

and Argument structure (examples are from Hale & Keyser 2002):

- (4) a. X Y
 X laugh
- b. X X
 ZP book X Y
 with/on shelf
- c. Y Y
 ZP sky Y X
 clear
- d. X
 sky

- (5) a. my open that (Peter 2;0.7 Bloom 1970)
 b. I'm put putting these bars in there (Allison 2;10 Bloom 1973)

These structures are possible even in adult speech:

- (6) a. Class in session
 b. Martha Stewart in jail
 c. Him worry? (from Progovac et al in press)

Merge is the "Great Leap Forward" in the evolution of humans" (Chomsky 2005: 11). A slight rewiring of the brain might have made the operation Merge possible and, in its turn, Merge made syntax possible by combining words into multiple unit expressions, with in principle infinite recursion. Syntax was "inserted into already existing external systems", namely the sensory-motor system and system of thought (Chomsky 2002: 108).

Through (2c):

- (7) The uncle of Kerry voted for himself in 2002.
 (8) a. *The news that nobody cheated created any uproar.
 b. Nobody created any uproar.

1.2 Three layers: thematic, grammatical, discourse-related

Grammatical categories (They emerge after V, N, etc; both in language evolution and in the child's language though there is a debate about this):

- (9)
- | | | | | | |
|--|------|--------|------|-----------|-------------|
| | CP | | | Discourse | |
| | | C' | | | |
| | C | | TP | | Grammatical |
| | that | Laurie | T' | | |
| | | | T | VP | Thematic |
| | | | will | Laurie | |
| | | | | V' | |
| | | | | V | DP |
| | | | | like | the story |

Stages of movement, e.g. to the left of Neg:

- (10) no going away (Eve, 20 months)

- (11) I no want go home (Peter, 26 months)
- (12) *pas manger*
not eat (Nathalie, 21 months)
- (13) *veux pas lolo*
want not water (Nathalie, 24 months; examples from Pierce 1992: 55; 65)

So, within UG, there is Merge, and principles connected with it, and three layers of categories (VP, TP, CP).

2 Economy Principles

Within Minimalism (from Chomsky 1995 on), Economy has played a role (fewest steps, last resort etc). So, in building derivation, there are choices. There are two principles in particular that we will discuss:

- (14) **Head Preference Principle (HPP):**
Be a head, rather than a phrase.
- (15) **Late Merge Principle (LMP):**
Merge as late as possible
(both from van Gelderen 2001; 2004)

2.1 According to the **HPP**, the speaker will prefer to construct the structures in (a) rather than those in (b):

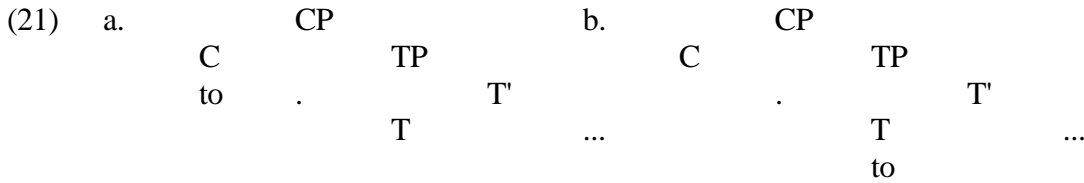
- | | |
|--|---|
| <p>(16) a. CP</p> <p style="margin-left: 40px;">C'</p> <p style="margin-left: 80px;">C TP</p> <p style="margin-left: 80px;">that we talked about</p> | <p>b. CP</p> <p style="margin-left: 40px;">PP C'</p> <p style="margin-left: 80px;">about whom we talked about whom</p> |
| <p>(17) a. TP</p> <p style="margin-left: 40px;">T'</p> <p style="margin-left: 80px;">D ...</p> <p style="margin-left: 80px;">je ...</p> | <p>b. TP</p> <p style="margin-left: 40px;">DP T'</p> <p style="margin-left: 80px;">je ...</p> |

The same is true with the NegP and ASPP.

2.2 The **LMP** is very obvious in cases of infinitival *to* where speakers construct it higher and higher, as in (18a), (19), but not when a C is not available, as in (20). The structure in (a) is the preferred one:

- (18) a. It would be unrealistic **to not** expect to pay higher royalties (BNC-CSS 245).
- b. It would be unrealistic **not to** show them to be human (BNC-CBF 14312).
- (19) a. - as a request **to not to** - (CSE-WH97A).
- b. This is to try **to not to** overturn the ... (CSE-WH97A).

(20) At first, the darkening official mood seems **not to** have troubled Prokofiev (BNC-ABJ 524).



Another shift is for *seem* to become an auxiliary (first *it seems* 1200; first clear ...seems to 1388):

(22) It seems that ...: google 54 million; ... seem(s) to ...: google 506 million.

Economy Principles are UG principles at work in the internalized grammar and hold for merge (projection) as well as move (checking). Syntax is inert and all variation is in the lexicon. Hence there is a choice of pronouns as D or DP (HPP) and verbs as V or Aux (LMP).

3 Grammaticalization is Economy

Grammaticalization is a linguistic kind of change that often involves a full phrase becoming one word, or a verb becoming an auxiliary. This has been examined by both functionalist and, more recently, formal linguists.

3.1 Spec to Head (HPP)

(23) Neg DP > Neg Adv > Neg > zero

(24) *Men ne cunnon secgan to soðe ... hwa*
 Man not could tell to truth ... who
 `No man can tell for certain ... who'. (Beowulf, 50-2)

(25) *ne fand þær nan þing*
 not found there no thing (Peterborough Chronicle)

(26) *I cannot answe*re (Cloud of Unknowing, HC-ME 3)

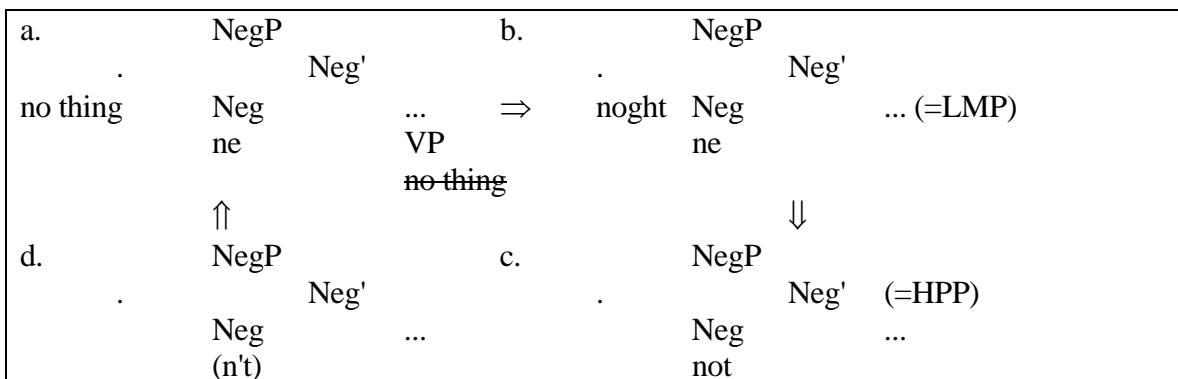


Figure 1: The Negative Cycle

Many other languages have this:

(27) *þat mæli ek eigi* Old Norse
 that say-1S I not

- ‘I am not saying that’ (from Faarlund 2004: 225).
- (28) *Men detta ække et forslag som vi har interesse av* Norwegian varieties
 but that is-not a proposal that we have interest in
 ‘But that’s not a proposal we are interested in’ (from Solstad 1977: 70).
- (29) *Eg har ikke aldri smakt sånne brød* Sappem Norwegian
 I have not never tasted such bread
 ‘I haven’t ever tasted that kind of bread’ (Sollid 2002).
- (30) *Idtjim (manne) daejrieh* Southern Sami
 NEG-PAST-1S (I) know
 ‘I didn’t know’ (from Bergsland 1994: 44).
- (31) *In leat goassege dahkan dan* Northern Sami
 NEG-S-1 be never do-PART it-ACC
 ‘I have never done that’ (Trosterud p.c.).
- (32) *En ole koskaan maistanut sellaisia leipiä* Finnish
 NEG have never tasted such bread
 ‘I have never tasted such bread’ (from Sollid 2002).

Demonstrative pronoun <i>that</i> to complementizer	Demonstrative pronoun to article
Relative <i>who</i> possibly to head	Adverb to aspect marker
Adverb to complementizer	Full pronoun to agreement
Negative adverb to negation marker	[VO]S > [V]SO

Table 1: Examples of the change from specifier to head

3.2 Late Merge

Non-theta-marked elements can wait to merge outside the VP (Chomsky 1995: 314-5). If, for instance, a preposition can be analyzed as having fewer semantic features and is less relevant to the argument structure (e.g. *to*, *for*, and *of* in ModE), it will tend to merge higher (in IP or CP) rather than merge early (in VP) and then move

For instance, the causative PP *for* DP > Spec CP (=LMP) > Head (=HPP)

- (33) *þæt he for eaxlum gestod*
 that he before shoulders stepped
 ‘that he stood in front of ...’. (*Beowulf* 358)
- (34) *for werefyhtum ... ond for arstafum usic sohtest*
 for fighting ... and for support (you) us sought
 ‘You wanted us to help fight’ (*Beowulf* 457-8).
- (35) *ouþer for untrumnisse ouþer for lauerdes neode ouþer for haeleste ouþer for hwilces cinnes oþer neod he ne muge þær cumon*
 ‘either from infirmity or from his lord’s need or from lack of means or from need of any other kind he cannot go there’ (PC, anno 675).
- (36) *forþam Trumbriht wæs adon of þam biscopdome*
 ‘because T had been deprived of his bishopric’ (PC anno 685).
- (37) *ac for þæm þe hie us near sint, we ... ne magon ...*
 but for that that they us close are, we ... not may ...
 ‘but because they are near to us, we can’t ...’ (*Orosius*, Bately 122.18-9).

4 Grammaticalization in Language Use and Development

UG Principles: guidance to the child (in acquisition) and the adult (in the derivation).

4.1 The Head Preference Principle

English **Preposition-stranding**:

(44) Who did you talk to ~~who~~?

(45) To whom did you talk ~~to whom~~?

Children:

(46) those little things that you play with (Adam 4:10, from Diessel 2004: 137).

Relative pronouns:

Children: 56% *that*, 42% zero, 2% *who* (Diessel 2004)

CHILDES, Kuczaj corpus, Abe, age 4-5: 82% *that*, 18% *wh-*. There is no evidence that the *wh* is not a head, however, since *whom/to who* do not occur:

(47) **a dragon that** was this little (Abe, 4;0.16)

(48) You know **the round part where** they dig (Abe 4; 1.5)

Adults: spoken 80-90% *that* (or zero)

written 10-20% *that*

In speech, 86% of prepositions are stranded, whereas in writing, 7% are.

(49) I haven't been to a party yet that I haven't got home the same night.

Other CP phenomena:

(50) *Les enfants que jouent là* Colloquial French
the children who play there
'The children who are playing there' (from Joseph 1988)

(51) *Kven du såg* Norwegian variety
Who you saw
'Who did you see' (from Åfarli 1985: 6).

(52) *Ka for nokka sa dokker* Norwegian variety
what for something said you
'What kind of thing did you say' (from Taraldsen 1985: 21).

(53) *Kisana (ki) to ti don sa liv la* Mauritian Creole
who that you T give DEM book the
'Who did you give this book to?' (from Adone & Vainikka 1999: 78)

(54) **Kote ki nu pe ale* Mauritian Creole
where that we ASP go
'Where are we going?' (from Adone & Vainikka 1999: 79)

(55) *Kote nu pe ale* Mauritian Creole
where we ASP go

Other Neg phenomena:

Unlike sub- or superstratum languages, the NEG in HC was put in a head position:

- (56) Jan pa t- av- ale nan mache Haitian Creole
 Jan not ANT IRR go in market
 `Jan wouldn't have gone to the market (DeGraff 1993: 65)

TP: Pronouns > agreement

- (57) She's very good, though I perhaps I shouldn't say so (BNC HDC)
 (58) if I had seen her, er prints I maybe I would of approached this erm differently (BNC F71).
 (59) I actually I'd like to see that again (BNC-HMN 901).
 (60) I always get something wrong, I always I kept, I kept getting to kiss her flatmate's chest (BNC-KDA 5676).

	uncliticized	cliticized	total
<i>I</i>	2037	685 (=25.%)	2722
<i>you</i>	1176	162 (=12.1%)	1338
<i>he</i>	128	19 (=12.9%)	147

Table 3: *Cliticization to pronouns in CSE-FAC (significant between first and second and second and third at p < .001).*

- (61) *J'ai vu ça.* French
 I-have seen that
 (62) **Je probablement ai vu ça* French
 I probably have seen that
 (63) *c'est que chacun il a sa manière de ...* Swiss SF
 (Fonseca-Greber 2000: 338).
 (63) *Gnun a m capiss* Torino
 Nobody he me understands (from Poletto 2004)
 (65) *'a:n~i `an~ n~eok* O'dham
 I 1.IMPF speak-IMPF
 `I am/was speaking' (Zepeda 1983: 61).
 (66) *εke ma lere jo ... εk furgete nau* Bernice Dutch Creole
 I will teach you ... I forget now
 (67) *no:, εkan tel didə* BDC
 not I-can tell that (Kouwenberg 1994: 483; 489)

French kids have no difficulty. Even though Subjects often appear after the V, the (weak) pronouns never do:

- (68) *moi je veux regarder*
 me I want watch (Gregoire 27 months, Pierce 1992: 96)
 (69) *Moi je sautes et je descends*

me I jump and I go-down

`As for me, I jump and go down' (Philippe, 26 months, Pierce 1992: 97)

4.2 *The Late Merge Principle*

Complementizers are late merged prepositions

Josefsson (2000: 398): Swedish "children first acquire the PP and then, directly after that the subordinate clause". She divides the acquisition into I no Ps; II occasional P; III Ps and then Cs. "most often, the children do not start using complementizers at all until they have reached a 90% us of prepositions" in obligatory contexts.

(70) *precis som en kan/ som en kanin*
just like a rab/ like a rabbit

(71) *grisen, den som heter Ola*
pig that who is-called Ola
(Embla, 27 months, both from Josefsson 2000: 410)

Bloom (1991: 269) on English: addition, location, and time are used for cause around 25 months:

(72) hold de ladder and e won't fall down.

CHILDES, Kuczaj corpus, English *like* and *for* show the same data as in Swedish:

(73) **like** a cookie (Abe, 3.7)

(74) no the monster crashed the planes down **like** this **like** that (Abe, 3.7)

(75) Daddy # do you teach **like** you do [//] **like** how they do in your school? (Abe, 4.10)

Same corpus with *for*:

(76) Mom # this white one **for** me? (Abe 2.7, file 25)

(77) this picture is mine **for** myself (Abe 2.7, file 25)

(78) this uh be a cave **for** [/] **for** # what you say? a Thanksgiving one this uh be a cave. (Abe 2.11, file 54)

(79) two Dad # how come some people have cookies **for** lunch sometimes?
(Abe 3.7, file 116)

(80) ok then we could go way # way # way down from the stairs and dig **for** that rock I saw (Abe 3.7, file 116)

(81) because people don't use hatchets **for** hunting butterflies
(Abe 3.7, file 116)

(82) it's not too high up # but I'm waiting **for** Silver to get ready. (Abe, 5.0, file 210)

Wh merged late:

(83) who it belongs to it (Peter 2:6.14)

Auxiliaries are late merged verbs

Wanna is the first (semi)-modal to appear, followed by *gonna* and *hafta*, before *can't* (Stephany 1986: 387).

(84) I go get it (CHILDES, Bates corpus, Gloria, snack, 28 months)

5 Conclusion

If two principles explain language change, they have to be used by learners and users to reanalyze the data so that the change can take place. I have shown that pronouns become agreement markers, negative DPs negative heads, and that complementizers that are heads are preferred. This follows from the HPP. I have also shown how the LMP is used to reanalyze verbs as auxiliaries and prepositions as complementizers.

Grammaticalization results in a linguistic cycle, in which full phrases become heads and then disappear. The loss has to be replenished and this is either through late Merge of lexical categories or through the incorporation of adverbial elements (the SIP).

Notes

The child data used are from the CHILDES database (<http://childes.psy.cmu.edu>). The data for Abe are described in Kuczaj (1976), from Gloria in Bates et al. (1988), and those from Peter and Allison in Bloom (1991).

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