(120)
a. who do you remember that John said would read what
b. you remember who John said would read what

10. Parasitic Gaps

Let us turn now to parasitic gaps, and ask how the foregoing considerations relate to the analysis of these constructions, which have provided a good deal of insight into linguistic structure since the topic was opened for investigation by Taraldsen (1981).

One basic property of parasitic gaps is that they are typically licensed by a wh-trace (or other operator-bound trace) in object position but not in subject position, as illustrated in (121), where $t$ is the real gap and $e$ the parasitic gap:

(121)
a. what did you file $t$ [before reading $e$]
b. what did you file $t$ [before you read]
c. *who [t met you [before you recognized e]]

The restriction concerning subjects must be qualified, however. A subject can license a parasitic gap that it does not c-command, as noted by Longobardi (forthcoming), who observes that (122b) is more acceptable than (122a):

(122)
a. *a man who [t looks old [whenever I meet e]]
b. a man who [whenever I meet e] [t looks old]

Where the subject is more deeply embedded, it can regularly license a parasitic gap, as in the following example due to Andrew Barss (see Engdahl 1983):

(123)
a. which papers did John decide to tell his secretary $t$ were unavailable before reading $e$
b. which papers did John decide [before reading $e$] to tell his secretary
   [t [t were unavailable]]
c. *which papers [t were unavailable [before you discovered e]]

The position of the before-phrase in (123a) is ambiguous, but the ambiguity is resolved in (123b), where the phrase is associated with the matrix clause and the embedded subject $t$ licenses the parasitic gap $e$; if the before-phrase is construed with the embedded clause in (123a), so that $e$ is c-commanded by $t$, the construction is excluded, as in (123c), where $t$ c-commands $e$. The exclusion of subject-licensing for parasitic gaps, then, seems to relate to an “anti-c-command” requirement of some sort.

In Chomsky 1982 examples such as (124), with PRO controlled by you, are cited as ungrammatical:

(124)
these are the articles that you knew [t were written by Bill] even without [PRO analyzing e]

Preposing the adjunct phrase as in the preceding example gives (125):

(125)
these are the articles that you knew [without analyzing e] [t were written by Bill]

This seems to have about the same status as (123b), which means that (124) should also be acceptable under the intended interpretation. I will put this question aside, along with a number of others concerning factors that enter into acceptability of parasitic gap constructions.

A further property of these constructions is that the parasitic gap shows all of the typical island effects. Consider such examples as (127a–k), assuming them to appear in the context (126):

(126)
this is the man John interviewed $t$ before ___

(127)
a. expecting us to tell you to give the job to e
b. expecting us to ask you which job to give to e
c. asking you which job to give to e
d. wondering who to ask which job to give to e
e. telling you that you should give the job to e
f. reading the book you gave to e
g. hearing about the plan you proposed to e
h. announcing the plan to speak to e
i. hearing about the plan to speak to e
j. expecting you to leave without meeting e
k. meeting the man in the office near e
The relative acceptability of these examples matches that of the corresponding examples with wh-movement, such as (128a–b) (corresponding to (127a–b)), etc.:

(128)

a. who did they expect us to tell you to give the job to t
b. who did they expect us to ask you which job to give to t

The matching is in fact quite close; thus, the CNPC cases (127h–i) of the noun-complement type are somewhat more acceptable than the corresponding cases (129f–g) of the relative clause type, and examples such as (127j) are somewhat less extreme violations than many of the others, just as is true of the corresponding cases with wh-movement (see (72), (63)).

In short, it seems clear that the parasitic gap construction involves empty operator movement, thus falling into the same category as adjective complements, purposive-rationale clauses, and many others that have been extensively investigated in recent years. In a construction such as (121a), for example, the structure must be something like (129), where O is an empty operator:

(129)
what did you file t [before [O [reading e]]]

This conclusion entails that the analysis in Chomsky 1982 cannot be correct. There it was assumed that the parasitic gap becomes a variable at S-Structure, locally bound by the operator of the real gap and thus falling within its scope. But that cannot be so if the parasitic gap construction involves a chain independent of the chain of the real gap.

It appears, then, that the parasitic gap construction involves an operation of chain composition:

(130)
If C = (α1, ..., αn) is the chain of the real gap and C’ = (β1, ..., βm) is the chain of the parasitic gap, then the “composed chain” (C, C’) = (α1, ..., αn, β1, ..., βm) is the chain associated with the parasitic gap construction and yields its interpretation.

The question of when parasitic gaps are licensed becomes, then, a question of the conditions under which chain composition is permissible.

Note that this conclusion eliminates much of the motivation for functional determination of empty categories, as discussed in Chomsky 1981, 1982. For additional argument against this approach, see Brody 1984. I have been assuming throughout that the approach is incorrect and that the features assigned to empty categories (like other features) do not change in the course of a derivation; see Chomsky 1985 for further discussion.

In Chomsky 1982 an argument against empty operator movement was suggested, based on examples such as (131a–c):

(131)
a. which book did you file t [without believing [Mary would like e]]
b. which book did you file t [without believing [e would please Mary]]
c. which book did you file t [without believing [that e would please Mary]]

The factual assumption was that (131b) was less acceptable than (131a); then (131b) could be considered an ECP violation, so that it is not formed by movement of an empty category, which would permit e to be properly governed by its antecedent. I noted that the status of (131c), which is considerably less acceptable than (131b), thus remained unexplained. The foregoing considerations suggest that the crucial distinction is between (131b) and (131c), the latter an ECP violation of the that-trace variety. What is now unexplained is the difference between (131a) and (131b) (if indeed it is real). These conclusions seem more true to the facts.

We have so far considered one major case of the parasitic gap construction, namely, adjunct parasitic gaps. Turning to the second major case, subject parasitic gaps such as (132), we find that here too there is evidence that parasitic gap constructions involve empty operator movement:

(132)
who would [a picture of e] surprise t

The properties of these parasitic gap constructions are somewhat different from those of the adjunct category, but again it appears that they exhibit the typical island effects. Consider, for example, the following cases:
(133) a. he’s a man that [anyone who talks to e] usually likes t
b. he’s a man that [anyone who tells people to talk to e] usually likes
c. *he’s a man that [anyone who meets people who talk to e] usually likes
d. *he’s a man that [anyone who asks when to talk to e] usually likes

Examples (133a) and (133b) are acceptable; island violations such as (133c) and (133d) are far worse, and the usual range of properties holds, though the examples appear to degrade more rapidly than the adjunct cases. We conclude, then, that this category of parasitic gaps also involves operator movement.

Further insight into the construction is given by such examples as (134a–c):

(134) a. he’s a man that [everyone who [gives presents to e]] likes t
b. *this is a book that [any man to whom [we’ll give e]] will like t
c. *he’s a man that [any present [they’ll give to e]] will please t

Compare wh-movement cases that yield phrases identical to those internally bracketed in (134):

(135) a. he’s a man that they wonder who [gives presents to e]
b. this is a book that they wonder [to whom [we’ll give e]]
c. *he’s a man that they wonder [which presents [they’ll give to e]]

Here (135a) and (135b) are typical Wh-Island Condition violations, whereas (135c) is a much more severe violation barred by other factors, as we have seen; recall (83). Presumably the same factors explain the status of (134c). Turning to (134a–b), we would expect both to be acceptable—in fact, comparable to (135a–b), which add a Wh-Island Condition violation. But although the conclusion is correct with regard to (134a), the unacceptability of (134b) is unexplained.

These examples are quite typical. The examples of subject parasitic gaps that appear in the literature are of the type of (134a), not (134b); structures of the latter type are uniformly unacceptable as parasitic gap constructions.

The correct generalization seems to be that subject parasitic gaps involve the VMH. Examples (134a–b) have the D-Structure represen-

(136) a. he’s a man that [everyone [\[\text{\text{CP}} \gamma \text{ [who gives presents to }\beta]]] likes \alpha
b. *this is a book that [any man [\[\text{\text{CP}} \gamma \text{ [we’ll give }\beta \text{ [to whom]]]}] will like \alpha

The element \alpha moves to the specifier position of the matrix relative clause, yielding the structures (137a–b), where t is the real gap:

(137) a. he’s a man that [everyone [\[\text{\text{CP}} \gamma \text{ [who gives presents to }\beta]]] likes t
b. this is a book that [any man [\[\text{\text{CP}} \gamma \text{ [we’ll give }\beta \text{ [to whom]]}] will like t

By the VMH, who may remain in situ at S-Structure in (137a) so that \beta moves to \gamma, yielding (138), with e the parasitic gap bound by the empty operator O:

(138) he’s a man that [everyone [\[\text{\text{CP}} O \text{ [who gives presents to e]]}] likes t

But in (137b) the wh-phase to whom moves to \gamma, yielding (139):

(139) this is a book that [any man [\[\text{\text{CP}} [to whom] \text{ [we’ll give }\beta \text{ \_t]})]] will like t

Now it is impossible for \beta to move to the specifier position of CP. We cannot derive a parasitic gap construction with an operator-variable structure, so that (134b) is ungrammatical.

Recall that in (138) who must move to the specifier position of CP at LF. Therefore, either parasitic gaps are licensed at S-Structure and O is eliminated by LF-movement, or O vacates its position prior to LF-movement of who. There is good evidence that parasitic gaps are licensed at S-Structure; thus, wh-in-situ and quantifier phrases do not license parasitic gaps (see Chomsky 1982), so that the chain composition algorithm presumably applies at S-Structure. It also seems reasonable to suppose that the parasitic gap construction must appear at LF for appropriate interpretation, so presumably O does move prior to LF, to a position in which it still locally binds the parasitic gap e. There are several possibilities, but I will not pursue them here; for concreteness, let us assume that O moves to the specifier position of the relative clause, adjoining to the operator binding the real gap.
We conclude that a parasitic gap construction involves two chains 'e' and 'c', where 'c' is the chain of the real gap and 'e' is the chain of the parasitic gap. These are formed into a single chain ('e', 'c') in accordance with a chain composition condition that is still to be formulated and that must be satisfied at S-Structure. This requirement holds for both adjunct and subject parasitic gap constructions. The VMH holds. Apart from this, no special assumptions are required to derive the array of evidence just reviewed.

The island properties that hold of both types of parasitic gaps provide direct evidence that operator movement is involved in both cases. The fact that the VMH appears to hold crucially for subject parasitic gaps adds further evidence of a more subtle nature for this conclusion. For further evidence, see Montalbetti 1984.

I have been assuming, following Taraldsen's original study of parasitic gaps, that there is a crucial distinction between the real gap, in the position more accessible to extraction, and the parasitic gap—that these are not simply "multiple gap" constructions. Evidence for this assumption is provided by Kearney (1983), who notes the following cases:

(140)

a. which books about himself did John file t [before Mary read e]

b. "which books about herself did John file t [before Mary read e]

Example (140a) is a normal parasitic gap construction, but (140b) is ungrammatical. It follows, then, that the wh-phrase in (141a), (141b) is extracted from the position of t, the real gap, not from the position of the parasitic gap e. As Taraldsen had originally assumed, the latter is truly "parasitic."

Further evidence that may bear on the presence of an operator in parasitic gap constructions is provided by Contreras (1984) and Hudson (1984). Previous literature had assumed that in a parasitic gap construction (141), the real gap t does not c-command the parasitic gap e:

(141)

\[ O [NP [vp \ldots t \ldots [Adjunct \ldots e\ldots]]] \]

But it might be argued on the basis of binding-theoretic considerations that in fact t does c-command e, as illustrated by examples such as (142a–c):

(142)

a. they visited us [before we admitted those students]
b. we interviewed them [before we admitted those students]
c. we interviewed [their parents] [before we admitted those students]

In (142a) they cannot bind those students, which it c-commands, a typical instance of binding theory condition C. In (142c), however, this constraint does not hold because their does not c-command those students. In (142b) binding of those students by them appears to have a status intermediate between that of the ungrammatical (142a) and the grammatical (142c). If this fact is taken to show that in (142b) them does c-command those students, then t c-commands e in (141). The structure of (141), then, is either (143a) or (143b):

(143)

a. O [NP [vp \ldots t \ldots [Adjunct \ldots e\ldots]]]
b. O [NP [vp[vp \ldots t \ldots] [Adjunct \ldots e\ldots]]]

If the structure is (143a), then the Adjunct phrase is a sister to t and is c-commanded by t. If the structure is (143b), then the Adjunct phrase is within VP but outside of some "small VP" VP' and is perhaps "weakly c-commanded" by t, yielding a "weaker" violation of condition C of the binding theory in (142b). The latter possibility requires some sharpening of the notion of c-command of a sort that has been proposed in other connections.

In either case the anti-c-command requirement of earlier work would not be strictly correct, and again the analysis in Chomsky 1982, which takes the parasitic gap to be locally bound by the real operator O of (141), would be undermined. The problem is overcome if we assume the empty operator analysis. The question we now face, again, is one of determining the conditions on chain composition as in (130).

Engdahl (1984) and Hudson (1984) provide additional examples that appear to be incompatible with the anti-c-command requirement. Consider the sentence (144):

(144)

which men did the police warn t [cp that they were about to arrest e]

This has a parasitic gap interpretation, with e the parasitic gap licensed by the real gap t.45 Here CP is a governed complement of warn and hence, it might be assumed, a sister to warn, so that t c-commands e. Then (144) would be another case violating the anti-c-command re-
requirement, again leading to the conclusion that operator movement is involved in the parasitic gap construction.

Luigi Rizzi (personal communication) observes that the examples in (142), (144) are not entirely persuasive as counterevidence to the anti-c-command requirement. In both cases the phrase with the parasitic gap might be outside the immediate c-command domain of the real gap (as in (143b)), and with a comparable analysis of (144) in accordance with Stowell’s (1981) assumptions on Case resistance). Furthermore, the status of (142b) might be attributed to the often degraded character of backward pronominalization. We have no clear evidence, then, that the anti-c-command requirement on parasitic gaps of Chomsky 1982 and other studies must be rejected, though we have good evidence that two operator-headed chains are composed in parasitic gap constructions.

Consider the following examples with a structure similar to (144):

(145)

a. who did you tell t [that you would visit e]
b. who did you ask t [why you should visit e]
c. who did you ask t [how you should address e]
d. who did you ask t [that I should visit e]
e. who did you convince t [that Tom should visit e before we talk to e]
f. who did you convince t [that Tom should visit e before we talk to e ‘]"

Example (145a) is presumably on a par with (144). Examples (145b) and (145c) seem considerably worse under the intended interpretation. If so, the reason could be that the pre-IP position is filled by the wh-phrase in (145b), (145c), so that operator movement is barred. Case (145d) is more acceptable than (145e), suggesting that the operator in the before-phrase is too far from the real gap t for the chain composition procedure to operate. Example (145f), if acceptable, suggests that a double process of chain composition may have taken place. Further questions arise when we replace the clausal complement of convince with an infinitival phrase (for example, who did you convince to visit Bill before we talk to e) or when we consider constructions such as (146a–c):

(146)

a. who did you believe [t to have visited Bill [before we talked to e]]
b. who did you believe [t visited Bill [before we talked to e]]
c. who did you warn t [e would visit Bill]

I will put aside these and many other similar questions that appear difficult to resolve, in part because the facts are often quite obscure.

Though many questions remain, I will assume that operator movement is involved in parasitic gap constructions, as discussed above, so that a parasitic gap, although truly parasitic on the real gap in Taraldsen’s sense, is a “real gap” in its own chain, headed by an empty operator. The major question, then, is to determine the conditions under which chain composition can take place at S-Structure, in accordance with (130), repeated here:

(130)

If ‘c = (α₁,...,αₙ)’ is the chain of the real gap, and ‘c’ = (β₁,...,βₘ)’ is the chain of the parasitic gap, then the “composed chain”

(‘c’, ’c’) = (α₁,...,αₙ,β₁,...,βₘ)

is the chain associated with the parasitic gap construction and yields its interpretation.

A large class of cases would be handled by adapting the assumption of earlier work that chain composition is possible only if the anti-c-command requirement is satisfied: that is, the real gap may not c-command the parasitic gap. We cannot derive this condition exactly in the manner of Chomsky 1982, though similar arguments are possible. Thus, consider the requirement, mentioned above, that a variable must be free in the domain of the head of its chain, a formulation of condition C of the binding theory that suffices to block “improper movement” (see note 20). If this condition holds of composed chains, then the anti-c-command requirement follows. Or suppose that A-chains (chains headed by an A-position) must satisfy the following Chain Condition: 46

(147)

A maximal A-chain (α₁,...,αₙ) has exactly one Case-marked position (namely, αᵢ) and exactly one θ-marked position (namely, αₙ).

Assume now that the condition (147) holds of any chain (α₁,...,αₙ) where the links meet the c-command condition, hence uniformly for noncompound chains and for a subchain of a composed chain satisfying
the c-command requirement for links. It then follows that the real gap cannot c-command the parasitic gap; otherwise, the result will be a maximal A-chain headed by the real gap and violating the Chain Condition (147).

Either of these approaches assumes that examples such as those in (142) and (144) do not violate the anti-c-command requirement. Let us consider alternatives that might be pursued if such examples do violate the anti-c-command requirement. One possibility is that for chain composition between $\mathcal{C}$ and $\mathcal{C}'$ to take place in (130), $\beta_i$ must be subjacent to $\alpha_n$; then Subjacency will hold for each link of the composed chain ($\mathcal{C}, \mathcal{C}'$). This condition will distinguish between such cases as (148a) and (148b):

(148)

a. what did you file t [vp before [O [you read e]]]

b. *who [t [vp spoke to you [vp before [O [you met e]]]]]

In (148a) $\mathcal{C} = (what, t)$ and $\mathcal{C}' = (O, e)$ (omitting intermediate traces), and $O$ is subjacent to $t$, separated from it by only one barrier—namely, PP. In (148b), however, two barriers separate $O$ from $t$—namely, PP and VP. Here we cannot appeal to the successive cyclic option that in effect voids VP as a barrier in overt movement cases, since chain composition involves no movement.

The same principle will apply in more complex cases such as (123b), repeated here:

(123)

b. which papers did John decide [vp before O [reading e]] to tell his secretary [t' [I were unavailable]]

Again omitting several intermediate traces, (123b) has the two chains $\mathcal{C} = (which\ papers, t', t)$ and $\mathcal{C}' = (O, e)$, and $O$ is subjacent to $t$; there is only one barrier—namely, PP—which includes $O$ but not $t$. In fact, of the adjunct cases discussed so far, only those of the form (144) with the subject taken as the real gap violate the condition that chain composition is admissible if the operator of $\mathcal{C}'$ is subjacent to the final term of $\mathcal{C}$:

(149)

*who t [vp warned the men [cp that they were about to arrest e]]

Here only VP is a barrier for the operator of $\mathcal{C}'$, so that the subjacency condition on chain composition is satisfied though the sentence is ungrammatical.

Though this approach comes rather close to what is required, still it seems incorrect, not only because of the residual empirical problems but also because the failure of c-commanding subjects to license parasitic gaps, as in (148b), is a far stronger effect than subjacency. In fact, it has the extreme character of a government violation of the ECP variety. Suppose, then, that we slightly modify the approach just sketched, introducing the notion "0-subjacency" defined earlier (see (59)): in chain composition as in (130), forming ($\mathcal{C}, \mathcal{C}'$), the head of $\mathcal{C}'$ must be 0-subjacent to the final element of $\mathcal{C}$. Thus, $\beta_i$ must be 0-subjacent to $\alpha_n$ in (130).

The property of 0-subjacency is essentially government minus the c-command requirement, and we might suppose that this fact explains the rigid character of violations. The intuitive sense of the proposed condition is that in a composed chain ($\mathcal{C}, \mathcal{C}'$), not only must each link of $\mathcal{C}$ and $\mathcal{C}'$ satisfy the weak 1-subjacency condition as in any chain, but the two chains must be linked under an even stronger 0-subjacency condition akin in its properties to government.

This revision accommodates (149) straightforwardly, since a barrier separates the operator of the parasitic gap from the real gap. But a problem arises with respect to the standard example (148a):

(148)

a. what did you file t [vp before [O [you read e]]]

Here $O$ is separated from $t$ by the barrier PP and is therefore not 0-subjacent to it. Notice, however, that nothing prevents $O$ from adjoining to PP, yielding (150):

(150)

what did you file t [vp O [vp before [e' [you read e]]]]

Here $O$ is indeed 0-subjacent to $t$, as required.

In discussing the adjunct island case of the CED, we ignored this option, but illegitimately on our assumptions, since it was available. This has the effect of voiding the Adjunct Condition entirely. Thus, consider again the examples (63a–b):
(63)
a. he is the person to whom [IP they left [before speaking t]]
b. he is the person who [IP they left [before speaking to t]] (before meeting t)

In (63a) to whom can adjoin to the adjunct before-phrase, then moving to its final position, crossing no barriers at any point; the same is true of (63b). In fact, as we saw, (63b) is fairly acceptable, whereas (63a) is unacceptable. We assumed that the relative acceptability of (63b) was the problem, taking it to be a Subjacency violation. Suppose, however, that the analysis just suggested is correct. Then it is not the acceptability of (63b) but rather the unacceptability of (63a) that is the problem. Perhaps only NP is permitted to adjoin to the PP adjunct before-phrase. If some plausible reason can be found for this, then we might assume the option of attachment to PP in successive cyclic movement to be available, as would be expected on our earlier assumptions.

We must, however, ensure that an ECP violation still results when an adjunct is extracted from an adjunct phrase, as in (65):

(65)
a. *how did you leave [before fixing the car t]
b. *who left [before fixing the car how]
c. who left [before fixing what]

This will follow even allowing adjoinment to PP under either of two assumptions: (1) only NP is permitted to adjoin to the PP adjunct position (see above); or (2) we define “government” in terms of domination, as in (14), rather than in terms of exclusion, as in (18). The latter assumption raises numerous problems, as we have seen.

This account still leaves questions open concerning subject parasitic constructions such as (132), (134a). If the 0-subjacency condition on chain composition is correct and if subject parasitic gap constructions fall under it, then the empty operator must move out of the subject position (which is a barrier) at S-Structure, where chain composition is licensed. As noted earlier, several possibilities might be pursued, but the question remains obscure.

Many further questions arise in addition to those already noted. For example, it is clear, as Luigi Rizzi (personal communication) has pointed out, that the subject of a small clause cannot license a parasitic gap, as illustrated in (151):

(151)
a. I consider [John [AP absolutely certain [CP that we can help him]]]
b. *who do you consider [t [AP absolutely certain [CP that we can help el]]]

The result follows at once from the anti-c-command requirement but will follow from the 0-subjacency condition on chain formation only if we assume that the empty operator of the parasitic gap does not move beyond CP; this would follow from the basic condition (6) on adjunction if AP is taken to be the argument selected by consider and heading the small clause, as in Stowell’s theory, assumed earlier.

Rizzi also notes the following pair in Italian:

(152)
a. che studente hai convinto t [che puoi aiutare e]  
a’. which student did you convince t [that you could help e]  
b. *che studente [α è stato convinto t [che puoi aiutare e]]  
b’. which student [α was convinced t [that you would help e]]

Example (152a) is an acceptable parasitic gap construction on a pair with (144), but (152b) is ungrammatical. Here α is the empty category subject permitted in this null subject language. The anti-c-command requirement could be construed so as to permit (152a) while excluding (152b) if we make the standard assumption that α is coindexed with t, forming a kind of chain, and assume the structure (153) for the VP so that t does not c-command CP:

(153) [vṛ[convinto t] [CP che puoi aiutare e]]

To accommodate these facts within the 0-subjacency hypothesis would require a modification of the chain composition condition to (154):

(154) The operator of the parasitic gap must be 0-subjacent to the head of the A-chain of the real gap.

Clearly many questions remain open and are well worth pursuing, since the parasitic gap constructions are particularly revealing with respect to UG for reasons discussed in Chomsky 1982.

Summarizing the discussion of parasitic gaps, we have strong evidence that they involve chain composition with an operator binding the parasitic gap. Chain composition is subject to a further condition,
perhaps the requirement that a variable be free in the domain of the head of its chain or the general Chain Condition (147) as construed earlier, yielding the anti-c-command condition in either case, or perhaps a requirement that the operator binding the parasitic gap be "sufficiently close" to the real gap, perhaps under the condition of 0-subjacency. A number of properties of the construction, some fairly intricate, then follow.

11. A-Chains

So far I have restricted attention to A-movement of maximal projections, apart from brief mention of V-raising to C, as in (155):

(155) [how tall] is John

Let us now turn to the question of head movement, asking how it might fit into the proposed framework. The optimal assumption would be that movement of zero-level categories falls under the principles that apply to movement of maximal projections: in particular, the trace must be properly governed. Let us examine the consequence of this assumption, within the framework already sketched.

It is clear that head movement is highly "local" and that violations of locality are far stronger than Subjacency violations. Thus, consider the D-Structure representation underlying (155):

(156) [CP ... [C [IP NP [I [VP V ...]]]]]

First V (= be) moves to the head position I of IP, amalgamating with I, and then this newly formed inflected element V₁ moves to C, the head position of CP, yielding (155) after wh-movement. Since I is lexically identified as an affix in (156), movement of V to I forming V₁ is permissible—indeed, it is obligatory, since otherwise the affix would lack a bearer. Thus, V cannot move directly to the position of C in (156). If I were a nonaffix—for example, the modal will—then V could not adjoin to I, but movement to the position of C must still be barred, or we could derive (157):

(157) [how tall]₁ be₁ [IP John [IP will [VP t t]]]

In general, the V head of VP can reach the head position C of CP only if it first passes through the head position I of IP, amalgamating with inflection.

Since movement of V is possible, its trace must be properly governed, and since the movement is local, this proper government must be by antecedent government, not θ-government. It follows that V-raising as in (155) is permissible, but V-lowering is not, and that such head raising must be sufficiently local as to guarantee antecedent government.

Notice that V is not θ-marked by I; if it were, V would be properly governed and "long movement" would be permitted. This conclusion is inconsistent with the combination of two previous assumptions: (i) that I θ-marks its VP complement; (ii) that qualification (35) holds on the Sisterhood Condition for θ-government. One or the other of these must therefore be abandoned. We will see directly that there is good reason to preserve (i) and that (ii) is untenable. We therefore maintain (i) and abandon (ii), thus concluding that V is not θ-marked by I, as required.

Given these assumptions, V-raising to yield (157) produces an ECP violation, since VP and (by inheritance) IP are barriers. If VP were L-marked by will, VP would not be a barrier, nor would IP, since it can be a barrier only by inheritance, and direct raising of be to yield (157) would be legitimate. We therefore must maintain the assumption that I does not L-mark its complement; L-marking is restricted to lexical categories. Note that the illicit movement in (157) cannot be blocked by the Minimality Condition, because of the defective character of I.'

Suppose that first V moves to the head position I of IP, amalgamating with I to form V₁, and then V₁ moves to C. The movement of V₁ to C crosses no barriers to government, since IP can be a barrier only by inheritance. Consider movement from V to I, yielding (158):

(158) [IP V₁ [VP t ...]]

Movement from V to I crosses VP, which should be a barrier to antecedent government of t by V₁. But the fact that this movement is legitimate shows that V₁ must L-mark VP in (158), voiding barrierhood.

The concepts relevant here are L-marking and θ-government, which we had construed as follows (ignoring the qualification (35)):
36. There might, however, be Case-theoretic consequences under other conditions, for example, if the matrix verb had an extra Case to assign or if the NP object could escape the Case Filter in a different way. For discussion of such possibilities, see Baker 1985, Massam 1985.

37. But see does not L-mark Bill in this case, since SPEC-head agreement does not hold between the specifier and the head of the NP in (93).

38. For further discussion over a broader range of constructions, see Cinque 1980, Torrego 1985, and references cited.

39. More specifically, that it lacks φ-features; see section 5.

40. The case would then be analogous to (106b), where at LF a trace of how is not properly governed by how (or its trace) in the specifier position of the embedded CP.

41. Independently, the Minimality Condition induces an ECP effect, as in the case of (95).

42. This restriction might be too strong for UG, however; thus, it is inconsistent with the analysis that Lasnik and Saito present for Polish. Perhaps the multiple wh-movement they discuss can in part be assigned to the PF component.

43. We interpret (117) to permit movement through any specifier position as long as the wh-phrase ultimately reaches a position occupied by wh-. Lasnik and Saito give an analysis of (114e) in these terms.


45. (144) must be interpreted with warn transitive; otherwise, the example is irrelevant. The problem is overcome with a pure transitive such as convince in place of warn, but now the sentence seems less acceptable (Richard Hudson, personal communication).

46. On the status of such a condition, see Chomsky 1985.

47. Note that subjacency does not entail c-command.

48. See Baker 1985 for extensive discussion. One illicit derivation still admitted here would be raising of the head of NP to V, formed by V-raising to I in a CP-deletion structure such as (i), where NP is L-marked by V':

(i) ...V' [p NP [r. V, VP]]

Perhaps antecedent government requires not merely m-command but the stronger requirement of c-command (see sections 3 and 12). I assume that in the configuration (i), the head of NP could raise to V'.

49. See Travis 1984. Recall that movement of head to specifier is barred; see (4).

50. We might assume, then, that the head-marking properties of I block percolation of the head-marking properties of V to V1.

51. The latter conclusion appears to be necessary for the copula, as we will see directly.
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