Layered derivations:
a minimalist perspective on constructions

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- ● the simplest derivations are layered

- ● merge = iteration, layering = recursion

- ● interface effects at the end of each subderivation
(idiosyncrasies of sound and meaning)

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1. Introduction

An example
(1)   John died
(2)   John kicked the bucket
(3)   John kicked the basket

(4)   *Conceptual organization*   *Structural organization*
a.   (1)/(2):   #John#   #die#   c. (1):   [$_{VP}$ die]
b.   (3):   #John#   #kick# #(the basket)# d. (2)/(3):   [$_{VP}$ kick *X*]

(5)   *Syntactic derivation*
a.   NUMERATION
        set/array of elements to combine in a structure
b.   DERIVATION
        structure created by combining elements from the numeration (via Merge)

(6)   *What is in the numeration?*
a.   **concepts**:   (1)/(2):   numeration = { #John#, #die# }
                                        derivation: [#John#   [#die#]]
                                        spell-out (PF):   (1) John died
                                                            (2) John kicked the bucket

b.   **words**:   (2)/(3):   numeration = { John, kick, the, bucket/basket }
                                        derivation: [John [kick   [the bucket/basket]]]
                                        spell-out (LF) :   (2) John died
                                                            (3) John kicked the basket

(7)   *Both unattractive*
        (6a): ignores the syntactic reality of the phrase 'kick the bucket'; spell-out arbitrary
        (6b): ignores the special conceptual status of 'kick the bucket'; numeration arbitrary

(8)   *Resolution*
        The numeration may contain all kinds of elements: features, morphemes, words, phrases

(9)   a. (1) N = { John, die }
       b. (2) N = { John, [kick the bucket] }
       c. (3) N = { John, kick, [the basket] }

(10)   *Layered derivations*
       Words and phrases are (potentially) the output of a previous derivation

(11)   *Derivation 1*   *Numeration 2*
       yields **kick the bucket**   contains   **[kick the bucket]** as a single item

2. The structure building process (merge)
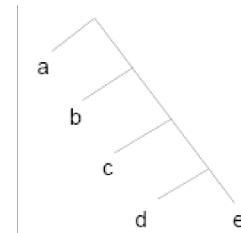
(11)   *Every derivation needs*
a. a set of elements N manipulated in the course of the derivation (numeration)
b. a procedure establishing relations among the members of N (merge)

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

     (consequences: binary branching, no parallel derivations, no multi-dominance, no movement, no recursion)

(13)   *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 $\rangle$
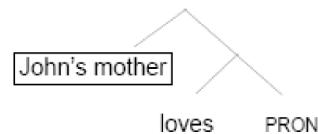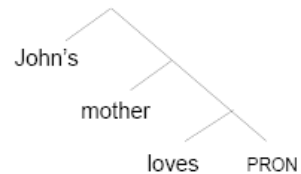
aside
(14)   *Linear Correspondence Axiom (modified from Kayne 1994)*
       (now a function of merge)
       $\langle$ x, y $\rangle \equiv$ / x y /

Why N must contain phrases
(15)   John's mother loves him/*himself
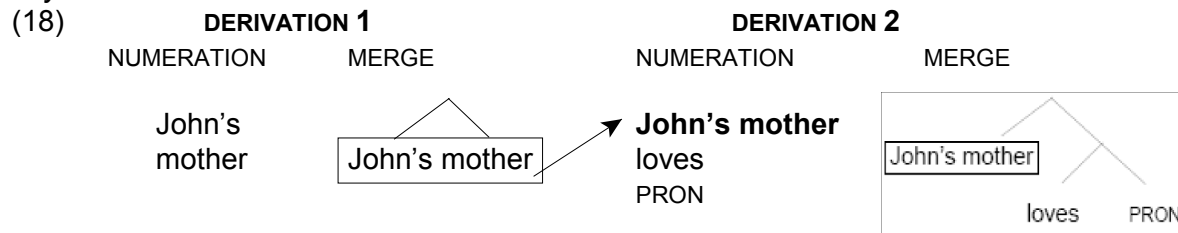   The mother of John loves him/*himself

(16)   N = { John's, mother, loves, PRON }
       yields $\langle$ John's, mother, loves, PRON $\rangle$

(17)   *so* N = { [John's mother], loves, PRON }
       (Zwart 2002: *him* = spell-out of PRON, *himself* = spell-out of anaphoric PRON)
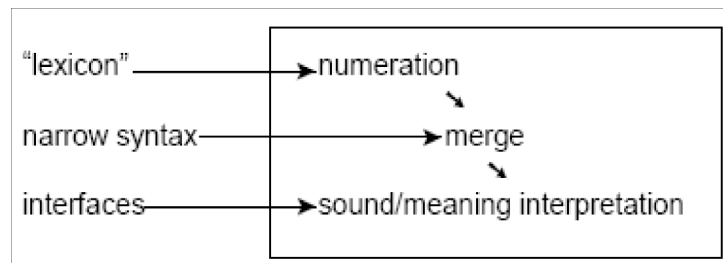
Layered derivations

(18)   **DERIVATION 1**   **DERIVATION 2**

    NUMERATION   MERGE   NUMERATION   MERGE

John's   **John's mother**

mother | John's mother | loves | John's mother |

                                    PRON   loves   PRON

So the question becomes

(19)   When is $x \in$ N the output of a previous derivation?

Model of a (sub)derivation

(20)

    "lexicon" ⎯⎯⎯⎯→ numeration

                                      ↘

    narrow syntax ⎯⎯⎯⎯→ merge

                                      ↘

    interfaces ⎯⎯⎯⎯→ sound/meaning interpretation

Suggested answer

(21)   Sound/meaning idiosyncrasies of *x* indicate that *x* must be the output of a subderivation

3. Interface effects

What happens at the interfaces?

(22)   a. conventionalization (words, idioms)

           b. linearization

           c. interpretation (e.g. focus)

           d. categorization (reanalysis)

           e. atomization (opacity)

           f. morphological realization (dependency marking)

3.1   Conventionalization

(23)   John kissed Mary

        Candidate numerations: a. { John, PAST, v, kiss, Mary }

                                         b. { John, PAST, [v + kiss], Mary }

(24)   v and V never separated in a derivation: v-V complex is an atom

(25)   'Lexical syntax' (Hale & Keyser) is simply what happens in a previous derivation

> "..there is *something* lexical about the entries for verbs like *shelve*, or any verbal entry, in fact. (..) But (..) the structural relresentations proposed here are are identical to those defined in syntax generally, and they are subject to principles of grassmmar that determine well-formed syntactic structures in general. (..) We cannot resolve this contradiction here." (Hale & Keyser 1993, 94-95)

(26)   Syntactic derivation of *kiss* as *v* + KISS (or *v* + [V + KISS]) is real, but *kiss* is then enlisted as an atom in the numeration for (23).

(27)   Conventional meaning: AG (*v*) + KISS = kiss (rather than 'make kiss, do kiss')

(28)   Any (transitive) verb is the output of a previous derivation

(29)   The arguments of a transitive verb v_T are not members of the numeration for the derivation D_V yielding v_T (in D_V, arguments are open positions associated with verbal elements)

(30)   *Room for cognate objects*
        a. They were dancing the hully-gully
        b. He shelved the books on the mantelpiece

(31)   a. { ..., put, [the books], on, shelf, on, mantelpiece, ... }
        b. 1. { put, on, shelf } yielding *shelve*
            2. { ..., [shelve], [the books], on, the, mantelpiece, ... }

(32)   Output of derivation 1 is conventionally interpreted at the interfaces as *shelve*

(33)   similarly with N-N compounds: ball + point = ballpoint (*pen*)
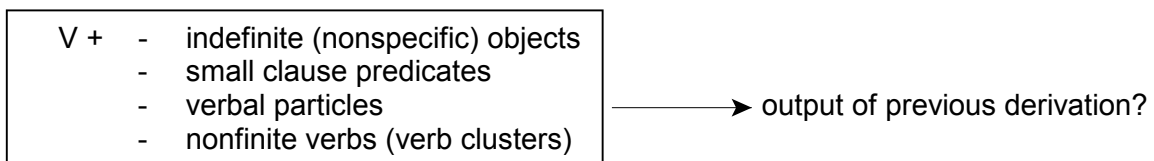   foot + ball = football (*soccer*)

3.2   Linearization

(34)   in principle automatic (LCA (14))

(35)   interface effect: deviation from normal pattern

(36)   compounds: Righthand Head Rule (Williams 1981)
        drive a screw vs. *screw driver*

(37)   *typological generalization*
a.   a head-initial language shows head-finality in lexical domains (compounding)
b.   a head-final languages shows head-initiality in syntactic domains (conjunctions, complementizers)

New perspective on head-finality in Dutch
(38)   Why is the Dutch VP head-final (all other projections being head-initial)?

        a. not completely head-final: OBJ$_{DEF}$ (...)   OBJ$_{INDEF}$ V   CLAUSE
        b. definite objects are scrambled to the left
        c. head-finality limited to a few contexts:

        ┌───┐
        │ V +   -   indefinite (nonspecific) objects │
        │   -   small clause predicates   │ ──────▶ output of previous derivation?
        │   -   verbal particles   │
        │   -   nonfinite verbs (verb clusters)   │
        └───┘

(39)   *Verb second seems to argue directly against the idea*
    a. ..dat   ik   hem   op-bel   b. Ik   bel   hem   op
        that   I   him   up-call   I   call   him   up
        '..that I call him (on the phone).'   'I call him (on the phone).'

(40)　*But what if V2 is 'phonology' ?* (Anderson 1993, Chomsky 2001, Zwart 2005)
　　a.　　Op-bellen　doe　ik　hem　niet
　　　　　up-call　　do　I　him　not

　　b.　*　Bellen　　doe　ik　hem　niet　op
　　c.　*　Op　　　doe　ik　hem　niet　bellen

(41)　a.　Rood-verven　doe　ik　dat　hek　niet
　　　　red-paint　　do　I　that　fence　not

　　b.　*　Verven　doe　ik　dat　hek　niet　rood
　　c.　*　Rood　doe　ik　dat　hek　niet　verven

(42)　a.　Horen　　praten　　heb　　ik　hem　niet
　　　　hear:INF　talk:INF　have:1SG　I　him　not

　　b.　*　Praten　heb　ik　hem　niet　horen
　　c.　*　Horen　heb　ik　hem　niet　praten

(43)　"phonology" = linearization at the interfaces (see below)

(44)　*Idiosyncratic meaning very common*
a.　particle verbs: *op-bellen* 'phone' (lit. up ring)
b.　verb clusters: *zien zitten* 'dig' (lit. see sit)
c.　secondary predicate: *wit wassen* 'launder, funnel illegally acquired funds' (lit. white wash)
d.　indefinite object: *zakken vullen* 'enrich' (lit. pocket fill)

3.3　Interpretation

(45)　I saw JOHN the other day
a.　focus:　　　　　　　　　　　　　　John
b.　focus-related topic (FRT, Tancredi 1992):　I saw *x* the other day

(46)　*single word responses*
　　　A: Guess who [I saw the other day]
　　　B: John

(47)　Single word responses are (inevitably) the output of a separate derivation

(48)　I saw JOHN the other day and BILL

(49)　The N of the derivation yielding [and Bill] consists of all and only the alternatives to the focus elements in the output of the derivation yielding [I saw John the other day]

(50)　Narrow focus: the interpretation of an output is reduced to the focused elements of that output

New approach to gapping
(51)　JOHN kissed MARY and BILL SUSAN

Derivation 1 yields / John kissed Mary /
Interpretation: FRT = x kissed y; focus elements = { John, Mary }
Numeration 2: focus alternatives to *John* and *Mary* = { Bill, Susan }

(52)   syntactically, D1 yields a clause
semantically, D1 (also) yields a list of (focused) NPs
Gapping conjoins a clause and a list of NPs

(53)   Carrera Hernández (2006): languages with different conjunctions for clauses and NPs have no forward gapping. This follows, since these languages have no suitable conjunction for gapping constructions (matching both clause and NP)

(54)   Traditional approach in generative grammar: deletion/ellipsis of the missing verb (phrase)

(55)   *Evidence against ellipsis: no gap-remnant relations* (cf. Ross 1970:250)
a.   I want Bob to shave himself, and Mary *(wants Bob) to wash himself
b.   John heard noone object, and Bill *(heard noone) say anything$_{NPI}$
c.   John kicked the ball, and Bill #(kicked) the bucket

(56)   *3 numerations*
   a.   NUMERATION 1:   { John, kissed, Mary }   yielding   ⟨ John, kissed, Mary ⟩
   b.   NUMERATION 2:   { Bill, Sue }   yielding   ⟨ Bill, Sue ⟩
   c.   NUMERATION 3:   { [John kissed Mary], and, [Bill Sue] }
                                              yielding ⟨ John kissed Mary, and, Bill Sue ⟩

(57)   *Gapping anomaly (Neijt 1979:30)*
Gapping is the only operation of core grammar that relates members of a coordinate structure

(58)   *Now*
Gapping does not relate members of a coordinate structure, but two derivations — i.e. the focus structure of D$_1$ determines the numeration of D$_2$ — and the outputs of D$_1$ and D$_2$ are related via normal coordination (= merge)

(59)   *Locality conditions on gapping (Neijt 1979:23f)*
a.   **Coordinate Structure Constraint**
Alfonse cooked the rice and the beans and Harry *(cooked the rice and) the potatoes
b.   **Sentential Subject Constraint**
*That Alfonse ate the rice is fantastic and ~~that~~ Harry ~~ate~~ the beans ~~is fantastic~~
c.   **Complex NP Constraint**
*Alfonse discussed the question of which rice we would eat and Harry ~~discussed the question~~ (of) which beans ~~we would eat~~

(60)   a.   CSC: *the rice and the beans* is an atom in D$_1$, therefore *the potatoes* cannot be listed in the numeration of D$_2$ as an alternative to *the beans*
   b.   SSC: *that Alfonse ate the rice* is a noncomplement hence also an atom, and *Harry* and *the beans* cannot be listed in the next derivation as alternatives to *Alfonse* and *the rice*
   c.   CNPC: arguable, a complex NP is also an atom (i.e. an island), hence *which beans* cannot be listed in the next derivation as an alternative to *which rice*.

(61)   *John loves Mary and I think that Bill Sue

(62)   Explanation: the numeration of the second conjunct contains elements that are not alternatives to the focused material in the first

(63)   !John loves Mary and I think Bill Sue

(64)   Account: *I think* is not a matrix clause embedding *Bill (loves) Sue*, but a hedge element

3.4   Reanalysis

(65)   A [far from simple] matter

$[_{PP}$ far [from [simple]]] > $[_{AP}$ [far from] simple]   (Kajita 1977)

(66)   Interface effects: *far from simple* = (a kind of) simple
                          simple (rightmost element) determines category = A

(67)   No need for interarboreal operations (grafting, Van Riemsdijk 2006)
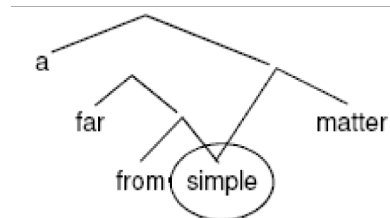
(68)   He left for [I think Budapest]

(69)   [I think Budapest] = [MODAL Budapest] ≈ possibly Budapest = NP (not TP)

(70)   a. NUMERATION 1 { I, think, Budapest } yielding   [I think Budapest]
       b. NUMERATION 2 { John, left, for, [I think Budapest] }

(71)   The output of Derivation 1 is a clause, listed in Numeration 2 as a N(P), made possible by the semantic interpretation in (66)

(72)   *   He left for [I like Budapest]

(73)   a. *   What is that matter far from — ?
       b. *   What did he leave for I think — ?

(74)   He left for { I think it was / *I think he lives in} Budapest
       He left for Budapest { I think it was / *is the capital of Hungary }

(75)   Generalization: 'grafting' only allowed if the 'graft' expresses modal modification
       (this follows on my analysis, since modal modification is what allows recategorization at the interface between derivation layers)

(76) a. He left for uh, Budapest
      b. *What did he leave for uh — ?

(77) *Hypothesis*
      Hedges (restarts, repairs) introduce the output of another derivation layer
      cf. Levelt (1983): hedges mark constituent boundaries

(78) He left for he said (it was) Budapest or Helsinki
a.   he left for X, and X = B. or H., based on what he said (modal reading)
b.   he left for X, and he said that X was B. or H. (de dicto reading)

(79) He said it was Budapest or Helsinki (only *de dicto*)

(80) Hij is naar ik meen   Budapest vertrokken   of Helsinki   (Dutch)
      he is to   I think   Budapest left   or Helsinki
      'He left for I think Budapest or Helsinki.'
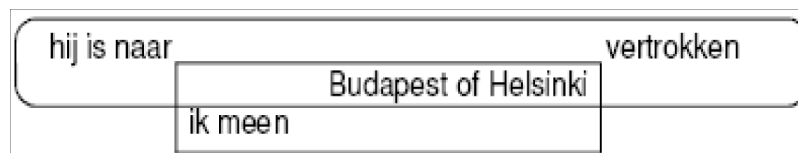
(81) a. **narrow scope:**
          He left for one of two cities, the first being *possibly* Budapest, and the second *definitely*
          Helsinki
      b. **wide scope:**
          He left for some city, *possibly* Budapest or Helsinki

(82) *Graft analysis of wide scope reading*

      gives wrong linearization Hij is naar ik meen Budapest of Helsinki vertrokken

(83) My analysis: *ik meen Budapest* is in focus, feeding a next numeration of just *of Helsinki*
      NUMERATION 1:   { ik, meen, Budapest }
      NUMERATION 2:   { hij, is, naar, [ik meen Budapest], vertrokken }
      NUMERATION 3:   { of, Helsinki }
      NUMERATION 4:   { [hij is naar ik meen Budapest vertrokken], [of Helsinki] }

3.5 Atomization

(84) Words and idioms are clearly opaque (lexical integrity)

(85) a. He is a jack of all trades
      b. *All trades he is a jack of

(86) Every item of the Numeration is an atom, i.e. it has no parts that may be merged individually

— *CED* (Huang 1982)
(87) Predicted to hold: specifiers and adjuncts are outputs of subderivations (cf. (15)-(17))

— CSC
(88) a. *Who did John see [Mary and —]
      b. *I wonder who [[John likes —] and [Bill hates Mary]]

(89) *Logic now*
      A coordinate structure is the output of an auxiliary derivation
      (no difference between complement and noncomplement coordinate structures)

(90) *Hypothesis*
      Coordination invariably involves a two-member numeration

(91) *Multiple coordination*
a.   not: [A + [B + [C + [D]]]] *etc*
b.   but: [[[A + B] + C] + D] *etc*

(92) Coordination is binary juxtaposition, possibly edge-marked by a conjunction

(93) ingenia   [fecunda] [totius-**que**   naturae   capacia]   (Latin)
      minds   fertile   all:GEN-CONJ nature:GEN   grasping
      'minds that are fertile and able to grasp the entire universe'

(94) Exceptions to the CSC must involve complementation (a) or adjunction (b)
      a. the book he wanted to sit down and read — (*to read*)
      b. the number of classes you can fail — and still get credit (*such that ...*)

— no use for a phase theory
(95) The output of a subderivation is a phase, but without an edge (cf. Chomsky 2005)

(96) Transparent CPs are not phases
      a. Who do you think you are — ?
      b. Numeration: { you, (do), think, (that), you, are, who }

(97) vP/VP is not a phase in the unmarked case (marked case: idioms, etc.)

— opacity in complements
(98) Goldberg 2006, chapter 7: 'backgrounding' creates islands
      a. It bothered Sue [that the mayor smoked cigars]PRESUPPOSED
      b. ??What did it bother Sue [that the mayor smoked] ?

(99) Wh-islands: always output of a subderivation?

(100) No spec-to-spec dependency (Lasnik & Saito 1984):
      a. who said what   (✓pair list reading)
      b. who told you [what Bill said]   (*pair list reading)

— remnant movement
(101) Question: do we ever move phrases that are not in the numeration, i.e. that are created in
      the course of the derivation ?

(102) a. Hij heeft daar niet [—   op gerekend]   (Dutch)
          he has   there not   on counted
          'He wasn't counting on that.'

     b. * [— Op gerekend]   heeft hij daar   niet   —
     c.   [Daar op gerekend] heeft hij niet   —

(103) a. Jan   vraagt   Marie te komen
          John   asks   Mary   to come

     b. Jan   probeert Marie te kussen
          John   tries   Mary   to kiss   'John tries to kiss Mary.'

     c. *   [Marie te komen] vraagt Jan niet
     d.   [Marie te kussen] probeert Jan niet

(104) Not clear the the mechanism of remnant movement is necessary (roll-up movement ??)

— *Remaining problem*
(105) Opacity of islands (for A' -movement) qualitatively different from lexical integrity effects
a. Extraction out of specifiers reported OK for many languages (e.g. Russian, Stepanov 2001;
        English ECM-subjects)
b. Extraction out of adjuncts acceptable under certain conditions (Truswell 2007)
c. Island violations reported to be gradual (?-??-*)

3.6   Morphological realization

(106) General approach: morphology after syntax (part of spell-out)

Output of previous derivation not opaque at the interfaces
(107) a. Ich   sehe   [[de**n** Mann] laufen]   (German)
          I:NOM   see   the:ACC man   walk:INF
          'I see the man walk.' (ECM-subject = specifier, should be opaque)

     b. Ik   **bel**   hem   [op —]   (Dutch)
          I   call   him   up
          'I phone him.' (verb-second, movement out of verb-particle combination)
              NB: verb-second viewed as a morphological readjustment of linear order, cf. Anderson 1993, Chomsky
              2001, Zwart 2005

     c. Hij weet *meestal*   wel   [*waar* Abraham de mosterd haalt]   (Dutch)
          he knows mostly   AFF   where Abraham gets the mustard
          ' He is generally well-informed.' (QVE-effect into idiomatic embedded interrogative)
              NB: QVE = Quantificational Variability Effect, cf. Lahiri 2002.

     d. They PAST [shelv**ed**] the book   (tense realization on lexically complex verb)

(108) *Dependency relation vs. dependency realization*
a. Dependency relation: feature sharing under sisterhood (function of merge)
b. Dependency realization: spell-out at the interface

(109)   Possibly: acceptable opacity violations involve an interface process of linking up elements from different subderivations (?)

4. Conclusion

(110)   *Constructions all the way down*
a. Attention to 'constructions' does not necessary lead to a rejection of a derivational model of grammar
b. Attention to 'derivation' does not justify ignoring the reality of constructions

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