The construction of layered derivations

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1. SIMPLEST MERGE  2. ORDER, INFORMATION, MORPHOLOGY  3. ITERATION VS. RECURSION  4. LAYERED DERIVATIONS  5. OPACITY

1. Simplest Merge

(1) Every derivation needs
a. a set of elements N manipulated in the course of the derivation (numeration)
b. a procedure establishing relations among the members of N (merge)

(2) Simplicity
a. merge manipulates a single element from N at each step of the derivation
b. merge manipulates each element from N only once

(3) Concretely
a. \( N = \{ a, b, c, d, e \} \)
b. merge: split \( x \in N \) off from N
c. merge\(_1\) \( \langle a, \{ b, c, d, e \} \rangle \)
merge\(_2\) \( \langle a, \langle b, \{ c, d, e \} \rangle \rangle \)
merge\(_3\) \( \langle a, \langle b, \langle c, \{ d, e \} \rangle \rangle \rangle \)

etc. until we get \( \langle a, \langle b, \langle c, \langle d, \langle e, \varnothing \rangle \rangle \rangle \rangle \rangle = \langle a, b, c, d, e \rangle \)

(4) What drives/ends Merge?
  a. start: the need to create order (information) among the members of N
  b. end: the establishment of a total ordering of N

(5) Features
a. no need to assume uninterpretable features
b. no mysterious features (EPP)
c. no feature checking

(6) Deviation from survive-minimalism
a. no concept of survival (no remerge)
b. no feature-driven derivation (no crashing/stalling)
c. top-down (not crucial)

2. What merge yields

2.1 Order

(7) Why split yields an ordered pair
a. \( \{ a, \{ a, b \} \} \equiv \langle a, b \rangle \) (Kuratowski 1921, Fortuny 2007)
b. derivational history: set of elements merged grows at each step

\[(\text{cf. (3c)})\]
merge_1 \{ a \} derivation yields a nest of sets
merge_2 \{ a, b \} \{ a, \{ a, b \} \} = \{ a, b \}
etc.
ultimately an ordered n-tuple

(8) Linear Correspondence Axiom (revised from Kayne 1994)
\[\langle a, b \rangle \equiv [a\ b]\]

2.2 Information

(9) Derivational Approach to Syntactic Relations (Epstein 1995/1999)
Syntactic relations are a function of merge

(10) \( N = \{ \text{John, kissed, Mary} \} \) merge_1 \( \langle \text{John, \{ kissed, Mary \} } \rangle \)

(11) Generalization (\( N = \text{Numeration} \))
\( \text{Merge } \alpha \in N \) turns \( N \) into the dependent of \( \alpha \)

(12) Dependencies
predication, complementation, modification, scope, etc.

(13) The derivation yields a record of dependencies to be interpreted at the interfaces

2.3 Morphology

(14) Morphology after syntax
Morphology takes a syntactic object and returns a form

(15) Features
A form is selected from a paradigm on the basis of the features of the syntactic object

(16) 'Uninterpretable' features
a. \([\text{number}]\) on a predicate is not inherent, but a function of the dependency of a noun phrase
b. \([\text{number}]\) must be spelled out on a term of the predicate (often the verb)
c. uninterpretable features are properties emerging in the course of the derivation as a function of merge

3. Iteration vs. recursion

(17) Split-merge is not recursive but iterative

(18) Rule: ‘Split N’ (\( N \) constantly updated, cf. (3))

(19) What is recursive about a derivation?
Recursion: take the output of Derivation_1 and put it in the Numeration for Derivation_2
(cf. ‘Workbench’ idea of Putnam & Stroik 2008)

(20) Recursion is inevitable in all but the most elementary derivations
4. Layered derivations

(21) John’s mother loves him/*himself  
The mother of John loves him/*himself

(22) \( N = \{ \text{John’s, mother, loves, PRON} \} \)  
yields \( \langle \text{John’s, mother, loves, PRON} \rangle \)

(Zwart 2002: \( \text{him} = \text{spell-out of PRON, himself} = \text{spell-out of anaphoric PRON} \))

(23) \( N_1 = \{ \text{John’s, mother} \} \) yielding \( \langle \text{John’s, mother} \rangle = [\text{John’s mother}] \)  
\( N_2 = \{ [\text{John’s mother}], \text{loves, PRON} \} \) yielding \( \langle [\text{John’s mother}], \text{loves, PRON} \rangle = (21) \)

(24) Parallel tree formation?  
Impossible in split-merge

(25) Model of grammar (of each (sub)derivation)

(26) The output of a subderivation passes through the interfaces

(27) Idiosyncratic sound/meaning properties: output of a separate subderivation  
(idioms not created ‘on the fly’ as in Svenonius 2005)

(28) Which elements are outputs of subderivations and why?

<table>
<thead>
<tr>
<th></th>
<th>IDIOSYNCRATIC SOUND/MEANING</th>
<th>CONFIGURATIONAL REASONS</th>
<th>INTERPRETIVE STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>compounds</td>
<td>✓</td>
<td></td>
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<tr>
<td>verbs (cf. Hale &amp; Keyser)</td>
<td>✓</td>
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<tr>
<td>idioms</td>
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<td>specifiers</td>
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<td>adjuncts</td>
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<tr>
<td>backgrounded material</td>
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</tbody>
</table>
(29) **A test: generalized integrity**
Terms of a member of a numeration are invisible to merge (cannot be split)

(30) if $N = \{ [\text{John's mother}], \text{does}, \text{love}, \text{Bill} \}$, split-merge never yields
\*John's does mother love Bill

(31) a. Lexical integrity
b. Idiom integrity: \*All trades he's a jack of
c. Subject/adjunct opacity (cf. Toyoshima 1997)
d. Opacity of backgrounded material (cf. Goldberg 2006, chapter 7)

(32) a. It bothered Sue [ that the mayor smoked cigars ]
   b. ??What did it bother Sue [ that the mayor smoked ] ?

(33) **The V-v complex**
a. Idiosyncratic sound/meaning pairing (kill \* cause to become not alive)
b. Integrity (V-v conflation is exceptionless in most analyses)
c. It follows that arguments are not generated inside the V-v complex
d. Argument structure is the interpretation of a configuration (Hale & Keyser 1993)

(34) Allows for ‘base-generation’ of arguments in their Grammatical-Function (GF) position

5. **Opacity**

(35) **A’-movement raises problems**
a. Which car did they arrest the driver of (predicted: complement not output of sep. der.)
b. \* Which car did the driver of cause a scandal (predicted: subject island)
c. Which car was the driver of arrested (predicted on bottom-up, not on top-down)
d. Which car did they see the driver of cause a scandal (not predicted)

(36) Observation: extraction out of subjects not universally disallowed and anyway better than
extraction out of adjuncts (Stepanov 2001)

(37) Further problem: connectivity effects show that wh-elements belong in a GF-position, not
in an argument position

(38) \textbf{Wen hast du gesehen ?} (German)
who:ACC have:2SG 2SG:NOM seen ‘Who did you see?’

(39) **Further observation: strange factors relevant to acceptability of A’-movement:**
a. discourse status (Erteschik-Shir 1973, Goldberg 2006)
b. event structure (Truswell 2007)
c. processing difficulty (Kluender 1998)
d. semantic factors (Szabolcsi & Zwarts 1993, Honcoop 1998)

(40) **How special is A’-movement?**

(41) a. A wh-element is a double atom
b. A wh-clause is a double atom
(42) \[ N = \{ \text{who, you, saw} \} \text{ yields not } [\text{who you saw}] \]
\[ \text{but } [\text{who } [\text{you saw}]] \]

(43) **Truswell facts**

a. What did John come in whistling?
b. * What did John work whistling?

(44) **Derivation of the adjunct clause**
\[ N = \{ \text{whistling, what} \} \text{ yields } [[\text{whistling }][\text{what}]] \]

(45) **Next derivation gives a choice**
\[ N_a = \{ [[\text{whistling}][\text{what}]], \text{did, John, [come in]} \} \]
\[ N_b = \{ [\text{what}], \text{did, John, [come in]} \} \]
\[ N_c = \{ \text{John, [come in], [whistling]} \} \]

(46) The success of (43a) is a function of the success of \( N_c \) in (45) yielding an interpretable object at the interfaces (i.e. representing a single event, Truswell's generalization)

(47) **Final derivation then**
\[ N = \{ [\text{what}], \text{did, [John come in whistling]} \} \]

(48) **Relevance of backgrounding** (cf. (33))

a. ?? What did it bother Sue that the mayor smoked
b. What do you think that the mayor smoked
c. [what] [that the mayor smoked]
d. think + [that the mayor smoked] readily interpretable as a unit (verb of propositional content)
   bother Sue + [that the mayor smoked] more difficult, as the clause has presupposed content

(49) **Applicability to wh-islands**

a. * Who did you wonder why Bill kissed
b. \[ N_1 = \{ \text{why, Bill, [kissed], who} \} \text{ yielding } [[\text{why}][\text{Bill kissed who}]] \]
c. to get (49a), who would have to be part of a double atom

(50) **Other example of a split in the output of a subderivation**

a. I saw \text{JOHN} the other day and \text{BILL}
b. \text{JOHN loves MARY} and \text{BILL SUE}

(51) **Split**

a. focus:
   \[
   \text{John} \quad \text{John, Mary}
   \]
b. focus-related topic (FRT, Tancredi 1992):
   \[
   \text{I saw x the other day} \quad x \text{ loves y}
   \]

(52) **Coordination**

a. unlike categories
b. sensitive to part of the output, namely a list of focus elements

(53) The \( N \) of the derivation yielding [and Bill], [and Bill Sue] consists of all and only the alternatives to the focus elements in the output of the derivation yielding [I saw John the other day], [John loves Mary]
6. Conclusion

(54)  1. the simplest derivations are layered
    2. the output of each subderivation is interpreted at the interfaces
    3. the output of a subderivation is in principle atomic, yielding generalized integrity
    4. A’-movement seems to require a noncanonical ‘double atom’ output, with conditions on
        acceptability sensitive to the possibility of merging part of the double atom separately

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