Asymmetric Merge
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0. Background: the derivational approach to syntactic relations

(1) “We hypothesize that FLN [the faculty of language in the narrow sense, i.e. the computational system of human language, or narrow syntax] includes recursion and is the only uniquely human component of the faculty of language.”
Hauser, Chomsky, and Fitch (2002:1569)

(2) “Narrow syntax has one operation that comes ‘free’, in that it is required in some form for any recursive system: the operation Merge. (..) Any operation other than Merge requires empirical motivation, and is a derivation from SMT [the strong minimalist thesis].”
Chomsky (2001:4)

(3) “…syntactic relations are established between a syntactic category X and a syntactic category Y when (and only when) X and Y are transformationally concatenated (thereby entering into sister relations with each other) by (...) Merge (...) during the tree-building, iterative, universal rule application that constitutes the derivation.”
Epstein (1999:320)

(4) a. merge yields γ
            α β
   b. γ may function as α/β (recursion)
   d. the derivation comprises temporally ordered series of steps
   e. grammatical relations are a function of merge
      i format = sisterhood
      ii determination takes place at different moments in time during a derivation

1. Asymmetry in language

(5) *asymmetry is inevitable
   a. linear (temporal) order
   b. information (dependency)

(6) *asymmetry is not random
   a. hierarchy = precedence (Kayne 1994)
   b. coordination
      i A + B
      ii * A B +
   c. c-command
2. Symmetric vs. asymmetric merge

(9) *Chomsky (2001, 2004)*

a. "the language faculty is [...] a system of discrete infinity. Any such system is based on a primitive operation that takes \( n \) objects already constructed, and constructs from them a new object: in the simplest case, the set of \( n \) objects." (2004:10)
b. "Merge takes two elements and creates a new one." (2001:4)
c. "the simplest possible [operation is] unstructured merge" (2004:13)

(10) \{ \alpha, \{ \alpha, \beta \} \}

(11) Alternative: merge yields an ordered pair \(< \alpha, \beta >\)

(13) **Arguments for set-merge**

i. simplicity
ii. projection
iii. inclusiveness

(14) Why binary merge (rather than unary merge) ?

(15) **Merge requires minimally**

a. a set of elements to be merged ('numeration') = RESOURCE
b. a current derivation = WORK SPACE
c. a transfer operation from the resource to the work space

<table>
<thead>
<tr>
<th>NUMERATION</th>
<th>MERGE</th>
<th>DERIVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>John, will, see, Mary</em></td>
<td><em>Mary</em></td>
<td><em>&lt;Mary, ( \alpha &gt;)</em></td>
</tr>
<tr>
<td><em>John, will, see</em></td>
<td><em>see</em></td>
<td><em>&lt;see, &lt;Mary, ( \alpha &gt;)</em></td>
</tr>
<tr>
<td><em>John, will</em></td>
<td><em>will</em></td>
<td><em>&lt;will, &lt;see, &lt;Mary, ( \alpha &gt;)</em></td>
</tr>
<tr>
<td><em>John</em></td>
<td><em>John</em></td>
<td><em>&lt;John, &lt;will, &lt;see, &lt;Mary, ( \alpha &gt;)</em></td>
</tr>
</tbody>
</table>

(17) **derives (without stipulation)**

a. the extension condition
b. binary branching
c. asymmetry

(18) strong hypothesis: move = transfer as well

(19) resource contains minimally

a. numeration
b. parallel derivations
and possibly

c. backups of merged material

(20) Extension condition: you may select something from inside a derivation, but not merge to (affect) something inside a derivation
If move = merge (transfer), the extension condition follows if only the entire current derivation can be affected (= DASR).

3. Some interpretive effects of merge

Sound: linear order (precedence), Nuclear Stress Rule

Morphology: agreement

Syntax: case, verb-second, linkers

Meaning: predication, modification, complementation

In each case, the dependent element is the second member of the ordered pair.

Asymmetry is temporal: merge turns the current derivation into a dependent

4. The typological dimension

4.1 Head marking vs. dependent marking (Nichols 1986, 1992)

<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
<th>HEAD</th>
<th>DEPENDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>possessive</td>
<td>possessum</td>
<td>possessor</td>
</tr>
<tr>
<td>attributive</td>
<td>noun</td>
<td>adjective</td>
</tr>
<tr>
<td>adpositional</td>
<td>adposition</td>
<td>complement</td>
</tr>
<tr>
<td>clausal</td>
<td>verb</td>
<td>arguments</td>
</tr>
</tbody>
</table>

### TABLE 1

(28) **possessive**

a. az ember haz-a
   the man house-3SG ‘the man’s house’

b. the man’s house

(29) **attributive**

a. wist t-citx*
   high REL-house ‘tall house’

b. zelen-yj dom
   green-NOM.MASC.SG houseMASC ‘green house’

Hungarian

English

Shuswap

Russian
(30) *adpositional*  
  
  a. **bez**  
     **brat-a**  
     Russian  
     without brother-GEN  
  
  b. **r-umaal**  
     **aa Yaax**  
     Tz’utujil  
     3SG-by CL Yaax  
     ‘by Yaax’  

(31) *clausal*  

  a. **a-xàc’a a-p**  
     **££££`yyyy**  
     °  
     yyyy  
     **££££-l`yyyy**  
     **-y-te-yt’**  
     Abkhaz  
     the-man the-woman the-book it-to.her-he-gave-FIN  
     ‘The man gave the woman the book.’  
  
  b. **boku-ga tomodati-ni hana-o ageta**  
     Japanese  
     1SG-NOM friend-DAT flower-OBJ gave  
     ‘I gave my friend flowers.’  

(32) **Phrase structural definition of dependency** (Nichols 1986:57)  

a. a head determines the presence and properties of other material within the phrase (selection)  

b. a head determines the features of the phrase as a whole (projection)  

4.2 **The expression of dependency**  

(33) Dependency is  

a. a *semantic* relation  
   e.g. predication  

b. *syntactically* realized,  
   in phrase structure  

b. *morphologically* marked,  
   by agreement  

b. *phonologically* expressed,  
   via cliticization  

(34) The relations (((SEM ➔ SYN) ➔ MORPH) ➔ PHON) need not be homomorphic.  

I  

SEM ➔ SYN  

(35) a. **subject predicate**  

    **Jij eet vlees**  
    [NP] [VP]  
    Dutch  
    you eat meat  

b. **Eet ** **jij vlees ?**  
    [V] [NP] [NP]  
    ‘Do you eat meat?’  

II  

((SEM ➔ SYN) ➔ MORPH)  

(36)  

**verb complement**  

**Ich liebe mein-en Gartenzwerg**  

German  

I  

love:1SG my-ACC.SG garden-gnome  

‘I love my garden gnome.’  

(37) **incomplete dependency marking (standard)**  

A dependency relation between α and β may be marked on γ, a term of β  

(38) **dependent head-marking**  

A dependency relation between α and β may be marked on γ, the head of β  

(39) A marking on a head does not signify head marking
III (((SEM → SYN) → MORPH) → PHON)

(40) head dependent
nep’idi-da genanem xa guk’w sa t’isem
Kwakwala
throw-DEIC child OBJ house OBL rock
‘The child hit the house with a rock (by throwing).’

(41) phonological expression on an outsider (the subject)
nep’idi-da genanem=xa gukw sa t’isem

(42) head dependent
a cup of coffee > a cup=of [cuppa] coffee

(43) cliticization onto a head does not signify head marking

4.3 The nature of subject-verb agreement

(44) semantic relation predication
syntactic realization NP, XP
morphological marking head of XP (unmarked case)

(45) other morphological markings
a. multiple marking
Juma a-li-kuwa a-ngali a-ki-fanya kazi
Swahili
Juma, 1-PAST-be 1-still 1-PROG-do work
‘Juma was still working.’

b. agreement on object
i. Dios tupo’-n naxo-xt’e’wal wako’
Coahuitlaco
god DEM-1AGRS 1PL:SU-annoy CAUS
‘We annoyed god.’

ii. Dios tupo’-m xa-ka’wa xo e ?
god DEM-2AGRS 2SU-love AUX Q
‘Do you love god?’

(46) subject → predicate
auxiliary, verb, object, etc.

(47) Relation not between head-dependent but between dependent-nondependent

(48) Subject-verb agreement is an instantiation of dependent head-marking (38).

(49) Other considerations
a. Consistent dependent-marking languages commonly show subject-verb agreement
b. The subject is not directly related to the verb (arguments are—a subject can be any type of argument and even a nonargument)
Question: how much nondependent-marking is there in the languages of the world?

4.4 Review of Nichols' (1986, 1992) observations

4.4.1 Possessive constructions

(51) CONSTRUCTION SEMANTIC RELATION
a. Jan's boek subject-predicate Dutch
John-POSS book
b. het boek van Jan head-complement
the book of John

(52) NONDEPENDENT DEPENDENT MARKING
a. az ember haz-a dependent Hungarian
the man house-3SG
‘the man’s house’
b. the man's house nondependent? English
the man’s house

c. het boek van Jan dependent Dutch
the book of John

(53) the man his house (cf. Dutch de man z’n [<zijn] huis )
the man= ’s house

(54) the izafet construction: dependent marking + cliticization
NONDEPENDENT DEPENDENT MARKING
a. asb= =é mard dependent Persian
horse EZ man
‘the horse of the man’
b. i. ki-tabu ch-a Juma dependent Swahili
7-book 7-EZ Juma
‘the book of Juma’
ii. vi-tabu vy-a Juma dependent Swahili
8-book 8-EZ Juma
‘the books of Juma’

(55) genitive case: unclear
NONDEPENDENT DEPENDENT MARKING
a. kniga Ivan-a dependent? Russian
book Ivan-GEN
‘John’s book’
b. Ahmeda-n wan nondependent? Lezgian
Ahmed-GEN voice
‘Ahmed’s voice’

4.4.2 Attributive constructions

(56) the [ new [students of linguistics ] ]

(57) 

adjective ← NP
noun complements
NONDEPENDENT DEPENDENT MARKING

a. **zelen-yj dom** nondependent? Russian
   green-NOM.MASC.SG house_MASC
   ‘green house’

b. **wist t-citx** dependent Shuswap
   high REL-house
   ‘tall house’

59. a. **calay a-monit** funny REL-person
    Karbi (Mikir)
    person funny

b. **monit calay**
   person funny

60. a. **het boek-ø**
    Dutch
    the:NTR.SG.DEF book_NTR-SG
    ‘the book’

b. **de boek-en**
    the:PL.DEF book_NTR-PL
    ‘the books’

61. NONDEPENDENT DEPENDENTS............
    **de oud-e boek-en**
    the:PL.DEF old-PL book_NTR-PL
    ‘the old books’

62. Case and number are not inherent features of N, so dependent marking. Gender...?

63. the izafet construction
   NONDEPENDENT DEPENDENT MARKING
a. **küh= =e boländ** dependent Persian
   mountain EZ high
   ‘high mountain’

b. **ki-ti ch-a m-ti** dependent Swahili
   7-chair 7-REL 3-wood
   ‘wooden chair’

4.4.3 Adposition constructions

64. NONDEPENDENT DEPENDENT MARKING
a. **bez brat-a** dependent Russian
   without brother-GEN

b. **r-umaal aa Yaax** nondependent? Tz’utujil
   3SG-by CL Yaax
   ‘by Yaax’

65. ‘head marking’ adpositions are ‘relational nouns’ (Nichols 1992:58), marked by possessor agreement

66. NONDEPENDENT DEPENDENT MARKING
a. **ja a-paçi** dependent Burushaski
   1SG:OBL 1SG-side
   ‘with me, beside me’

b. **Langa Brumo mo-paçi** L.B.:NOM 3SG-side ‘with Langa Brumo’
(67) Tz’utujil:  
a. noun raising?  
b. dependent precedes nondependent?

(68) *spurious cases of head-marked adpositions*

a. i. *i’-ma*  
   ii. *te’-ma*  
   iii. *pö’le-ma*  
   Wappo
   1SG-for  
   3SG-for  
   boy-for  
   ‘for me’  
   ‘for him’  
   ‘for the boy’

b. i. *’ab t-wui*  
   ii. *’am ’em-wui*  
   Papago
   TOWARD  
   1PL-to  
   AWAY  
   2PL-to  
   ‘toward us’  
   ‘toward you’

c. i. *Waraka hyaye k-omok-no*  
   Hixkaryana
   Waraka from
   1SG-come-IMM.PAST
   ‘I have come from Waraka.’

   ii. *i-hyaye k-omok-no*  
   3SG-from  
   1SG-come-IMM.PAST
   ‘I have come from him.’

4.5 Dependency revisited

(69) *The core dependency relations*

a. head-complement: the complement is the dependent of the head  
b. subject-predicate: the predicate is the dependent of the subject

<table>
<thead>
<tr>
<th>Prosody</th>
<th>Subject/Head</th>
<th>Predicate/Complement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak</td>
<td>(✓ subject/✓ head)</td>
<td>Strong (✓ predicate/✓ complement)</td>
</tr>
<tr>
<td>Order</td>
<td>‘left’ (✓ subject/?head)</td>
<td>‘right’ (✓ predicate/?complement)</td>
</tr>
<tr>
<td>Merge</td>
<td>New (✓ subject/?head)</td>
<td>Old (✓ predicate/?complement)</td>
</tr>
</tbody>
</table>

| Dependency | Nondependent (?subject/✓ head) | Dependent (?predicate/✓ complement) |

**Table 2**

6. Conclusion

1. Dependencies are relations between sisters  
2. Participants are dependents and nondependents  
3. Agreement is always dependent marking  
4. Clear examples of nondependent marking are few

References


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