Given an economic condition like Procrastinate, we would expect all movement to be covert. When movement is overt, it must have been forced to operate 'early' by some special requirement. Chomsky (1993;1994:1995) codes this requirement into 'strong features'.

A strong feature that is not checked in overt syntax causes a derivation to crash at LF. Chomsky (1993)
A strong feature that is not checked (and eliminated) in overt syntax causes a derivation to crash at LF. Chomsky (1994)
A strong feature must be eliminated (almost) immediately upon its introduction into the phrase marker. Chomsky (1995, ch.4)

Justification for (A): "...the position of Spell-Out in the derivation is determined by either FF or LF properties, these being the only levels, on minimalist assumptions. Furthermore, parametric differences must be reduced to morphological properties if the Minimalist Program is framed in the terms so far assumed. ... we expect that at the LF level there will be no relevant difference between languages with phrases overtly raised or in situ (e.g., wh-phrases or verbs). Hence, we are led to seek morphological properties that are reflected at PF."

Technological details: "...'strong' features are visible at PF and 'weak' features invisible at PF. These features are not legitimate objects at FF; they are not proper components of phonetic matrices. Therefore, if a strong feature remains after Spell-Out, the derivation crashes...Alternatively, weak features are deleted in the PF component so that PF rules can apply to the phonological matrix that remains; strong features are not deleted so that PF rules do not apply, causing the derivation to crash at FF."

Justification for (B) (apparently empirical rather than conceptual):
"John read what?
...Spell-Out can apply anywhere, the derivation crashing if a 'wrong choice' is made...If the phonological component adds a lexical item at the root, it will introduce semantic features, and the derivation will crash at FF. If the covert component does the same, it will introduce phonological features, and the derivation will therefore crash at LF...

Suppose that root C (complementizer) has a strong feature that requires overt wh-movement. We now want to say that unless this feature is checked before Spell-Out it will cause the derivation to crash at LF to avoid the possibility of accessing C after Spell-Out in the covert component."

Technology: "Slightly adjusting the account in Chomsky (1993), we now say that a checked strong feature will be stripped away by Spell-Out, but is otherwise ineliminable."

Spell-Out: C [strong Q] John read what *LF
Spell-Out: John read what
LF: C [strong Q] John read what *LF

Justification for (G) (contra (A)): "...formulation of strength in terms of PF convergence is a restatement of the basic property, not a true explanation. In fact, there seems to be no way to improve upon the bare statement of the properties of strength. Suppose, then, that we put an end to evasion and simply define a strong feature as one that a derivation 'cannot tolerate': a derivation D-2 is canceled if it contains a strong feature..."

Technology: "A strong feature...triggers a rule that eliminates it: [strength] is associated with a pair of operations, one that introduces it into the derivation...a second that (quickly) eliminates it."

Ellipsis provides potential evidence for (A), if it is, as suggested by Chomsky and Lasnik (1993), a PF deletion process.

Technological details: "...formulation of strength in Chomsky (1993;1994;1995) codes this requirement into 'strong features'.

Pseudogapping as overt raising to Spec of Agr, followed by deletion of VP. [Lasnik (1995)]

NP-raising to Spec of Agr, ('Object Shift') is overt in English. [Koizumi (1993;1995), developing ideas of Johnson (1991)]

You might not believe me but you will Bob
NP Agr, you
Agr, TP / \
T will / \ V
\ V'
V
\ V
NP Agr, prove
Agr, TP
Bob
\ V'
\ V
\ V
\ V
S.C. NP
believe t

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\ V
NP Agr, prove
Agr, TP
Bob
\ V'
\ V
\ V
\ V
S.C. NP
believe t
Suppose the strong feature driving V-raising resides in the lexical V rather than in the higher 'shell' V. The strong feature of the verb must either be checked by overt raising to the shell V or be contained in an ellipsis site. PF deletion could eliminate the unchecked strong feature.

Sluicing - WH-Movement followed by deletion of IP (abstracting away from 'split Infl' details). [Saito and Muraseg (1990), Lobeck (1990)]

Speaker A: Mary will see someone.
Speaker B: I wonder who Mary will see.
Speaker A: Mary will see someone.
Speaker B: Who Mary will see?

*Who Mary will see?
Who will Mary see?

Suppose that in a matrix interrogative, it is Infl that has a strong feature, rather than C. The strong feature of Infl must either be checked by overt raising to the interrogative C or be contained in an ellipsis site. PF deletion could eliminate the unchecked strong feature.

Infl-raising to C is uncontroversially overt in normal matrix interrogatives. NP-raising to Spec of Agr, on the other, hand is standardly assumed to be covert in English. Lasnik (1995), based on Lasnik and Saltos (1991) [see also Postal (1974) and Wyngaard (1989)] and den Dikken (1995), argues that such movement is, indeed, overt.
"We...virtually derive the conclusion that a strong feature triggers an overt operation to eliminate it by checking. This conclusion follows with a single exception: covert merger (at the root) of a lexical item that has a strong feature but no phonological features..." Chomsky (1995)

(54) (55) is thus still problematic.

*John read what

To prevent this, covert insertion of strong features must be barred. Chomsky proposes to do this with the economy principle (57): α enters the nummeration only if it has an effect on output.

(56) "Under [57], the reference set [for economy comparisons] is still determined by the numeration, but output conditions enter into determination of the numeration itself..." Look-ahead?

(57) "With regard to the PF level, effect can be defined in terms of literal identity...α is selected only if it changes the phonetic form. At the LF level the condition is perhaps slightly weaker, allowing a narrow and readily computable form of logical equivalence to be interpreted as identity."

(58) Clearly, covert insertion of a C will have no phonetic effect. Will it have an effect at the LF output?

(59) If it will, then covert insertion is allowed, and we generate (55) with structure (64):

C  [α: John read what]

If it will not, then we generate (55) with structure (66):

α, [John read what]

(60) (67) violates no morphological requirements, and, if C has no effect on output, then it should mean exactly what did John read?

(61) "...the interface representations (n,λ) are virtually identical whether the operation [covert insertion of strong features] takes place or not. The PF representations are in fact identical, and the LF ones differ only trivially in form, and not at all in interpretation."

Chomsky (1995) proposes that strength is always a property of an 'attracting' head, never a property of the item that moves. The above analyses of Pseudogapping and Sluicing are incompatible with that proposal.

(62) There is a possible alternative analysis, based on the Chomsky (1995) theory of pied-piping, particularly as explicated by Ochi (1997).

(63) "For the most part - perhaps completely - it is properties of the phonological component that require pied-piping. Isolated features and other scattered parts of words may not be subject to its rules, in which case the derivation is canceled; or the derivation might proceed to PF with elements that are 'unpronounceable,' violating IF." Chomsky (1995)

(64) "Just how broadly considerations of PF convergence might extend is unknown, but further, better understanding of morphology and the internal structure of phrases. Note that such considerations could permit raising without pied-piping even overtly, depending on morphological structure..."

(65) Matrix interrogative C might then contain the strong feature, with the matching feature of InfI raising overtly to check it. This leaves behind a phonologically defective InfI, which will cause a PF crash unless either pied-piping or deletion of a category containing that InfI (Sluicing) takes place.

Similarly for the feature driving overt V-raising: it could be a strong feature of the higher V. Once the matching feature of the lower lexical V is 'attracted,' the lower V becomes defective. A PF crash will be avoided if either pied-piping or deletion of a category containing the lower V (VP Deletion = Pseudogapping in the relevant instances) takes place.

(70) However, there is independent evidence for strong features residing in moving categories.

(71) For example, Bošković (1997) shows that in Serbo-Croatian, WH-phrases have a strong focus feature: they all have to move overtly.

(72) a Ko sta gdje kupuje?
who what buys

*b Ko kupuje sta gdje?
what buys what where?

*b Ko sta kupuje gdje?
* Ko gdje kupuje sta?

Bibliography


