purposes of VPD.

Rather in (17*e*) has a somewhat different behaviour, but lends itself to a similar explanation. In most varieties of American English, *rather* can undergo AP Inversion⁸ only in the presence of an auxiliary (see Dieterich & Napoli, 1982).

- (19) (a) You would leave rather than stay.
You would rather leave than stay.
(b) He left rather than stayed.
*He rather left than stayed.

Now, while a negative can precede or follow *rather* when a main verb follows *rather* (*I would rather not leave/I would not rather leave*), a negative must follow *rather* in a VPD construction (*I'd rather not/I would not rather*). Again, we suggest that when *rather* immediately follows an auxiliary, it can be analyzed as part of the auxiliary string with regard to at least some constructions. VPD is one such construction. Negative placement with *rather* in a VPD structure supports this analysis.

Huddleston further argues that auxiliary-ness is not the key to VPD on the basis that not all auxiliaries are accepted in VPD structures. He gives as an example aspectual *use*, which in his variety of English can undergo Subject Auxiliary Inversion but cannot appear in a VPD structure (**I used*). Again, I hesitate to comment, since I have no access to speakers who treat *use* as an auxiliary (that is, my informants do not get Huddleston's *Usedn't there to be a church here?*). However, it is not part of my claim that all auxiliaries can appear in VPD structures, but rather, that VPD structures end in an auxiliary. There may be a number of restrictions of a variety of natures on which elements may or may not appear in a VPD structure beyond the requirement that the final element be an auxiliary. (For example, many have noted that VPD structures may not end in *being* – see Salkie, 1983, and Akmajian & Wasow, 1975: 242, among several others. See also fn. 27 in Section 7 below.)

Williams (1977*a*) also takes the position that a VPD structure need not end in an auxiliary, citing sentences like ?*John did to Bob and John was by Bob* (where the grammaticality judgments here are Williams'). However, both of these sentences would be analyzed as Pseudogapping rather than VPD, if we follow Levin's (1979*a*: 99–100) diagnostics.

In sum, I see no evidence against the claim that VPD structures end in Aux and much evidence in favour. Thus I conclude that VPD structures end in Aux.

[8] Notice that my analysis of VPD structures will require that the phenomenon known as AP Inversion, seen in (19) in the text, be handled by interpretative means rather than syntactic movement.

4. THE AUXILIARY AS PRO-PREDICATE

Schachter (1978), building on work by Hudson (1976), offers three arguments that the final Aux of VPD structures is a pro-predicate.⁹ Schachter's arguments are briefly outlined in 1-3 below.

1. VPD structures are indexical expressions, since the context in which they are used must be taken into account in determining their reference.¹⁰ If the final Aux of VPD is a proform, the fact that it is an indexical follows.

2. VPD structures are sensitive to the Backwards Anaphora Constraint (BAC).¹¹ If the final Aux of VPD structures is a pro-predicate and hence an anaphor, the fact that VPD obeys the BAC follows.

3. Schachter (194) assumes that the previous transformational accounts of VPD, both those calling for deletion and those calling for interpretation of a null anaphor, all posit rules belonging strictly to sentence grammar. The referent of a VPD structure, however, need not be in the same sentence. This fact is a problem for the transformational accounts, but not for one involving a pro-predicate, since proforms typically allow both intra- and extra-sentential (and sometimes even pragmatic) antecedents.

To Schachter's three arguments, several others can be added.

4. Hankamer (1971: 351) proposes that 'pronominalization' rules, as opposed to 'wipe out' rules, result in keeping what would be the leftmost branch of the affected constituent, where the affected constituent is the smallest major category dominating the deleted material. For Hankamer, 'pronominalization' rules are really deletion rules with a certain type of output. However, one can accept the validity of Hankamer's observation about leftmost branches as being a distinguishing factor between pronominalization and deletion without adopting his transformational approach to pronominalization. Looking at VPD structures, we can see that the final Aux of a VPD structure corresponds to a leftmost branch in the corresponding

sentence with a full (i.e. non-pro) VP.¹² Thus if Hankamer's observation is a valid diagnostic, VPD involves a pro-predicate.

5. Hankamer (1971: 338 ff.) further proposes that wipe out rules, as opposed to pronominalization rules, have three properties: (a) they observe the no-ambiguity condition; (b) they are not bidirectional; and (c) they observe Ross's constraints. But VPD, like other processes involving proforms, has the three opposite properties. That is, it can produce ambiguity, it can operate in either direction, and it can violate Ross's constraints.

(20) (a) Ambiguity: Although Mary could have, John decided to open the door. (Could have decided/could have opened.)

(b) Bidirectional: (Backward in (a) above, forward in: John decided to open the door, although Mary could have.)

(c) Violations of Ross's constraints (these examples are taken from Sag, 1976: Chapter 1, Section 1).¹³

CNPC: John didn't hit a home run, but I know a woman who did.

SSC: That Betsy won the batting crown is not surprising, but that Peter didn't know she did is indeed surprising.

CSC: Peter never hit a home run, but Betsy did and she was very happy about it.

If VPD must be either wipe out or pronominalization, and if Hankamer's three diagnostic properties do indeed distinguish between the two, then VPD involves a proform, i.e. a pro-predicate.

6. Proforms can typically have split antecedents, as in (21). In (22) we see that VPD structures allow split antecedents (Jerry Morgan, personal communication).

(21) John left with Sue before I could speak to them.

(22) John was going to write a letter and Sue was going to send flowers, but one of them *didn't* both of them forgot to.

[12] This is true whether we take Ross's (1969b) approach to Aux's, in which each Aux introduces a new VP, or a 'classical' approach, in which the auxiliary string is the leftmost daughter of the VP. It is not true, however, if Aux is immediately dominated by S, I discuss the structure of Aux in Section 6.

[13] Sag (1976) follows Grosu (1975) - in dividing the CSC into two subcases - the Element Constraint (as in (20c): CSC) below in the text) and the Conjoint Constraint, which Sag says VPD does obey, as in (i).

(i) * I couldn't lift this rock, but I know a boy who *can* and bend a crowbar, too. However, as Levin (1979a: 111) points out, (i) is excluded simply because the Aux *can* does not end the VP, as it must in properly formed VPD structures (see Section 3 above). The Conjoint Constraint is not needed to rule out (i). Thus VPD can, indeed, be taken as insensitive to all of Ross's constraints.

[9] Schachter considers the *to* occurring in VPD structures to be a pro-infinitive rather than a pro-auxiliary, with consequences mentioned in Section 5 below. For now, the fact that he does not group *to* with the other Aux's is not important.

[10] Schachter means 'context' to include pragmatic as well as linguistic context. He argues here (191, and fn. 5) as well as in Schachter (1977) that VPD can occur without linguistic antecedent. This observation is in direct opposition to Hankamer and Sag's (1976) claim. He notes that *do it* and *do so* do not allow such pragmatic control and suggests that expressions like *do it* have a narrower, and hence more determinate, referential range* (191, fn. 5) than VPD structures. His observation is entirely consistent with Levin's, reported in Section 3 above, and with remarks on VP anaphor choice in Kaplan (forthcoming).

[11] While the precise nature of the BAC is a matter of some dispute (with McCray (1980) arguing that it is semantically based rather than configurational), it is generally agreed that some statement of the constraint must be included in the grammar. Notice that in a government and binding (GB) framework, the BAC is covered by part C of Binding Theory: an R-expression must be free. I handle this point in the discussion following argument 7.

Certainly, if *didn't* and *to* are pro-predicates in (22), construal mechanisms already needed in the grammar to handle examples like (21) will operate here as well. But a rule of deletion, which applies to nodes, will encounter serious difficulties here since no single node can serve as the controller of the deletion.

7. Wasow (1972: 91), building on work by Akmajian (1968), uses as a diagnostic for anaphora type phenomena the fact that the antecedent in an anaphoric relation may contain a negative element not included in the interpretation of the anaphor. That VPD behaves as an anaphoric phenomenon by this test is clear from examples like (20c: CSC) above. If the final Aux of the VPD structure is a pro-predicate, this behaviour is expected.

In fact, however, argument 7, like the preceding arguments in this section, could be explained as well by positing a null anaphor following the Aux as by positing a proform Aux. Indeed Wasow chooses the null anaphor explanation for 7. There seems to be no way of refining arguments 1 and 3-7 to eliminate one of these two possibilities. Argument 2, however – the one based on the BAC – can be so refined, as pointed out by Edwin Williams (personal communication).

Notice that the rule of Subject-Aux Inversion (SAI) in English separates the first Aux from the material in the VP following it with the subject. We can use this rule to show that it is the Aux itself and not any following null anaphor (which should be separated from the Aux by SAI) that serves as the proform in VPD structures. Consider (23).

- (23) [Anyone who wants to leave] [can].

In (23) the matrix VP is a VPD structure and is understood as meaning 'can leave'. This sentence is well-formed according to the BAC under both of the analyses we are considering, since in both cases the proform of VPD follows the antecedent in this example. But if we apply SAI to (23), we find that in the resulting question, (24), the matrix predicate cannot have its referent determined intrasententially.

- (24) Can anyone who wants to leave?

((24) is to be analyzed with *anyone who wants to leave* forming an NP. Only under this analysis is the matrix clause a VPD structure.) If the proform of VPD were a null anaphor, that anaphor would be in S final position in (24), since SAI reorders only the first Aux with the subject (see Sag, 1976: 20). But the putative null anaphor would then still follow the embedded predicate, as in (23), and there would be no reason why the embedded VP could not serve as an intrasentential antecedent for the null anaphor. If, however, *can* in (24) is itself a proform, then the BAC accounts for the inability of the embedded VP to serve as an antecedent in (24).

At first there appears to be a problem with this argument. Notice that pronouns cannot violate the BAC even when an intersentential antecedent-proform relationship is possible.

- (25) (a) Will John_i do this?
(b) *He_i will if John_i can.

Yet our VPD Aux can.

- (26) (a) Everybody [must leave now]_i.
(b) [Must]_i even those who don't want [to leave now]_i?

Still, *must* seems peculiar in (26). If we substitute *can*, *will*, *should* or any other auxiliary that makes sense (with suitable changes in the morphology of the main verb) into (26), we find (26b) is out – just as (25b) is out. Notice further that the acceptable interpretations for (24) do not include one in which *can* is understood as *can leave*, regardless of context. We conclude, then, that it is *must* that calls for an explanation in (26) and that that explanation, whatever it may be, will not threaten our argument.

There remains, however, one final point to discuss before we can accept the argument. As pointed out above in fn. 11, in GB the BAC does not appear: part C of the Binding Theory, instead, covers it. Now if we can extend notions of reference and indexing in GB to verbal projections (as argued in Zagana, 1982), we see that (23) is a violation of the Binding Theory since the R-expression *to leave* is coindexed with a c-commanding pro-predicate, *can*. The crucial difference for us between the BAC and part C of the Binding Theory is that the first constrains coindexing only when the antecedent follows the proform while the second constrains coindexing even when the antecedent precedes the proform. Part C of the Binding Theory is essentially based on Reinhart's (1976) work and requires an analysis of sentences like (27) in which *he* does not c-command *John*.

- (27) Near John_i he_j saw a snake.

I cannot here defend the BAC over part C of the Binding Theory. Rather, I hope that the rest of the evidence presented for the base analysis will be of sufficient weight to allow us to call into question this part of Binding Theory.

Let us turn now to an argument against a null anaphor following the auxiliary in a VPD structure which leads to an argument for the proform status of these auxiliaries.

8. Within GB the Empty Category Principle of government theory requires that every empty category be properly governed, where proper government means lexical government or coindexing with a c-commanding node in the same maximal projection. If there were a base generated empty node after the auxiliary in a VPD construction, that empty node would not be coindexed with a c-commanding node within the same maximal projection.¹⁴ If it is to

[14] Zagana (1982) argues for a base generated empty VP and claims it is properly governed because it is coindexed with the auxiliary. Her claim of coindexing is based on Stowell's (1981) proposal that a head and all its subcategorized complements are coindexed. Zagana

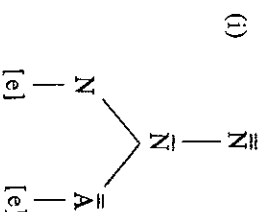
be properly governed, then, it must be lexically governed. But there is no candidate for a lexical governor except the auxiliary itself, and that possibility arises only in those analyses of auxiliaries in which the Aux is the head of its VP. I take the position that Aux is not the head of its VP (for reasons stated in Section 4.1 below), thus there cannot be a null anaphor following the Aux in a VPD structure.

If the final auxiliary of VPD constructions is a proform itself with no empty node following it, the whole question of violations of the ECP does not arise. (Notice that if VPD were the result of deletion, the question raised here would not arise, either. However, arguments 1-7 militate against a deletion analysis.)

4.1. *Against Aux as a head*

Certainly the idea that Aux is the head of VP is not unheard of (see Gazdar, Pullum & Sag (1982) in general and see Williams (1981) for the claim that *to* is the head of an infinitival VP). Still there remain convincing arguments against this position. Johnson (1982) argues on the basis of the syntactic and

argues that a V and its auxiliary are therefore coindexed, and that the auxiliary in a VPD construction has moved into INFL and thus c-commands the empty VP. There are several problems with this approach. For one, to claim a V subcategorizes its auxiliaries is to miss the generalization that all Vs can take auxiliaries. Second, the kind of coindexing Stowell proposes between a head and its subcategorized complements is distinct from that used to support the ECP in the first place, and there is no *a priori* reason to expect this new kind of coindexing to play the same role in our grammar that the old coindexing plays. Third, assuming X-bar theory, every maximal projection has a head. Thus with this approach any item subcategorized by a head could be a base generated empty node as long as either the head of the maximal projection is lexically realized or there is a properly governed empty category inside the maximal projection which is coindexed with our empty node. Given this, I see nothing to stop us from having two coindexed empty nodes which c-command each other within the same maximal projection with no item of that maximal projection being lexically realized. For example, we might have (i).



Now the whole \bar{N} is empty and needs to be properly governed (according to the ECP). But the empty \bar{N} and the empty A which make up our \bar{N} are properly governed (by each other, thanks to Stowell's coindexing), so we might expect this \bar{N} to have no restrictions whatsoever on its binding properties, after all. Surely this is an unwanted result. For these and other reasons, I reject Zagona's analysis and conclude that an empty VP node in VPD structures could not be coindexed with a c-commanding node within the same maximal projection.

semantic behaviour of infinitival complements that Aux is the specifier of VP. Koster and May (1982) argue at length that Aux (including *to*) is not the head of VP. Let me add two arguments to theirs.

First, Aux does not have one of the most salient characteristics of a head of a phrase: it does not subcategorize complements in the usual way. There are no 'intransitive' or VP-less auxiliaries, for example. It is true that both *have* and *be* in their main verb senses subcategorize complements while still exhibiting the syntactic behaviour of auxiliaries (see also Section 3 above and the discussion of (17)-(19)). However, Guéron (1981) shows that auxiliaries when they are used as auxiliaries (in the presence of a 'main' V and in VPD structures) have the semantic properties of logical operators. But *have* and *be* when used in their main verb sense lose their logical operator properties and, instead, behave semantically like the head of VP. Thus *have* and *be* have two sets of semantic properties which correlate with whether they are heads of VP or not, and it is only the head of VP *have* and *be* that subcategorize complements. (Guéron goes on to propose an analysis of VPD that is quite different from mine, but her point about the logical operator properties of Aux holds regardless of the analysis of VPD one assumes.)

It is also true that there is a correlation between the form of an Aux and the form of the next verb (*have* is followed by V + *en*, progressive *be*, by V + *ing*; modal, by V, passive *be*, by V + *en*). But similar correlations hold between the specifier and head of NP (*these* introduces a plural N; *this* introduces a singular N; etc.). Thus the existence of such a correlation is not relevant to the question of whether Aux is a head.

Another argument against Aux as a head is based on the fact that Aux does not take a range of specifiers. The only candidate that readily comes to mind as a specifier for Aux is Neg, but Neg's syntactic behaviour suggests that if it is a specifier, it is a specifier of S (as discussed in Section 7 below).

I therefore conclude that Aux is not the head of VP.

4.2. *Conclusion*

In conclusion, the final VP of a VPD structure is a pro-predicate.

5. AGAINST THE DELETION ANALYSIS

Let us now discuss the arguments typically given for a deletion rule of VPD and show how the pro-predicate analysis can handle the crucial data.

5.1. *Missing Antecedent Phenomenon (MAP)*

A common argument is that which uses the MAP of Grinder and Postal (1971) as a diagnostic for deletion. Hankamer and Sag (1976), for example, put forth such an argument. However, Williams (1977b: 694, fn. 4) shows that this is

a faulty test since the base generated proform *so* can be understood to contain a missing antecedent.¹⁵

5.2. Agreement

Another argument is based on agreement facts (see Ross, 1969b, and Hankamer, 1973, among others). Consider (28).

- (28) Some people think there are no such rules, but there are/*is.

If VPD structures are base generated with full VP's and deletion applies, then the second coordinate of (28) can undergo *There* Insertion with the normal agreement rules for *there*-S's (whatever they may be). But if VPD structures are base generated with the final auxiliary as a propredicate, then the question of how agreement gets assigned in (28) is formidable. Furthermore, Schachter (1978) claims that with this analysis, *there*-S's will also call for base generation (perhaps along the lines of Jenkins (1972) or Schachter (1977b)).

In fact, however, the difficulties posed by (28) are more apparent than real. Consider Chomsky's (1981: 87 ff.) analysis of *There* Insertion. He allows *there* to insert freely into subject position before the rule Move α applies on the matrix S (as in (29)) or after Move α applies (as in (30)).

- (29) *There* seem to be real problems here.
(30) *There* was a demonstrator arrested by the policemen.

The only stipulation on dummy *there* is that it receive number, which it does in (29) and (30) from the NP which originally occupied the subject slot it is inserted into (by way of the trace this NP will have coindexed). In this way Chomsky's analysis does not encounter any difficulties in accounting for agreement in Raising structures like (29), since *there* itself is marked plural here, whereas the classical analysis of *there*-S's, which allows Subject-Verb Agreement (Ag) to apply before *There* Insertion, cannot account for (29) without serious complications of either *There* Insertion or Ag (since *real problems* is not the subject of *seem* at any point in the derivation). Furthermore, Chomsky's analysis of *there*-S's maintains all the benefits of other analyses that insert *there* (see Miltsark, 1974, for many).

The single most important point of *there*-S's in Chomsky's analysis for us at this point is the claim that dummy *there* has no inherent number: it must be assigned number. Before we use this claim, consider also that *there* is a pronoun (witness the fact that it can occur in conductive tag questions, where only pronouns can occur). Now there is at least one other pronominal element beside *there* which can be assigned number. Consider PRO in (31).

- (31) (a) We all wanted PRO to visit each other.
(b) We children never planned PRO to be so numerous.
(c) We all hoped PRO to confer again.

We know that PRO is plural in (31a) because *each other* calls for a plural antecedent; in (31b), because *numerous* calls for a plural NP to modify or predicate; in (31c), because *confer* calls for a plural subject. But we cannot claim that PRO is always (inherently) plural: PRO with arbitrary interpretation need not be plural and PRO controlled by a singular NP is singular.

- (32) PRO (arbitrary)
sg. To kill oneself is never a solution.
pl. To confer more frequently might be a solution.
PRO (controlled by singular NP)
sg. I wanted PRO to enjoy myself.
*pl. *I wanted PRO to visit each other.

Thus PRO is plural in (31) because it is controlled by a plural NP. Since the theory of control, which is part of construal, allows PRO to be assigned number, we might allow *there* to be assigned number not just by way of the trace it covers (as in (29-30)), but also by way of association with an antecedent. Naturally, *there* could only find as an antecedent another dummy *there*. Note that the use of the term 'antecedent' here does not imply that coreference is involved. If *there* is truly a dummy or inert element, it does not have reference. Instead, all I suggest here is that *there* can receive number in different ways, one of them being as a 'gift' from some other *there*. With this approach *there* could be inserted into any empty subject node. Nodes filled with PRO are not taken as empty (see Chomsky, 1981: 251). But since *there* never occurs in non-subject slots in the surface, let us restrict its occurrence to applications of *There* Insertion, which inserts *there* in subject position during the transformational component of the grammar, rather than allowing it to be base generated in subject position as well.¹⁶

Let us turn back to (28) now. With a base analysis of VPD and an association rule (which is, perhaps, sensitive to the restrictions that rules of construal observe) which allows *there* to be assigned number by an antecedent *there*, we have the following analysis of (28).

- (33) D.S.: Some people think [no such rules be] but [np]e be]
Move α : Some people think [_i ^t _i] be [no such rules]_i but
[np]e be]

There Insertion (twice – in both empty subject slots):

Some people think [_i ^{there} _i] be [no such rules]_i but [[_i ^{there} _i] be]

[15] See also Garbham (1983) for further arguments against the validity of MAP as a diagnostic for deletion.

[16] Nothing in the following discussion hinges on this restriction.

Association: (which coindexes the two *there*'s, assigning number):

Some people think $\left[\begin{smallmatrix} \text{there} \\ +pl \end{smallmatrix} \right]_i$ be [no such rules]_i but $\left[\begin{smallmatrix} \text{there} \\ +pl \end{smallmatrix} \right]_i$ be

Ag: Some people think there are no such rules but there are.

Singular cannot occur in the VPD clause in (28) because *there* could not have been assigned the number singular – either by way of a trace (since there is none in this clause) or by way of association (since the only available antecedent *there* is plural).¹⁷ *There* is unacceptable in (34a) because there is no locative, presentational, or existential predicate here, but it is acceptable in (34b) because *there*, like arbitrary PRO, can have either number.

(34) (a) *There rains a lot.

(b) *I expected there to be expansive.

(b) There are/is

I expect there are/is.

Discourse and pragmatic factors will help us choose between the singular and plural *there* (and its number will be witnessed in the verb number), just as discourse and pragmatic factors help us choose between the singular and plural PRO in (35) (as witnessed in the number of the reflexive pronoun).

(35) To perjure yourself/yourselves is always a mistake.

5.3 Contraction

A third common argument is based on the claim that contraction rules do not operate before a deletion site (see Ross, 1969b, among others). Thus if VPD were a deletion rule, the failure of contraction in (36) would be accounted for by this general constraint.

(36) He's tall and you are, too/*you're, too.

Schachter (1978: 204) follows Hudson (1976) in saying contraction is blocked in VPD structures because 'an auxiliary verb can contract only if it is immediately followed by a dependent sister'. Of course Schachter's alternative account, while consistent with the hypothesis of this paper, is only as strong as its independent motivation. That is, we would not want to replace an explanation for (36) that is based on a general constraint on contraction with an alternative explanation that is based on a constraint specific to auxiliary contraction, unless there were independent evidence for the latter. While Schachter (1979: fn. 22, 204–5) presents some evidence against the hypothesis that auxiliaries cannot contract when their object has been deleted

(a hypothesis Schachter takes from King (1970)), he does not present any evidence against the hypothesis that contraction cannot take place before a deletion site.

Here evidence supporting Hudson's hypothesis is offered. Notice that some verbs which can be used as auxiliaries can also be used as main verbs. When used as main verbs, if a predicate complement is present, contraction is possible.

(37) (a) John is nice./John's nice. (Cf. progressive *be*: *John's studying*,

and passive *be*: *John's humiliated by this*.)

(b) I have two cents only./I've two cents only. (Cf. perfective *have*: *I've studied*.)

Now, while there are very few so-called 'non-elliptical' uses of *be* and *have* as main verbs without complements, there are some. Significantly, we find that these verbs cannot contract in the absence of a complement.

(38) (a) God is./*God's. (In response to: *What can you say about God?*)

(b) I have but you don't./*I've but you don't. (This is the same use of *have* as in: *Some have and some don't*.)

((38a) is also discussed in Kuno (1981) and Napoli (1980). (38b) came from a discussion with Edwin Williams (personal communication).) Since no deletion site occurs in (38), Hudson's proposal is clearly the superior of the two with regard to these data.

Second, Kuno (1981) notes that contraction cannot apply in (39).

(39) (= Kuno's 93a)

*John's, as I have already told you, a mediocre philosopher.

Notice that in (39) no appeal to deletion site can be made. Furthermore, it is not likely that one could claim that a movement site (i.e. a trace) immediately follows 's.¹⁸ Thus here again Hudson's proposal is the empirically superior one.

At this point a third proposal presents itself. Kuno says that 'auxiliaries never contract before major breaks' (154). If we accept the idea that a major constituent break occurs between an auxiliary and any following item which is not a sister within the VP, Hudson's explanation would follow from Kuno's. But Kuno's is much wider than Hudson's. Kuno aims to block (40a) with his explanation, whereas if Extraposition attaches the extraposed S within the next higher clause's VP (see Baltin, 1982: Section 1.2.2), Hudson's proposal cannot help us here.

[17] This explanation for the failure of a plural verb is distinctly similar to Schachter's (1978: 204), but the analysis of (28) here differs substantially from his, since *There* Insertion is still maintained.

[18] That a following trace blocks contraction could be claimed on the basis of S's like (i).
(i) Who did you say he is/*he's?
But movement of the predicate nominative in (39) is certainly not apparent.

- (40) (a) *The fact's that smoking kills.

However, there is a trace between *the fact* and the following verb in (40a) (at least under some analyses of Extraposition) and it has been argued by many that contraction cannot apply across a trace (see Chomsky & Lasnik, 1977; 1978, among others), in which case contraction in (40a) would be blocked regardless of what follows the verb. Still, as an unidentified referee pointed out to me, for many speakers contraction is possible in (40b), where a trace intervenes just as in (40a), but in which there is no major break after the auxiliary.

- (40) (b) The fact's surprising that smoking kills.

(For many speakers (40b) is good only with a pause after *surprising*, suggesting we have a Right Dislocation rather than an Extraposition structure here. But for the speakers in question, (40b) is good with the characteristic Extraposition intonation contour.) Thus Kuno's explanation looks well motivated.

Another explanation for the failure of contraction in VPD structures which does not call for a deletion site is that of Baker (1971), which attributes the failure to high stress on the Aux.

While it is beyond the scope of this paper to delve further into the question of whether Hudson, Kuno, or Baker is correct, it is clear that it is not necessary to appeal to a deletion site to account for the failure of contraction in (36). Thus a base generated analysis of VPD can be maintained.

5.4. Distribution of *to*

A fourth argument is due to Ross (1969b). He notes that if we have a rule of deletion in VPD structures, we can account for why it is *to* that shows up at the end of (41) and not 'some other morpheme such as *ing* or *Winnebago*'.

- (41) He knows how to dress, but I don't know how to.

Furthermore, Ross notes that *to* cannot occur in VPD structures when the corresponding S with a full VP disallows *to*.

- (42) (a) *He knows how to get high, but he doesn't know why to.
(b) *He knows how to get high, but he doesn't know why to get high.

Naturally, if VPD were the result of deletion, (42a)'s unacceptability would follow from (42b)'s unacceptability.

Neither of these points about the distribution of *to*, however, is problematic for a base generated analysis of VPD, as Schachter (1978) convincingly argues. *Know* can subcategorize an S complement, whether infinitival or tensed. If *to* is an infinitival (as Pullum argued – see Section 1 above) pro-predicate, then in (41) we have the infinitival clause $s_{\text{COMP}}[how]_{\text{S}}[VP[PRO]_{\text{VP}}[to]]_{\text{S}}$. Thus (41) is good because the infinitival sentence here satisfies the

subcategorization frame of *know*. But *ing* and *Winnebago* are out because they cannot form a sentence with *how*.

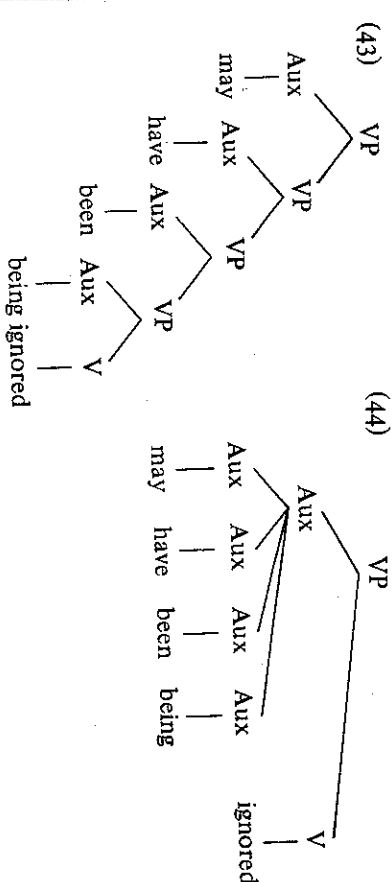
A similar explanation holds for (42). As Schachter notes, *why* cannot introduce an infinitival S.¹⁹ Thus (42a) is out for the same reason (42b) is out, with no need to appeal to deletion.

In conclusion, none of these four typical arguments for deletion holds up under close scrutiny.

6. THE BASE ANALYSIS

6.1. The structure of auxiliaries

The hypothesis examined in this paper is that VPD structures are base generated with the final auxiliary of the auxiliary string in the VPD structure being a pro-predicate in the deep structure. The data presented thus far do not help us to choose among the many different proposals for auxiliary and VP structure in English (see Pullum & Wilson, 1977; Langacker, 1978; and Akmajian, Steele & Wasow, 1979 and many others). Whether each auxiliary introduces its own VP, as in (43), or the auxiliaries occur as sisters, as in (44), or any other variation, we still need to stipulate that it is the final auxiliary in a VPD structure that is a pro-predicate.



Note that the fact that multiple possibilities are present in VPD structures, as in (45), does not force us to accept (43).

- (45) Susie can't have been misunderstood,
(a) could she have been?
(b) could she have?
(c) could she?

[19] Josh Aird (personal communication) has pointed out to me that this generalization is not entirely accurate. He offers the following example:

(i) When I'm 70, maybe I'll remember how to, but I doubt I'll remember why to.

All three tags in (45) are acceptable for at least some speakers (including the author and the people thanked at the beginning of this article).

A pro-predicate, just like other proforms, does not require that its antecedent be a single constituent, as we saw above with the split antecedent in (21). Thus all the options in (45) could be generated and interpreted regardless of constituent structure.

Since there is no evidence crucial to the base analysis here for any one analysis of the auxiliary and VP structures in English, there is no need to take a position on this issue. At this point we can either say an auxiliary which is in VP final position assumes pro-predicate status (perhaps by the addition of some feature such as [+pro]), or we could propose that any auxiliary when generated under V is a pro-predicate. According to the first proposal the relevant part of the structure of (45*a*) is as in (46). According to the second proposal, the relevant part of the structure of (45*a*) is as in (47).

(46) Could she have [been]_{aux}?

(47) Could she have [been]_v?

A problem with the second proposal is that if we allow any old auxiliary verb to be lexically inserted in the base directly under V, we need to explain why the canonical order of auxiliaries is maintained just as if that pro-predicate were in the auxiliary string. That is, why can a modal generated under V never be preceded by any auxiliaries, but *have* under V can be – and only by modals, etc? We need to prevent structures like those in (48).

(48) *She is must. / *She is had. / *She has could. / *She can must.

We might propose that the VPs in (48) are out because they cannot find grammatical antecedents, since no full VP will have the sequences *is must*, *is had*, etc., before the main verb. However, this way out of the problem is not promising. For one thing, VPD structures do not require linguistic control (see Schachter, 1977*a*), thus the fact that no full VPs will contain the strings in (48) does not preclude the possibility of a good pragmatic controller. Second, even when a linguistic antecedent is present, strict identity of the auxiliary strings is not required for VPD.

(49) John said he couldn't do it, but he may (have).

One might also claim that (48) is out for morphological reasons. While this explanation seems reasonable for the examples in which a modal follows an auxiliary which calls for an affix on the following verb form (such as progressive *ing*, perfective *en*, and passive *ed*), it will not account for the failure of two modals in a row nor of the *en* form of *have* (i.e. *had*) after passive *be*. For these reasons the first proposal, that it is a final auxiliary of a VP that receives pro-predicate status, is to be preferred (but see the final remarks of Section 7 below concerning (98)).

6.2. *Advantages of the base analysis*

The base analysis above has great explanatory value. We have already seen in Sections 4 and 5 above some of this analysis's advantages. Others can easily be added. A starting point might be the many semantic and pragmatic factors which others have noted that affect the suitability of VPD (see particularly Levin, 1979; and Sag, 1976). While many of these factors are either puzzling regardless of one's analysis of VPD structures, or quite explicable regardless of one's analysis, some of them are easily explained with the base analysis but not so easily with a transformational analysis.²⁰

6.2.1. *Quantifier scope*: First, consider Sag's (1976: 38–41) observation that quantifier scope in the first clause of (50) is ambiguous (as to which quantifier has wide scope), while that in the second clause is not (having only one quantifier).

(50) Someone hit everyone, and then Bill hit everyone.

(51) (a) [$\forall x$ ($\exists y$) [y hit x]] and then $\forall x$ [Bill hit x].

(b) [$\exists y$ ($\forall x$) [y hit x]] and then $\forall x$ [Bill hit x].

Now if the second clause is a VPD structure, we find that the first clause is not ambiguous, but can have only the reading in which the existential quantifier has wide scope (as in (51*b*)).

(52) Someone hit everyone and then Bill did.

Sag is led by this fact to claiming there is 'a parallelism requirement on VPD' (40) – and it is requirements such as this which eventually lead him to his formulation of VPD as a deletion rule requiring that at the level of logical form the deleted VP in S' is a λ -expression that is an alphabetic variant of another λ -expression present in the logical form of S or in the logical form of some other S' which precedes S in discourse' (74). This kind of condition on the logical form of the output of a deletion rule is highly problematic. If deletion is in the left branch of the grammar and logical form in the right (as Chomsky (1981 and earlier) proposes), we expect the two to be entirely independent of one another.

Notice in contrast that the facts are a non-problem for the base analysis. The VPD clause has a fixed subject, *Bill*. *Did* looks for an antecedent in the first clause of (52) which can only be a predicate that holds of a fixed subject. Now if the first clause allows the *someone*'s to vary (that is, if we get reading (51*a*)), then no single person hit everyone and there is no predicate of a fixed subject that *did* can take as an antecedent. But if the *someone* is fixed (that is, if we get reading (51*b*)), then that person is the subject of a predicate which

[20] See Levin (1979*a*: Ch. 4; 1979*b*) for some problems that involve the notions of control and of presupposition which exist regardless of the analysis of VPD.

can serve as an antecedent for *did*. Another way of saying the same thing is that *did* looks for a bound verb phrase (where $\forall x$ binds the x of y hit x in (51b)), so that the verb phrase is 'bound') to predicate of a given subject. Thus the nonambiguity of (52) follows from the proform nature of the predicate in the VPD structure.

6.2.2. *Unison reading*: A second problem of a similar nature to the one above was also noted by Sag (1976: 41). He observes that while (53) cannot report a situation in which Sandy and Betsy spoke in unison, (54) can.

(53) Sandy greeted everyone when Betsy greeted everyone.

(54) Sandy greeted everyone when Betsy did.

The distinction here is surely delicate, but nonetheless real. Sag further notes that (55) allows the in-unison reading.²¹

(55) Sandy greeted everyone when Betsy greeted them.

For a deletion analysis of VPD, the above data are problematical. However, for the base generated analysis they are less so. That is, given that the pronoun in (55) allows for the in unison reading (where the pronoun finds its antecedent in the quantified NP), we might expect proforms in general to allow this reading. (Note that the reading is one which places an identity of reference type reading on the two verb phrases.) Now since (54) involves a pro-predicate whose antecedent contains the quantified NP, it is no surprise that the in unison (or identity of reference) reading can emerge.

6.2.3. *Wh-questions*: The third problem to be discussed here is also due to Sag (1976: 42). Sag notes that with a deletion analysis of VPD, we would expect to find fragments like (56) and (58) in contexts such as (57) and (59), respectively, but they are not judged acceptable (as indicated here by the addition of stars).

(56) (= Sag's 1.3.17) *What did Bill?

(57) (= Sag's 1.3.18) -What did Harry take a picture of?

-An elephant.

*What did Bill?

A tiger.

(58) (= Sag's 1.3.19) *What was Harry able to?

(59) (= Sag's 1.3.20) -What was John able to take a picture of?

-An elephant.

*What was Harry able to?

-A tiger.

[21] Of course neither (54) nor (55) is limited to the in-unison reading.

The base generated analysis, however, encounters no problems here. (56) and (58) will never be generated because the *wh*-words could not have originated in the VP. The VPs (*are* and *to*) are pro-predicates – they end their VP. Thus there is no possibility of questioning their non-existent complements. *Wh*-words which originate outside the VP, of course, can easily occur in VPD sentences (viz. *Why should I?*).

6.2.4. *Wh-relatives*: The fourth problem is similar to the third and comes again from Sag (1976: 43). Sag notes that (60) is pretty good whereas (61) is not readily accepted (as indicated by the addition of ?*).

(60) (= Sag's 1.3.21) We finally got in touch with John, who my brother Al tried to visit but couldn't.

(61) (= Sag's 1.3.22) ?*We finally got in touch with John, who my brother Al tried to visit but who he couldn't.

Once more Sag is led to serious complications of his deletion rule of VPD in order to account for this difference, but for the base analysis the facts are as expected. In (60) *couldn't* is a pro-predicate conjoined to a full predicate (*tried to visit*) and it finds an antecedent in (*to*) *visit*. One might object that *wh*-movement should be blocked from the first conjunct by the Coordinate Structure Constraint since this is not an across-the-board application of the rule. But notice that proforms in general allow this pattern.

(62) (a) We finally donated money to John, who my brother Al thought would win, but thought so incorrectly.

(b) We finally donated money to John, who my brother Al was sure would win, but shouldn't have been sure of it, after all.

Thus the acceptability of the pro-predicate in (60) can be accounted for with the independently needed mechanism (whatever it may be) that accounts for (62)'s acceptability.

But in (61) the problem is the *who*. This *wh*-word could not have originated in the VP since the VP consists solely of *couldn't* at all points in the derivation (setting aside the question of negative placement). Thus (61) has no well-formed underlying structure.

6.2.5. *Wh-clefts*: The fifth problem is entirely parallel to the third and fourth and comes from Sag (1976: 43). In *wh*-clefts we find (63) is good but (64) is bad.

(63) (= Sag's 1.3.24) What Sandy wanted to buy but couldn't, was the catcher's mitt.

(64) (= Sag's 1.3.23) *What Sandy carried was the baseball bat, and what Betsy did was the catcher's mitt.

For the deletion analysis these sentences represent complications. But the base analysis encounters no such complications. In (63) the pro-predicate *couldn't* is displaying the same type of behaviour other proforms display, as in (65).

- (65) (a) Who Sandy thought had done it, but thought so incorrectly, was her neighbour.
 (b) Who Sandy was so sure had done it, but shouldn't have been so sure of it after all, was her neighbour.

(64), on the other hand, has no well-formed underlying structure since *did*, as a pro-predicate, has no complements at any point in the derivation.²²

6.2.6. *Analyzability*: The sixth problem, due to Bouton (1970),²³ is of a different nature. Bouton notes that VPD is acceptable in examples like (66) (where *a*, *c*, and *d* are taken from Sag (1976: 45) and *b* is a variation on one of Sag's examples).

- (66) (a) Alan will eat anything you want him to.
 (b) Sandy hit the very person that Bill did.
 (c) Sandy ate whatever Tom did.
 (d) Betsy grabbed whatever she could.

Sag (1976), responding to Hankamer (1972), argues that the construction exemplified in (66) is, indeed, a VPD.²⁴ The problem for a deletion rule of VPD is that if VPD generates (66), VPD cannot be stated with the string formalism, given the standard notion of analyzability. This is because the VP to be deleted under identity with a higher VP is actually contained in that higher VP. The base analysis, however, is once more unaffected by these data. Consider the structure of (66*b*).

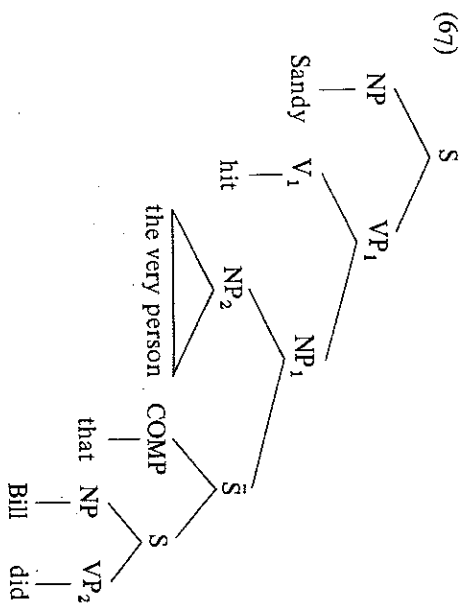
[22] Sag (1976) and Williams (1977a) each propose a constraint on VPD to block VPD structures from containing free variables – thus accounting for the range of data found in my arguments 3, 4, and 5 above. However, they offer no independent motivation or explanation for their constraint. In the base analysis no such constraint is needed.

[23] This problem is also mentioned in Williams (1977a: p. 105, fn. 3) where he refers us to an unpublished manuscript by G. Carlson.

[24] Sag (1976: 47) says examples like (i–ii) are acceptable for 'most people'.

- (i) *I spoke with everyone who Tom did.
 (ii) *I did the very things which Tom warned me not to.
 But no one I have asked accepts (i–ii). People naturally offer in place of (i–ii) the corresponding sentences with *that* instead of *who* or *which*. Despite this fact, I would not be surprised if someone uttered a sentence like (i) or (ii), particularly in a situation in which one was trying to speak 'correctly'. That is, people may consider a *wh*-word more 'formal' than *that*, similar perhaps to the choice of nominative over oblique in PPs for some people (viz. with *Sue and I*), and may have a very late kind of (a-grammatical) 'substitution' rule which allows them to insert a *wh*-word in *that*'s position in certain social contexts. (i–ii), then, are not generated by the core grammar. Thus as far as we are concerned here, they are 'ungrammatical'. Accordingly, they are no problem for the base analysis.

VERB PHRASE DELETION IN ENGLISH



VP₂ is interpreted as something like 'hit the person' where 'the person' has the same referent as 'the very person'. If *did* is a pro-predicate, then it could take the string *hit the very person* (V₁–NP₂) as its antecedent. Notice that proforms do not require that their antecedents be constituents or even form a continuous string, as noted in Section 4, argument 6.²⁵

[25] A major weakness of the above argument is that it relies on one rather unusual assumption. In order to see that assumption, consider the obvious derivation of (67) which is consistent with the base analysis of VPD. No movement or deletion rules will have applied in (67): its surface structure is identical (for our purposes) to its deep structure. But typically analyses of *that* relative clauses which do not involve movement involve deletion instead (as in Bresnan, 1976). And a very common claim about relative clauses is that they contain a node identical to (i.e. coreferential with) the head of the relative clause (see Akmajian & Kitagawa, 1976; Chomsky, 1977: 81 and 92; and Kayne, 1981, among others). In (67), Relative Deletion could not apply because there would be no node identical to the head to undergo deletion, given the base analysis of VPD. If this analysis of (67) is correct, we would expect that English might allow other *that* relative clauses which contain no node identical to the head but which also do not involve the phenomenon of interest in this paper (that is, VPD). Indeed, this expectation is fulfilled by at least three different structures, as shown in Napoli (1983): relatives with adverbials as heads, relatives with so-called Null Complement Anaphora structures (where NCA structures are base generated, as argued in Napoli (1983) and (1985)), and the very informal speech relatives of some speakers, as in (i).

(i) That's the book that the ending drives me crazy.
 Given these relatives, we could replace the coreference requirement of relatives with a requirement that every relative clause be able to be construed as modifying the head – a functional rather than a syntactic requirement. This is what Chomsky (1982: 13) calls an 'aboutness' relation. And, as Chomsky notes, it is possible 'to devise a system of logic in which vacuous quantifiers are permitted in well-formed expressions, but simply ignored in interpretation'. Thus there is no *a priori* argument against the existence of relatives which bear only an 'aboutness' relation to their head and do not contain an NP coreferential with the head.

An alternative approach which deals with examples like (i) in their Japanese counterparts is found in Kuno (1973), who maintains the coreference restriction on relative clauses only

6.2.7. *Q Float*: A seventh problem involves Quantifier Floating (QF). Sag (1976: 15) observes that a VPD structure cannot end with a floated quantifier.

- (68) (a) My brothers all have left, and my sisters all have, too.
(b) *My brothers have all left, and my sisters have all, too.

Sag claims VPD is blocked from applying to (68*b*) because of some more general constraint involving Aux-final quantifiers and adverbs (28). Exactly what the constraint is and how VPD is sensitive to it is not made explicit. But if we have a base-generated pro-predicate in the VPD structure in (68), we needn't talk of any such constraint. Instead, we can note that QF moves a quantifier phrase to the left periphery of any projection of V (as in Baltin, 1982: Section 1.2.1). Thus QF could not move *all* after *have* in (68*b*) since this position is a right periphery and not a left periphery of any V projection. The behaviour of QF, is, therefore, not problematic for a base-generated analysis, but definitely a complication for any analysis involving deletion or interpretation of a null anaphor, since in both these alternative analyses the floated Q would find itself on a left projection of V in (68*b*).

6.2.8. *Necessity of Aux*: Finally, if VPD is the result of a deletion rule, that rule must be written to apply 'only when an Aux immediately precedes the deletion target.' (Sag, 1976: 26) Why should the rule apply only after Aux? The effect of this structural condition on VPD is that the remaining VP after VPD is not empty but contains at least and at most an Aux string. No obvious explanation for this result emerges with the deletion analysis. It is simply a given of the rule. With the base analysis, instead, there is no rule deleting verb phrases, so every VP in the surface has some lexical realization. We base-generate VPs with full verbs with or without auxiliaries. (Recall that this section opened with the claim that only VP final auxiliaries have pro-predicate status, thus complements do not occur with pro-predicates.) That is, a VP which ends in an Aux will have that final Aux interpreted as a pro-predicate. Nothing more need be said.

by analyzing examples like (i) (in Japanese, of course) as coming from a relative clause which underlyingly has an S that branches to an NP and a following S. The NP is in 'theme' position, and it is this NP which is coreferential with the head of the relative clause.

Clearly the determination of the proper analysis of relative clauses is beyond the scope of this paper. What I hope to have demonstrated is simply that there are possible alternative analyses to sentences like (67) which are consistent with our analysis of VPD sentences. I do not, therefore, consider the derivation of examples like (67) to be a fatal flaw in the base analysis of VPD structures.

Let me point out that an analysis of VPD which makes use of a base generated empty VP node runs into precisely the same issues regarding the analysis of relative clauses that our base analysis faces. The only kind of empty node analysis that would not face these problems would be one like the empty structures hypothesis of Wasow (1972).

6.3. *Reverberations*

6.3.1. *Effects on other rules of grammar*: Before concluding this discussion, it is important to note that base generation of VPD structures in the way proposed here does not necessarily call for base generation of other structures. In Section 5 (see discussion of (28–35)) we saw that we can still maintain an insertion analysis of *There* sentences. Consider now passive *be* in VPD structures.

- (69) (= 35*a* of Schachter, 1978: 211).
John was examined by Dr Krankheit, but Bill wasn't.

If we base-generate the pro-predicate (plus negative) *wasn't*, we can account for the passive interpretation of *wasn't* by way of the construal rule which assigns the preceding VP as the antecedent of this pro-predicate. The question of how *Bill* receives its theta role now arises. In Chomsky (1981), the surface subject of a passive sentence receives its theta role of theme by way of being generated in the base in direct object position. If *wasn't* is a proform for the entire predicate in the base, then *Bill* could not have been generated in the VP in (69). (Recall that we cannot simply say an Aux in VP final position in S-Structure is a pro-predicate. Instead, we must have the Aux in VP final position in DS. See the discussion of (56–65) above.) In fact, given the analysis here, the surface subject of a pro-predicate will always be its deep subject, as well. We are forced, then, into base-generating *Bill* as the subject of *wasn't*. We have two alternatives now, either base-generate all passives (as Schachter, 1978: Section 6, does), perhaps assigning a given theta role to the subjects of all passive predicates in the base, or we can maintain Move NP in passive structures (as Chomsky does) and assign *Bill* a theta role by some alternative mechanism. With the base analysis of VPD, *wasn't* has an antecedent which is passive in (69) and which has a subject with a given theta role (assigned in the usual way). We might propose that *Bill* is 'indirectly' (and compositionally – see Chomsky, 1981: 103) assigned a theta role as a result of the construal process which takes the first VP in (69) as an antecedent for *wasn't*. That is, coindexed predicates have subjects with the same theta role, a very natural result. Another way of obtaining the same result is to allow a pro-predicate to assign any theta role whatsoever to its deep (and, necessarily, surface) subject. Then a rule in LF of consistency in the absence of information to the contrary would block any interpretation in which coindexed predicates had subjects with differing theta roles. It's not clear whether one alternative makes different empirically verifiable predictions from the other. But it is clear that some such mechanism must exist, since pro-predicates and their co-indexed full predicates in the absence of a context are interpreted as having subjects with the same theta roles even in active constructions. Consider (70).

- (70) John broke a window and Jim did, too.

When speakers are given the situations in which John took a hammer and smashed a window with it but Jim was lifted up by some bully and used as an instrument to smash a window, speakers agree that (70) is not the way they would describe the situation to someone who had not seen it unless they were intentionally offering a misleading report of the scene (perhaps with a kind of 'pun' flavour). However, if additional information is added to explicitly distinguish the theta roles of the subjects, (70) is accepted.

- (71) John broke a window and Jim did, too, although John did it on purpose, and Jim couldn't help it.

Thus, in isolation the theta roles of the subjects of the coindexed predicates are taken as identical. But in context, these theta roles may differ. Notice that information outside the VP can contribute to our interpretation of the theta role in (71). Perhaps we are dealing with 'adjunct' theta roles assigned by the adverbial *although* clauses (in the sense of Zubizarreta, 1982: 41, in particular).

In sum, the question of proper assignment of theta role to the subject of a VPD structure arises regardless of passive constructions. Thus even with the base analysis of VPD we can maintain a transformational analysis of passive without adding any otherwise unneeded complexities to the grammar. A third construction which Schachter (1978: 219) says must be base generated given a base analysis of VPD is that commonly known as the Raising into Subject Position construction, as in (72).

- (72) John seems to have been working hard, but Bill doesn't seem to (have (been)).

But with the analysis here, in which *to* can be a pro-predicate, (72) can be generated using Move NP. The underlying sentential complement of *seem* will be *sl*[Bill *vp*[(to (have (been)))]]. Move NP will make *Bill* the subject of the higher clause – and no problems are encountered.

A fourth construction which Schachter (1978: 219) says must be base-generated given his base analysis of VPD is that commonly known as the Raising into Object Position construction, as in (73).

- (73) I expect John to be patient, but I don't expect Bill to (be).

However, while it may be clear that there are many reasons to exclude a transformational rule of Raising into Object Position from a grammar, (73) does not offer one more, given the analysis of VPD here. Instead, the sentential complement of *expect* is *sl*[Bill *vp*[(to (be))]] and if Raising into Object Position existed, it could apply in (73) with no problem.

There are, however, at least two constructions which do call for a base analysis given a base analysis of VPD structures. Both are pointed out by Schachter (1978: Sections 7 and 8). One is tag questions, as in (74). The other

is Raising from Object into Subject Position (or 'tough' movement), as in (75).

- (74) John loves Mary, doesn't he?

- (75) John is easy to please, but Bill is hard to.

Schachter, building on Hudson (1976), gives some very nice reasons for base generating tag questions as in (74). For arguments that (75) does not involve movement, see Lasnik & Fiengo (1974), who argue for deletion with 'tough' predicates. The base analysis of VPD would, however, also preclude a deletion rule with 'tough' constructions. Certainly it is not immediately obvious that base-generation is the most insightful analysis of tag questions and 'tough' constructions and further work needs to be done here.²⁶

In conclusion, the base analysis of VPD offered here has many advantages. It is empirically superior to a deletion analysis in many ways. And it is simpler (and less abstract) than a null anaphora analysis, while still being of equal or superior (if arguments 3 and 4 and that built on example (24) of Section 4 above are tenable) empirical adequacy.

6.3.2. *Effects on the base*: With the base analysis of VPD, the Phrase Structure Rules will allow VP to be rewritten as Aux. Since I have taken the stance that Aux is not the head of VP (see Section 4.1 above), this means that we will allow headless categories in the base, in violation of a (the?) basic principle of X-Bar Syntax. A major revision of the theory of this sort should be undertaken only if there are considerable advantages to be so gained. In Section 7 I argue that VPD is one example of a cross-categorical generalization: left branch specifiers can serve as proforms for their category. It is the capturing of this generalization which makes the necessary revision of X-Bar Syntax defensible. Furthermore, X-Bar Syntax itself may not be a needed part of grammar (see the discussion following example (84) in Section 7 below). If X-Bar Syntax is eliminated from the grammar, the base analysis remains unaffected.

7. OTHER PROFORMS

If any VP final auxiliary in English has pro-predicate status (as argued in Section 4 above), two questions naturally arise. First, are all proforms generated in the specifier position of their category? Second, does any major category which ends in a specifier of its head in the absence of the head have

[26] The question of base generation of 'tough' sentences would not arise if (75) were ungrammatical. Schachter, however, marks (75) as acceptable. Many others mark it as unacceptable (see Garnham, 1983, for discussion).

proform status?²⁷ I will not attempt to answer the first question, which is far-reaching, here. Instead, let me note that Hershensohn (1981), for entirely independent reasons from those brought up in this paper, argues that pronouns are generated in the specifier of NP. The second question, however, is one I'd like to look at closely.

Schachter (1978) carefully points out the existence of a class which he calls 'pronominal determiners, i.e. determiners occurring without a following head noun, and functioning as pronominals under these circumstances' (195). Schachter offers the examples in (76).

- (76) (= Schachter's 20)
- (a) John ordered some beer, and Bill ordered some, too.
 - (b) John bought the first round, and Bill bought the second.
 - (c) John had four beers, and Bill had five.
 - (d) John emptied all these bottles, and Bill emptied all those.

Schachter further points out that while personal pronouns enter into a relationship of coreference with their antecedent, pro-predicates and pronominal determiners need not be coreferential with their antecedents. Instead, the reference of the pro-predicate (if we allow the notion of 'reference' to be suitably extended to predicates) and of the pronominal determiner are 'determined by the reference of the antecedent' (196). Another way to say this is that the relationship between personal pronouns and their antecedents necessarily involves identity-of-reference while the relationship between pro-predicates/pronominal determiners and their antecedents may involve identity-of-reference or identity-of-sense only (see Bach, Bresnan & Wasow (1974) for a discussion of the relevant notions).

This last point is particularly fascinating. From a perusal of the literature, one finds that any notion of identity other than strict reference is always exemplified with proforms other than personal pronouns (such as *one*) except for possessives. But notice that possessives do strictly fall into Schachter's class of pronominal determiners although their morphological form when not serving as determiners is distinct (*mine* vs. *my*; *yours/your*; *ours/our*; *theirs/their*). Thus one might hypothesize that the notion of identity-of-sense is relevant only to proforms which are generated in the specifier system – that is, specifiers in final position of the category they specify. Since pro-sentences, like *so*, *not*, and *wh*-words (as in (77)), can have an identity-of-sense interpretation, we might then expect that these forms are part of the specifier system for S.

- (77) John thinks that Mary has left.
- (a) and I think so, too.
 - (b) but I think not.
 - (c) and now I wonder why.

We will return to the question of pro-sentences below. But before we go into the more abstract question of specifiers of S, we need to study the more concrete specifier systems of categories such as NP and AP.

Consider once again Schachter's examples in (76). We are not, in fact, dealing only with 'determiners' here. In (76a) we have *some*, a quantifier which disallows a co-occurring determiner (**the some boys* (cf. *some of the boys*)), and which is part of the specifier of NP. In (76b) we have *second*, an ordinal numeral which can (and here does) cooccur with a determiner and which syntactically belongs to the category of adjective, and thus is not part of the specifier of NP. In (76c) we have *five*, a quantifier which allows a co-occurring determiner (*these five boys*) and exhibits quantifier behaviour, thus being part of the specifier of NP. In (76d) we have *those*, a determiner which can (and here does) co-occur with a quantifier and is part of the specifier of NP. We find, furthermore, that not all determiners can be used as proforms.

- (78) *I'll take the.

At the same time, we find that adjectives can be used in an NP in the absence of a head N (see also (76b) above).

- (79) (a) You take five and I'll take the *remaining*.
 (b) You worry about the *poor*, while I worry about the *rich*.
 (c) In the library, put the *hard cover* on the top shelf, the *red leather* on the second shelf, and the *paper* everywhere else.

Two questions face us. First, why can some elements of the specifier system occur in the absence of a head N while others cannot? Second, are the examples in (79) instances of the same kind of phenomenon exemplified in (76a, c, d)? There is no obvious set of grammatical constructions or features which correlates with the two classes of specifiers, as far as I can see. Thus I cannot answer the first question.

The second question, of whether the examples in (79) are cases of the same phenomenon as that in (76a), is more easily answered, and negatively. The phenomenon as that in (76a) is more easily answered, and negatively. The use of NPs consisting of specifier plus AP is productive: any AP which can occur across the copula from an NP it modifies can occur inside an NP with no head N and vice versa. Furthermore, even APs which would follow a head N inside the NP can appear in NPs in the absence of the head N.

- (80) Here are all the books. You stack the new over here and I'll stack the *yellow* with age right there.

[27] This is not to say that any auxiliary can occur in VP final position: no auxiliary ending in *-ing* is allowed in VP final position (see Sag, 1976: 16–17, for some suggestions as to why).

For such APs the necessary extension to APs of the interpretive rule which allows us to take a final specifier as a proform would fail since we would then be able to interpret an AP like *yellow with age* as a proform even in Ss like (81), where a head N occurs.

(81) The books yellow with age lay on the table.

We could try to rescue the situation by letting the interpretive rule apply only to categories which are missing a head; thus it would be blocked from (81). But for VPs this stipulation was not necessary, since specifiers occur only to the left of the head V. There is an advantage to leaving out this stipulation – and that is that any VP (and now NP, and, as will be argued below, any other major category) which ends in a specifier but has a head V present will be ruled 'uninterpretable', since the final specifier will be interpreted as a proform for the category but the head will be interpreted at the same time and the VP will have two 'semantic' heads. We now have a reason for the ungrammaticality of the ordering of (82).

(82) *leave will/*boy this/*pretty very

(82) is out for semantic reasons, and no appeal to PS rules to restrict the order of elements within a VP need be made. This is a particularly interesting result, since Chomsky (1982: 16 in particular) suggests that PS rules may be able to be eliminated altogether. In conclusion, the stipulation that a head be absent should not be part of the interpretive rule yielding proforms out of specifiers. Thus the above argument against having the rule be responsible for the interpretation of (79) (the argument based on (80–81)) holds. It appears, then, that (79) is a separate phenomenon from (76a).

This result is a welcome one. Note that we typically think of proforms as being less semantically rich than other lexical items of the same category. Thus the personal pronouns tell number, gender, and person but nothing else, whereas an N like *bicycle* is loaded with information.²⁸ The proposal that specifiers can serve as proforms uses no radical extension of the classical notion of proform – but if we said APs could serve as proforms for nouns we would need a major modification of this notion.²⁹

[28] Other features may be allowed in pro bundles, such as [+human] for some relative pronouns (see Chomsky & Lasnik, 1977: 447, fn. 46).

[29] The question of the interpretation of NPs consisting of specifier plus AP, as in (79), is similar to the question of the interpretation of VPs with missing propositional complements, such as in (i) (and (11) in the text above).

(i) *Q.* Is Sue coming?

A. I guess.

Q. Well, did she do her homework yet?

A. She started, but I don't know if she finished.

Q. Well, she doesn't have to do it, does she?

A. Yes, she does. Mamma said.

In Napoli (1983) and (1985) I argue that these VPs are not anaphors, but, instead, are

We have seen that specifiers of VP (i.e. auxiliaries) and specifiers of NP can serve as proforms. Let us now turn to specifiers of AP, as in (83).

(83) so/very/that/100/very much alert.

There are instances in which we find pro-adjectivals, such as the use of *that* in (84A), and the responses in (85A).

(84) *Q.* Don't you think she's alert?

A. Oh, yes, she certainly is *that*.

(85) *Q.* Is she alert?

A. Oh, very/very much/very much so.

The final word of each response in (85A), being a specifier in final position of an AP, is interpreted as a pro-adjectival. Certainly within an S the distribution of pro-adjectivals is extremely limited. Only in AP utterances (like those in (85A)) do we see a range of pro-adjectives. No immediate explanation for this situation offers itself. Still, it is clear that APs are subject to the same interpretive rule applying in VPs and NPs, which interprets a specifier in category final position as a proform for that category.

Let us return now to the question of pro-sentences, as in (77). Surely *so*, *not*, and *why* are all occupying slots which are interpreted as propositions and which can be occupied by full propositions in other sentences (e.g. *I think she's left/I think she hasn't left/I wonder why she left*). Thus it is reasonable to consider them pro-sentences. The relevant question now is whether these pro-sentences belong to the specifier system of S. If we take COMP to be the specifier of S, then the question is whether *so*, *not*, and *why* belong to the complementizer system of S. Notice that it is not necessary for us that all pro-sentences belong to the set of complementizers of S. The claim is that specifiers in final position of a category can serve as proforms for the category but not that this is the only source of proforms. Third person personal pronouns, for example, do not belong to the specifier system of NP. Thus if complementizers can serve as pro-sentences, the claim finds further support, but the existence of other pro-sentences which are outside the complementizer system of S would not disconfirm the claim.

Wh-words are complementizers *par excellence*, and an example like (77c) would appear to be precisely what we need to confirm our claim. However, such structures have been analyzed by Ross (1969b) as involving deletion of an embedded S. While Ross's analysis is open to criticism, it is beyond the

skeletal in their meaning and that many factors (both linguistic and nonlinguistic) can enter into the way we 'flesh out' their interpretation. Several arguments are given for this analysis, including the fact that these missing complement sentences contrast in both syntactic and semantic behaviour with sentences that have anaphors in the verb's complement position.

I suggest that the type of analysis pursued in these other words be considered for sentences like (79), although I cannot here enter into such a discussion.

scope of this paper to make such criticism. I refer the reader to Riemsdijk (1978) and Levin (1982), among others, for non-deletion analyses of Sluicing. If Ross's analysis were correct, then Ss like (77c) could have their syntactic and semantic behaviour explained without having to analyze *why* (and other *wh*-words) as a pro-sentence, and we would need to look elsewhere for confirmation of our claim.

It is not immediately obvious that *so* or *not* belong to the complementizer system of English, but there are a number of reasons to propose that they do. First, consider (86).

- (86) It's possible that Jill will bring a friend but I certainly hope not.

Here *not* is understood to negate the missing proposition *Jill will bring a friend*. If *not* is generated in COMP position, its appearance in (86) is independent of the nonappearance of a subject, auxiliary, verb, and object. But if *not* is base generated in the auxiliary string (where it would appear if the other elements of its clause were present), we need to account for why *not* can appear alone in (86).

Second, Klima (1964) gives several reasons for generating sentential 'neg' in initial (what he calls 'presentence') position of S: (a) Neg appears initially in gapped Ss, as seen in the second half of (87).

- (87) Mary supports John, not John, Mary.

(b) Neg has great 'mobility', being able to appear in the auxiliary, in the subject, and in objects, as well as in initial position, although its 'favourite' position is in the auxiliary.

- (88) Mary didn't see Paul.

No one saw Paul.

I saw no one.

I talked to no one.

I went with no one.

Thus the occurrence of sentential neg is independent of other constituents and should be generated independently of them. (c) Neg motivates the occurrence of indefinites like *anyone* in a way similar to that of *wh*.

- (89) Who saw anyone?/Did you see anyone?
I didn't see anyone.

If both neg and *wh* are generated in initial S position (with neg following *wh* when they co-occur),³⁰ we can see them as forming a natural class which

[30] Neg in initial position can cooccur with a complementizer, even with *that*, as an anonymous referee pointed out to me:

(i) I think that nowhere could you find a nicer place to live than England.

(See (d) immediately below in the text.) Thus, if initial Neg in the surface is, indeed, in COMP, we must allow a doubly filled COMP node in English. A reasonable alternative

should have common properties, such as the indefinite effect. (d) Initial neg motivates subject-auxiliary inversion in root clauses just as *wh* does.

- (92) When will he marry again?/Will he marry again?
Never will he marry again.

The inversion effect would be a common property of a certain kind of complementizer if neg were a complementizer in the base. (e) Neg can attach itself to a great variety of constituents just as *wh* can.

- (93) No one, none/who
never/when
no place/where
no boy, no N/which boy, which N

Attachment of this sort would be a common property of a certain kind of complementizer if Neg were a complementizer in the base. (f) Klima also argues that the scope of neg is best accounted for by positioning it in such a way that it c-commands the whole S (his wording is that the S is in construction with neg).³¹

The case for *so* belonging to the set of complementizers is more difficult to make, partly because there are several *so*'s in English (as we saw in (85d) – see also Hankamer & Sag (1976)). *So* with the meaning of 'also' shares with neg and *wh* the property that when it occurs in initial position it motivates subject-auxiliary inversion.

- (94) Paul left; (and) so did Mary.

Furthermore, *thus*, *such*, and *so* (which arguably form a natural class) can appear to the left of the V with the subject appearing to the right, as in (95).

- (95) I must be obeyed: such is my wish.
Thus saith the Lord: vengeance will be mine.
Vengeance will be thine: so saith the Lord.

Beyond these points, evidence for *so*'s status as a complementizer is hard to come by. Importantly, however, there doesn't seem to be any evidence against generating these *so*'s in COMP.

We can see that at least *not* is a pro-sentence which belongs to the

is that Neg is generated underlyingly in COMP, but in the surface it may occupy a variety of slots (as seen in (88)), including a slot to the left of subject but the right of COMP. The likely candidate is Topic, as in (ii).

(ii) He's a man to whom liberty we could never grant.
(i) is from Baitin (1982).

[31] The usefulness of the notion of c-command in explaining scope in general is debatable. For a picture of how c-command can be useful in understanding the scope of *even* see Anderson (1972). For a view of quantifier scope which identifies many complex factors, see Ioup (1975).

complementizer system (and at best *wh*-words and *so* are, also), thus we have confirmation of our claim for the category S: an S-final specifier of S (that is, COMP) is interpreted as a pro-S.

Let us summarize our results thus far. For the major categories in English there is an interpretive rule which interprets specifiers in category final position as proforms for that category. In all instances the proform may have other specifiers preceding it.

(96) VP: He may have.

NP: I like these four.

AP: Do you like her?

Yes, very much.

S: I wonder why not.

At this point a parallel between NP and S emerges. Within NP we have *wh* proforms, negative proforms (N proforms), and definite proforms (TH proforms), as well as others, all three of which belong to the specifier system of NP at the surface level.

(97) (a) Which (boy) did you choose?

(b) I like none (of them).

(c) I like those (boys).

(In (97a) the *which* is the specifier of the initial NP which is in COMP position.) Likewise for S we have *wh* proforms, N proforms, and TH proforms, in the form of *wh*-words, *not* (*never*), and *so* – which, arguably, belong to the specifier system of S at the underlying level and, when used as proforms, at the surface level. We might hypothesize, then, that the WH, N, and TH markers are of a proform nature; that is, they supply certain minimal information about the referentiality of the category they introduce (see Pope, 1976: Ch. 1).

Let me give one final parallel between the major categories before we conclude. Proforms which are homophonous with specifiers can appear with complements.

(98) N (a) I like [those]_N.

(b) I like [those in the box]_N.

S (c) I think [not]_S.

(d) I was wondering whether she'd come and [not whether he would]_S.

A Q. Is the baby pleasant?

(e) Oh, [very much so]_A.

(f) Oh, [very much so to look at]_A, but her crying drives me nuts.

V (g) I [may]_V.

(h) John may talk to Jill about it, and I [may to Jessie]_V.

While a variety of rules might be (and have been) proposed to handle some of the constructions exemplified in (98), the fact remains that there is a parallel there which we would hope the grammar could capture. It seems that a final specifier of a major category X can be used as a proform for X, whether or not that specifier is the last element of the \bar{X} . Thus, while we saw reasons in Sections 1 and 3 above for not considering a sentence like (98h) to be a VPD sentence, I here suggest that the distinction outlined there, while real, may be irrelevant to one major interest of this paper: the role of specifier in the proform system. I proposed that the final specifier in a specifier string (which could be the only specifier) in the absence of a head is treated as a proform for that category. This 'treatment' might be the result of an interpretive rule or of an actual category changing rule (where spec $X \rightarrow X$). I have argued in Section 6.1 above for the interpretive rule with regard to VPD sentences.

8. CONCLUSION

The analysis which holds VPD as a base-generated structure in which the final auxiliary is a pro-predicate is empirically adequate for English, given certain other changes. One is that the generally accepted analysis of relative clauses must be abandoned or, at least, modified (as outlined in fn. 25). Another is that X-Bar Syntax needs to be revised to allow headless categories (as pointed out at the end of Section 6).

Furthermore, English makes use of an interpretive rule which interprets specifiers in final position of their category as proforms for that category. If only major categories have specifiers, then this interpretive rule appears to apply only to major categories.

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