1. Background

Recall: If there are sequential syntactic levels L_i, L_{i+1}, then operations applying at L_i will invariably precede operations applying at L_{i+1}; consequently, L_i-operations feed and bleed L_{i+1}-operations whereas L_{i+1}-operations counter-feed and counter-bleed L_i-operations.

Observation: Exactly the same kinds of effects will arise when operations applying in the syntactic component proper interact with operations applying in some pre-syntactic domain (e.g., the lexicon), and with operations in some post-syntactic domain (PF, LF).

1. Current minimalist model of grammar

\[ \begin{array}{c}
\text{PF} \\
\text{LF} \\
\text{Syntax} \\
\text{Lexicon}
\end{array} \]

2. History

Pullum's (1979) generalizations:

Some operations apply in the syntax; other rules apply at interfaces (before or after syntax).

- Preyclic (pre-syntactic, lexicon-oriented) operations will never be fed or bled by syntactic operations, and will always feed and bleed these.
- Postyclic (post-syntactic, phonology-oriented) operations will always be fed and bled by cyclic (genuinely syntactic) operations, and will always counter-feed and counter-bleed these.

2.2. Postyclic Operations

Observation:

Postyclic rules can circumvent the Strict Cycle Condition (i.e., they can target properly embedded positions).

2.2.1. Affix Hopping and VP Deletion

(5) Ernest wrote a novel and Claude did too

Question:

Given that do-support applies only so as to provide a host for an otherwise unattached inflectional affix, how can (5) be derived from (6-a)?

(6) a. Ernest wrote a novel and Claude wrote a novel too  
   b. Ernest PAST write a novel and Claude PAST write a novel too

Answer:

- (5) is derived from (6-b), with Affix Hopping applying after VP deletion.
- Affix Hopping cannot simply be ordered after VP deletion in the syntax proper because this would give rise to a Strict Cycle Condition violation (Affix Hopping affects an embedded structure).
- The problem vanishes if Affix Hopping applies postcyclically (in current terminology: at PF), whereas VP deletion applies cyclically, in the syntax.
- Thus, Affix Hopping counter-bleeds do-support (and VP deletion feeds do-support).

Note:

The domain of preyclic rules bears a distant resemblance to what is nowadays known as a \textit{numeration}. (So all of this is not necessarily about the lexicon, but about another pre-syntactic component.)
2.3. 

Preposition Deletion

(7) Deletion of P with CPs after certain predicates:

a. I am absolutely sure [PP of it/that/what I told you]

b. *I am absolutely sure [PP it/that/what I told you]

c. *I am absolutely sure [PP of that God exists]

d. I am absolutely sure [PP that God exists]

Observation:

Passive and tough-movement bleed preposition deletion.

(8) Passive:

a. They didn’t agree on it.

b. They didn’t agree (*on) that Jim should be the party leader.

c. That Jim should be the party leader wasn’t agreed on at the first ballot.

(9) Tough-Movement:

a. It is never easy to be sure of it.

b. It is never easy to be sure (*of) that Harold will do what he has promised.

c. That Harold will do what he has promised is never easy to be sure of.

Assumption:

Preposition deletion is a postcyclic (in current terminology: PF-) operation.

(10) Hypothesis (Pullum (1979, 370)):

If any syntactic rule R is phonologically conditioned, then R is postcyclic.

3. Interface Levels: PF and LF

3.1. The Stylistic Component

Assumption:

Certain operations (like Heavy NP Shift, Extraposition, Scrambling, etc.) that do not seem to interact with well-established syntactic operations have been argued to apply in a separate (later) stylistic component.

"If [the ordering condition of post-verbal material in English] is to be put into the grammar of English, it should be segregated from the normal type of transformational rules to whose output it applies, and placed in a component by itself, a component which I tentatively propose to call the stylistic component. [...] I can suggest two other rules that seem to be likely candidates for inclusion in it. The first is the Scrambling Rule in Latin and in other “free word order” languages [...] The second is the condition which must be imposed on prenominal adjectives with respect to their closeness to the noun they modify:

(Ross (1967, 3.1.1.3.3))

"Thus among the PF-rules there may be rules of movement, rearrangement, etc., which are sometimes called “stylistic rules”:

(Chomsky (1981, 18))

(11) Extraposition and the CNPC:

a. *[DP Welches Buch] hat sie dort [DP einen Mann [CP4 der3 C TP t3]] which book has she stayed there a man who read

b. *[DP Welches Buch] hat sie [VP [VP dort [DP einen Mann t4]] which book has she stayed there a man met]

Historical note:

For most of the operations that were at one point classified as “stylistic”, evidence has emerged that they do interact with other syntactic operations after all. For instance, this holds for scrambling in free word order languages.

(12) Scrambling in German creates Freezing effects (i.e., bleeds extraction):

a. Wo du nicht du [CP t1] dass dieser [PP t1 mit ] what think you that no-one has counted

b. *Wo du nicht du [CP t1] dass [PP t1 mit ] keineter2 gerechnet hat ] what think you that with no-one counted has

(13) Freezing (Wexler & Culikover (1980)):

A moved item is a barrier for extraction.

(14) Scrambling in Hindi circumvents Weak Crossover effects (i.e., feeds bound variable pronoun licensing) (Mahajan (1994)):

a. **Uskē1 maalīk-ne koān sii kitaāb1 phēNkk diī its author-ne which book throw away

b. koān sii kitaāb1 maalīk-ne t1 phēNkk diī which book its author throw away

(15) Constraint on Bound Variable Pronouns (Heim & Kratzer (1998)):

A pronoun that is interpreted as a bound variable must have an A-binder in syntax.

3.2. Head Movement at PF

Assumption (Chomsky (2001, 37-38)):

Head movement is not a syntactic operation; it applies at PF.
Arguments for head movement at PF:

1. “The interpretive burden is reduced if, say, verbs are interpreted the same way whether they remain in situ or raise to T or C [...] More generally, semantic effects of head raising in the core inflectional system are slight or nonexistent.”

2. It is unclear how one and the same type of feature (a “strong” feature, e.g.) can effect two different operations viz., XP movement and head movement. Why can, e.g., the trigger for V-to-T movement not be satisfied by VP-to-SpecT movement?

3. Head movement violates well-established syntactic constraints: The moved item does not c-command its trace, the Strict Cycle Condition is not respected, and it cannot apply iteratively (assuming extraction to be excluded).

Note:
The assumption that head movement does not have semantic effects has been disputed (see, e.g., Grewendorf (2002), Lechner (2006), Haider (2010)), but it’s worth noting that Chomsky’s observation that syntactic head movement (conceived of as adjunction to some other head) is inherently counter-cyclic, and that this problem with the Strict Cycle Condition goes away if the operation takes place at PF. This is more or less exactly as in Pullum’s argumentation above. Furthermore, an inability to feed semantic interpretation is exactly what one would expect if head movement (as a PF operation) comes too late: By assumption, head movement counter-feeds interpretation.

3.3. PF Movement of XPs

Ref: Sauerland & Elbourne (2002)

Assumption:
Certain kinds of movement can take place either in the syntax or at PF. The latter accounts for instances of total reconstruction – the movement is invisible to LF. Thus, PF movement counter-feeds scope-taking.

(16) a. **Total reconstruction only:**
An Austrian is likely to win the gold medal
b. **Partial reconstruction:**
Which relative of hers did every student invite to the final?

3.3.1. British English Plural Agreement

(17) a. A northern team is likely to be in the final.
\( \exists > \text{likely, likely} \)
b. A northern team is likely to be in the final.
\( \exists > \text{likely, *likely} \)
c. There is likely to be a northern team in the final.
d. *There is likely to be a northern team in the final.

Analysis:
1. This kind of special agreement is not triggered by a morphosyntactic [number] feature, but by a semantic [mereology] feature (parts and wholes).
2. Agreement of T and a subject DP can be effected by either movement of the subject DP to SpecT in the syntax, or by feature raising in the LF branch.

3. Feature raising in the LF branch is not an option for the [mereology] feature (cf. (17-d)).
4. Therefore, the only way for mereological plural agreement to take place is to have subject DP movement in the syntax (“in the stem”).
5. This precludes scope reversal (i.e., total reconstruction).

3.3.2 Bars’s Generalization

(18) Bars’s Generalization (Bars (1986), Lechner (1998), Sauerland & Elbourne (2002), Bhatt & Davay (2007), Needleman & van de Koot (2010), Heck, Assmann (2012)): A quantified item in a moved remnant XP \( \alpha \) cannot take scope, via reconstruction, over an item \( \beta \) that has undergone movement from \( \alpha \).

(19) Remnant VP topicalization and scrambling in German:

a. Jedes Buch hat sie ihrem Studenten gegeben \( \forall > \exists \)
   every book is assigned to student, given
b. \([VP_x, \text{Jedem Studenten } t_1 \text{ gegeben }] \text{ that } \text{has } [DP_x \text{ ein Buch }] t_2 \text{ given} all students are assigned to a book, given
   \( \forall > \exists, \exists \forall \)

(20) Remnant wh-movement and A-movement in English:

\[ \text{[DP}_2 \text{ How likely to win }] \text{ is } [\text{DP}_1 \text{ an Austrian }] \text{ to } t_2 \text{?} \]

an Austrian > likely, *likely > an Austrian

Analysis:
1. Wh-moved (more generally, A-bar moved) items permit partial reconstruction.
2. A-movement can take place in the syntax (‘stem’).
3. This derives the reading where DP\( _1 \) takes wide scope.
4. For the narrow scope reading of DP\( _1 \), total reconstruction would be required, i.e., A-movement at PF.
5. “At this point the standard assumption that movement in the stem precedes movement in the braces of the derivation becomes relevant”: XP\( _2 \) movement must precede DP\( _1 \) movement.
6. However, movement of DP\( _1 \) from a moved XP\( _2 \) is impossible (Freezing, plus violation of the c-command requirement on movement).
7. Therefore, PF movement of DP\( _1 \) is not an option; and consequently, there can be no narrow scope reading for DP\( _1 \) (given that only total reconstruction can achieve this).

3.3.3. Scrambling and Scope in Japanese

(21) Rigid scope with multiple scrambling (Yatsuhiro (1996)):

a. Dareka-ni daremo o John-ga syokkaisha someone\(_{dat}\) everyone\(_{acc}\) John introduced

someone > everyone, *everyone > someone
b. Daremo-o dareka-ni John-ga syookaisita
   someone > everyone, everyone > someone

c. Dare-ko daremo-ni John-ga syookaisita
   someone > everyone, everyone > someone

Analysis:
1. Scrambling is feature-driven.
2. In cases of multiple scrambling, the highest DP moves first (because of Minimality).
3. A dative DP is initially higher than an accusative DP.
4. Scope reversal with scrambling requires total reconstruction, i.e., PF movement of DP.
   (So scrambling can take place either in the stem, or at PF.)
5. Option 1: Both DP_{dat} and DP_{acc} move in the syntax; DP_{dat} moves first: no total
   reconstruction available. DP_{dat} takes wide scope.
6. Option 2: Both DP_{dat} and DP_{acc} move at PF; total reconstruction throughout. DP_{dat}
   takes wide scope.
7. Option 3: DP_{dat} moves in the syntax, DP_{acc} moves at PF; total reconstruction of DP_{acc}
   (irrelevantly), DP_{dat} takes wide scope.
8. Option 4: DP_{acc} moves in the syntax, DP_{dat} moves at PF; this would yield total reconstruc-
    tion of DP_{dat}, and therefore scope reversal. However, such a derivation is impossible
   because stem movement precedes PF movement, and it must be the highest DP_{dat} that
   moves first.

3.4. Depenent Verbs at PF

Ref: Embick (2000) on Latin dependents

(22) Regular and deponent verbs

<table>
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<th></th>
<th>regere (‘rule’)</th>
<th>hortāri (‘urge’)</th>
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<td></td>
<td></td>
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<td>hortātur</td>
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<td>PART PRES</td>
<td>rēgēnas</td>
<td>Hortānas</td>
</tr>
</tbody>
</table>

Two approaches, each with two possible sources of [pass]:

1. [pass] may be present in syntax, triggering passive morphology and interpretation, or
   may be inserted after syntax, where it still triggers passive morphology (by late insertion
   of morphological exponents) but comes too late to trigger passive syntax (or inter-
   pretation → counter-feeding). (Problem: deponency realization feeds head movement, but
   there is no post-syntactic movement. Solution:)
2. [pass] may show up in two different positions: With regular passivation, it is part of a
   functional head (triggering passive syntax and interpretation). With deponents, it shows
   up on a root, where subcategorization information and interpretation are not affected.
   Morphological realization of [pass] proceeds uniformly.

3.5. Slavic Numerals and Agreement at PF

Ref: Watanabe (2012)

Question:
Why do subjects with a numeral of 5 or higher trigger default singular agreement in some
Slavic languages?

Answer:
This is due to a conter-feeding relation between [singular] assignment and subject-predicate
agreement.

(23) Default agreement in Czech:
   Těch pět hezkých divěk jelo

Analysis:
Assignment of [+singular] is assumed to be post-syntactic in this context, whereas agreement
is assumed to be part of narrow syntax; so [+singular] assignment cannot feed agreement.
Like other post-syntactic operations manipulating features, [singular] assignment takes place
before morphological realization; this accounts for plural marking on the subject. However,
+[singular] assignment, on this view, comes too late to valuate the number feature of the
inflected verb via agreement; therefore we get default agreement.

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