Multiple exponence in child language

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Introduction

Children produce overregularization errors during acquisition (Marcus et al. 1992), which can result in **redundant errors**

(1) English past tense
ate > eat-ed > **ate-d** > ate (Kuczaj 1977, 1978)

What is the nature of redundant errors like *ate-d*?

- **Multiple exponence:** A single feature PAST is incorrectly realized twice, once by the stem *ate-* and once by the affix *-ed*
- **Allomorphy:** *ate* is learned as an allomorph of EAT in the context of PAST, which is incorrectly spelled out as *-ed*
- **Radical decomposition:** *ate* spells out EAT and some other (non-PAST) feature, PAST is incorrectly spelled out as *-ed*

Introduction

Commission error: Misapplication of a rule or generalization (see e.g. Snyder 2007, 2011)

- **Distributive** commission error: *eat-ed* (eat-PAST)
- **Redundant** commission error: *ate-d* (eat.PAST-PAST)

Claim 1

Redundant commission errors in child language involve true multiple exponence.

Claim 2

Multiple exponence can occur **across word boundaries**, thus favouring models of morphology that do not grant independent ontological status to the concept of word.

Outline

1. Emergence of commission errors
2. Case studies
    - Causative
    - Comparative
3. Theoretical analyses
    - Nanosyntax: Spanning
    - Distributed Morphology: Fusion
4. Extension
    - Locative prepositions

Emergence of commission errors

Commission errors

Commission errors across domains (see also Martin et al. 2021)

	Commission errors	
Target form	**Distributive error**	**Redundant error**
ate	*eat-ed*	*ate-d*
	EAT PAST	EAT.PAST PAST
mieux	*plus bon*	*plus mieux*
'better'	COMP GOOD	COMP COMP.GOOD
fermer	–	*faire fermer*
'to close'		CAUSE CAUSE.CLOSED
sous	–	*dessous*
'under'		PLACE PLACE.AXPART.EIGEN
rien	*pas...quelque chose*	*pas...rien*
'nothing'	NEG...∃	NEG NEG.∃

Principles of exponence

Adult grammar

Minimize Exponence! (Siddiqi 2006)

Realize a set of concepts using the fewest exponents.

- General economy principle, e.g. EAT, PAST → *ate*

Child grammar

- **One-to-one mapping principle** (Slobin 1973, van Hout 2008, Alexiadou et al. 2021)
- General transparency principle, e.g. EAT, PAST → *eat-ed*

Maximize Exponence!

Realize each concept using exactly one exponent.

Principles of exponence

Language acquisition

- Two competing principles

Maximize Exponence!

Realize each concept using exactly one exponent.

⇕

Multiple Exponence

⇕

Minimize Exponence!

Realize concepts using the fewest exponents.

- Intermediate stage of **Multiple Exponence** where transparent, decomposed forms exist alongside non-transparent, portmanteau forms
  - e.g. EAT, PAST → *ate-d*

Commission errors

Predictions for development

- Children first decompose in a one-to-one fashion (**stage 1**)
  $\rightarrow$ Distributive commission errors, e.g. *eat-ed*
- This pressure for transparency perseveres even after they have started acquiring target portmanteau forms (**stage 2**)
  $\rightarrow$ Redundant commission errors, e.g. *ate-d*
- Multiple exponence in child grammar reflects the attempt to maximize both transparency and economy
- e.g. EAT, PAST $\rightarrow$ *eat-ed* $>$ *ate-d* $>$ *ate*
  COMP, GOOD $\rightarrow$ *plus bon* $>$ *plus mieux* $>$ *mieux*
- Multiple exponence may persist in non-standard adult language, either as uncontrolled redundant errors, or as controlled ways to emphasize some aspect of meaning

Commission errors

Stages of exponence

Distributive error *Maximize* *Exponence!*	**Redundant error** **Multiple** **Exponence**	**Target form** *Minimize* *Exponence!*
eat-ed EAT PAST	*ate-d* EAT.PAST PAST	*ate*
plus bon COMP GOOD	*plus mieux* COMP COMP.GOOD	*mieux* 'better'
–	*faire fermer* CAUSE CAUSE.CLOSED	*fermer* 'close'
–	*dessous* PLACE PLACE.AXPART.EIGEN	*sous* 'under'
pas...quelque chose NEG...∃	*pas...rien* NEG NEG.∃	*rien* 'nothing'

Case studies

Case studies

- Two case studies of redundant commission errors in child French and English
  1. Causative: *faire fermer* 'CAUSE CAUSE.CLOSED'
  2. Comparative: *plus mieux* 'COMP COMP.GOOD'
- These cases are instances of true multiple exponence, which furthermore occur across word boundaries

Causatives

- Lexical causative verbs encode a causative meaning component CAUSE, e.g. French *fermer* 'close' or *montrer* 'show'
- Productive causatives can be formed in French using the verb *faire* 'make', which encodes an additional CAUSE component

(2) a. *Montre le camion de pompiers.*
'Show the firetruck.'

b. *J'ai fait montrer le camion au client par un de nos meilleurs vendeurs.*
'I made one of our best salesmen show the truck to the client.'

Causatives

- Children in French CHILDES corpora (MacWhinney 2000) frequently produce lexical causatives with a redundant *faire*, thus spelling out CAUSE twice (Martin et al. 2021)

(3) a. *faire fermer les yeux.* (LSN 4;02, Palasis 2009)
Intended meaning: 'Close the eyes.'

b. *va le faire couper.*
Intended meaning: 'Going to cut it.'
(Marilyn 2;09, Demuth and Tremblay 2008)

c. *du bon feu ici pour les faire réchauffer.*
Intended meaning: 'A nice fire here for reheating them.'
(Camille 3,09, Le Normand 1986)

Causatives

- Matteo (Palasis 2009) and Madeleine (Morgenstern et al. 2009) use the portmanteau lexical causative form before/alongside the redundant form
- Provides evidence for a multiple exponence analysis

(4) a. *Elle a fait tomber ma petite cabane.* (Matteo 2;11)
'She made my little shed fall.'

b. *J'ai montré ça.* 'I showed that.' (Matteo 3;02)

c. *Eh fais montrer le camion de pompiers!* (Matteo 3;03)
Intended meaning: 'Hey show the firetruck!'

(5) *(a)près on va le cacher ... on va le cacher ... va le faire cacher.* (Madeleine 2;02)
Lit.: 'Then we'll hide it ... we'll hide it ... we'll make hide it.'

Causatives

- Multiple exponence of CAUSE is attested in
  - child French (Bezinska et al. 2008, Martin et al. 2021)
  - child Turkish (Aksu-Koç and Slobin 1985)
  - child Persian (Family and Allen 2015)
  - child Japanese (Yamakoshi et al. 2018)
  - child English (Lord 1979, Nie et al. in progress)
- It also arises in non-standard and dialectal adult variants

Causatives

Examples of CAUSE multiply realized in non-standard adult French:

(6) a. *Ah mais tu m'a [sic] fait donner une idée.*
'Oh but you gave me an idea.' (Twitter)

b. *une blessure va lui faire montrer un tout autre chemin*
'An injury will show her a totally different path.'
(corpus frTenTen17 via Sketchengine)

c. *J'ai fais [sic] fermer mes yeux il était 1h59 mtn il est 3h00 mdr*
'I closed my eyes it was 1.59 now it's 3.00 lol.'
(Twitter)

Comparatives

- Regular comparatives in adult French are formed with word *plus* 'more' and the positive form of the adjective
- For *bon* 'good', there is a portmanteau comparative form *mieux* 'better' which blocks the regular form **plus bon*
- French children frequently produce *mieux* with a redundant *plus* (cf. Moline 1971), thus spelling out COMP twice

(7) a. *C'est plus mieux comme ça.* 'It's more better like this.'

b. *on va i donner un petit peu d'eau* (...) *pour qu'i soit plus mieux.*
'We'll give him a little bit of water (...) so that he's feels more better.' (VET, Saint-Pierre and Feider 1987)

Comparatives

- Suppletive and regular *-er* suffixed comparative forms can appear with redundant *more* (or *-er*) in child English

(8) a. *I like toasts more better.* (Abe 4;03, Kuczaj 1977)

b. *I make it more bigger.*
(Roman 3;09, Weist and Zevenbergen 2008)

c. *that's even lighterer.* (Helen 4;02, Lieven et al. 2009)

(9) *MAR: *a little bit more drier* .
*FAT: *yeah (.) that's true (.) and cleaner (.) right* .
*MAR: *and more drier and more cleaner* .
(Mark 3;09, MacWhinney 2000)

Comparatives

- Children produce the target comparative form before/alongside the redundant form
- Redundant comparatives can be overtly marked twice in English, with *more* and *-er*
- No correlation between irregular formation of the comparative and likelihood of commissive *more* in child English
    - e.g. *better* is no more likely than *bigger* to occur with commissive *more*
- Provides evidence for a multiple exponence analysis

Generalizations

- Redundant commission errors involve multiple exponence and can occur across word boundaries
- The element that is multiply realized tends to be
  - A higher element in the projection
  - A functional element, rather than the root
- Multiple exponence of lower elements are unattested or rare and do not seem to persist in the adult grammar

	Redundant commission error	
Target form	**well attested**	**unattested/rare**
donner	*faire donner*	**donner avoir*
CAUSE HAVE	CAUSE CAUSE.HAVE	CAUSE.HAVE HAVE
mieux	*plus mieux*	**mieux bon*
COMP GOOD	COMP COMP.GOOD	COMP.GOOD GOOD

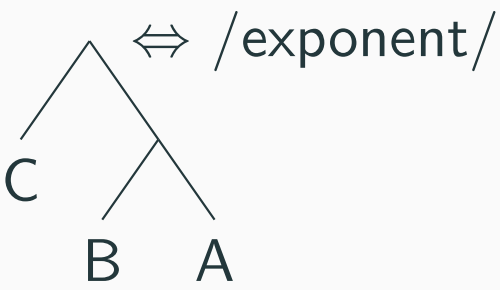
Theoretical analyses

Preliminaries

- Data show that ME occurs across word boundaries.
- Challenge for approaches that separate word-formation from phrase-formation (e.g. Paradigm Function Morphology, Stump 2001, 2016)
- Syntax-based approaches to morphology should be able to account for the data
- Two analyses presented here:
  - Nanosyntax (Starke 2009, Caha 2009, et seq.)
  - Distributed Morphology (Halle and Marantz 1993, 1994)

Nanosyntax

- Nanosyntax (Starke 2009, Caha 2009, et seq.) allows non-terminal spellout, i.e. spellout out of several terminal nodes that form a constituent at once.

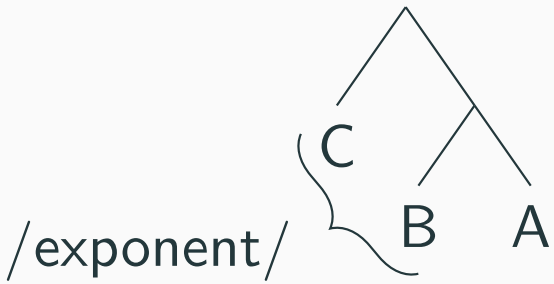
(10) 

- Lexicalization follows the Superset Principle. Previous lexicalizations may be overridden by subsequent lexicalizations.

Nanosyntax: Spanning

- Spanning (Williams 2003, Abels and Muriungi 2008, Taraldsen 2010, Svenonius 2012, a.o.) allows lexical items to spell out non-constituents (span = "a contiguous sequence of heads in a head-complement relation", Svenonius 2016: 205).

(11)



Nanosyntax: Commission errors

Claim

Children's commission errors result from **erroneous overlapping application** of spanning lexicalization (S-lexicalization) and run-of-the-mill constituent lexicalization (C-lexicalization).

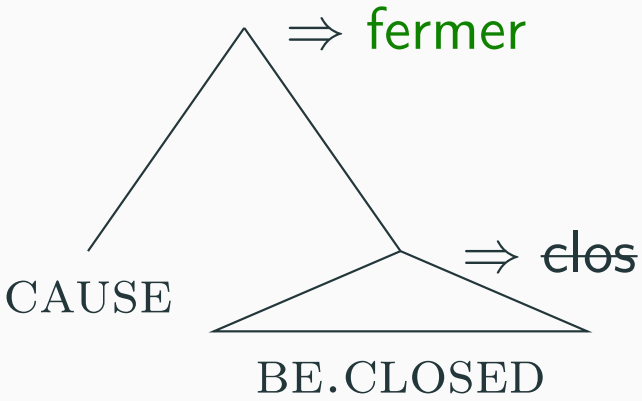
Nanosyntax: Causative fermer

(12) Lexical items

a. clos $\Leftrightarrow$ [BE.CLOSED]

b. fermer $\Leftrightarrow$ [CAUSE [BE.CLOSED]]

(13) C-lexicalization overrides previous C-lexicalization



Nanosyntax: Commissive faire fermer I

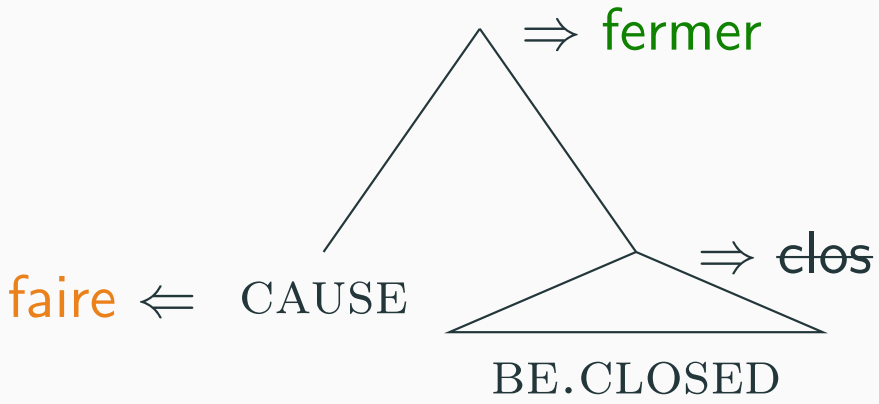
(14) Lexical items

a. clos $\Leftrightarrow$ [BE.CLOSED]

b. fermer $\Leftrightarrow$ [CAUSE [BE.CLOSED]]

c. faire $\Leftrightarrow$ [CAUSE

(15) Overriding *clos* with *fermer* and (erroneous) S-lexicalization of CAUSE by *faire*



Nanosyntax: Commissive faire fermer II

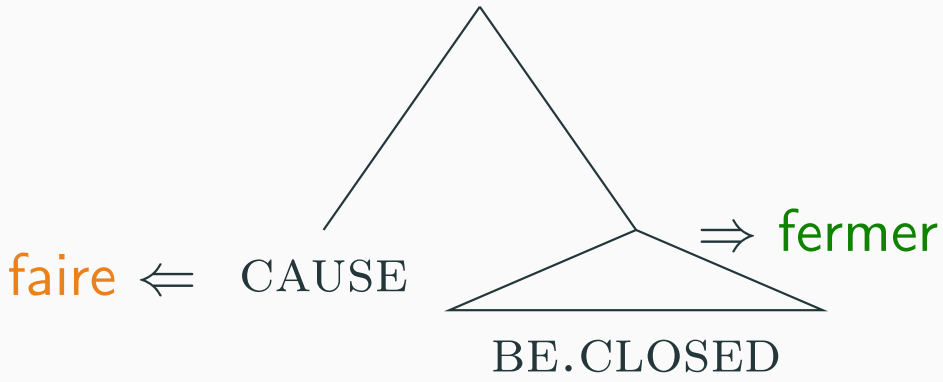
(16) Lexical items

a. clos $\Leftrightarrow$ [BE.CLOSED]

b. fermer $\Leftrightarrow$ [CAUSE [BE.CLOSED]]

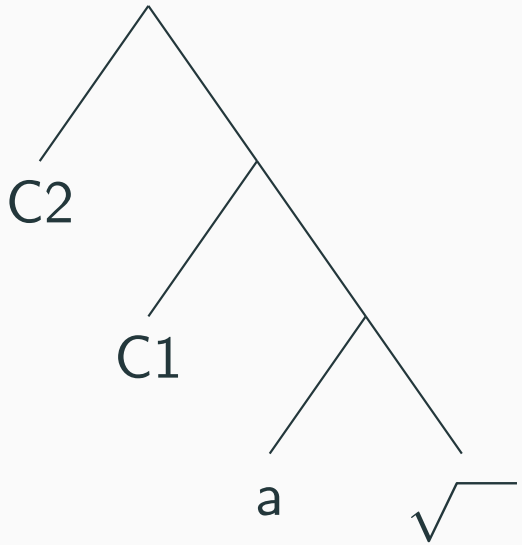
c. faire $\Leftrightarrow$ [CAUSE

(17) Elsewhere error inserting *fermer*, failure to override *fermer* and S-lexicalization of CAUSE with *faire*



Nanosyntax: Comparatives

(18) Structure of comparative phrase (Caha et al. 2019)



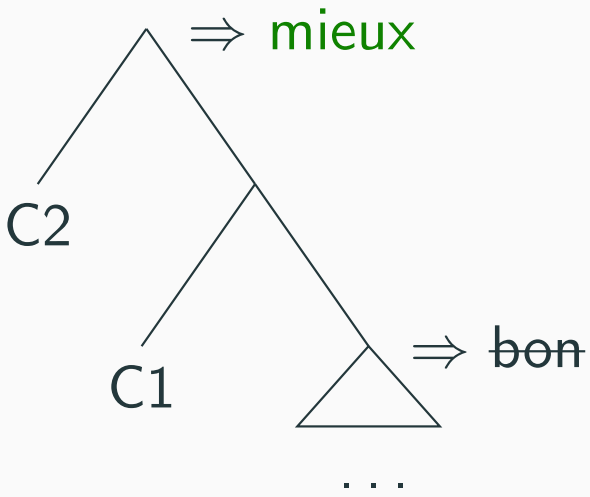
Nanosyntax: Comparative ‘mieux’

(19) Lexical items

a. bon $\Leftrightarrow$ [a $\sqrt{\text{GOOD}}$]

b. mieux $\Leftrightarrow$ [C2 [C1 [a $\sqrt{\text{GOOD}}$]]]

(20) Overriding *bon* with *mieux*



Nanosyntax: Commissive 'plus mieux'

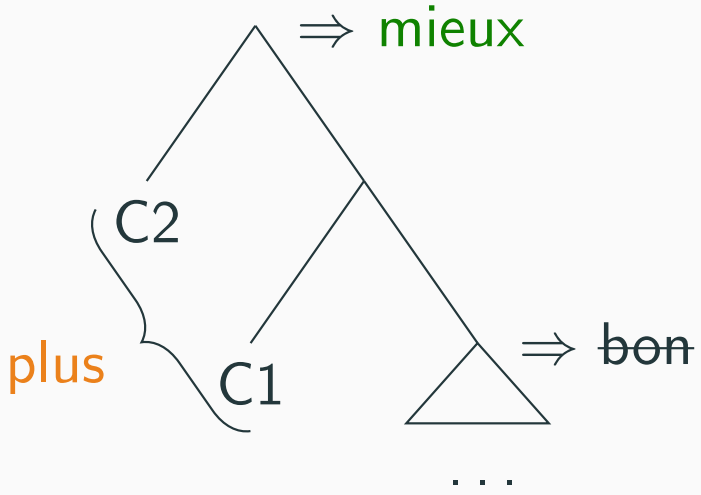
(21) Lexical items

a. bon $\Leftrightarrow$ [a $\sqrt{\text{GOOD}}$]

b. mieux $\Leftrightarrow$ [C2 [C1 [a $\sqrt{\text{GOOD}}$]]]

c. plus $\Leftrightarrow$ [C2 [C1

(22) Overriding *bon* with *mieux* and (erroneous) S-lexicalization of [C1[C2 by *plus*



Nanosyntax: Commissive 'more bigger'

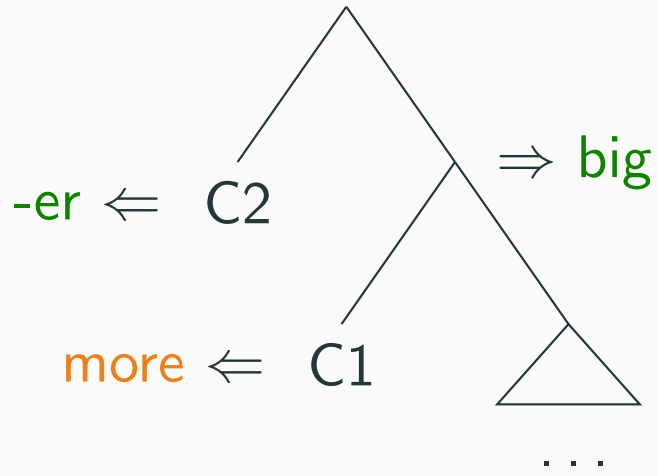
(23) Lexical items

a. big $\Leftrightarrow$ [C1 [a $\sqrt{\text{BIG}}$]]

b. more $\Leftrightarrow$ [C2 [C1

c. -er $\Leftrightarrow$ [C2

(24) Overriding *big* with itself and (erroneous) S-lexicalization of C1 by *more*



DM

- Vocabulary items may only be inserted into terminal nodes (heads) following the Subset Principle and Specificity.
- Head movement may generate complex heads, whose terminals may further undergo Fusion resulting in all features involved being present on a single simplex head.
- The application of Fusion is regulated by Minimize Exponence, a (transderivational) constraint that prefers the derivation that uses fewer exponents over one that uses more exponents to realize the same features (Siddiqi 2006).

DM: Commissive errors

Claim

Vocabulary Insertion takes place in accordance with the Specificity Principle but may **fail to discharge some features** (Maximize Exponence) which may then affect subsequent insertions.

DM: Causative ‘fermer’

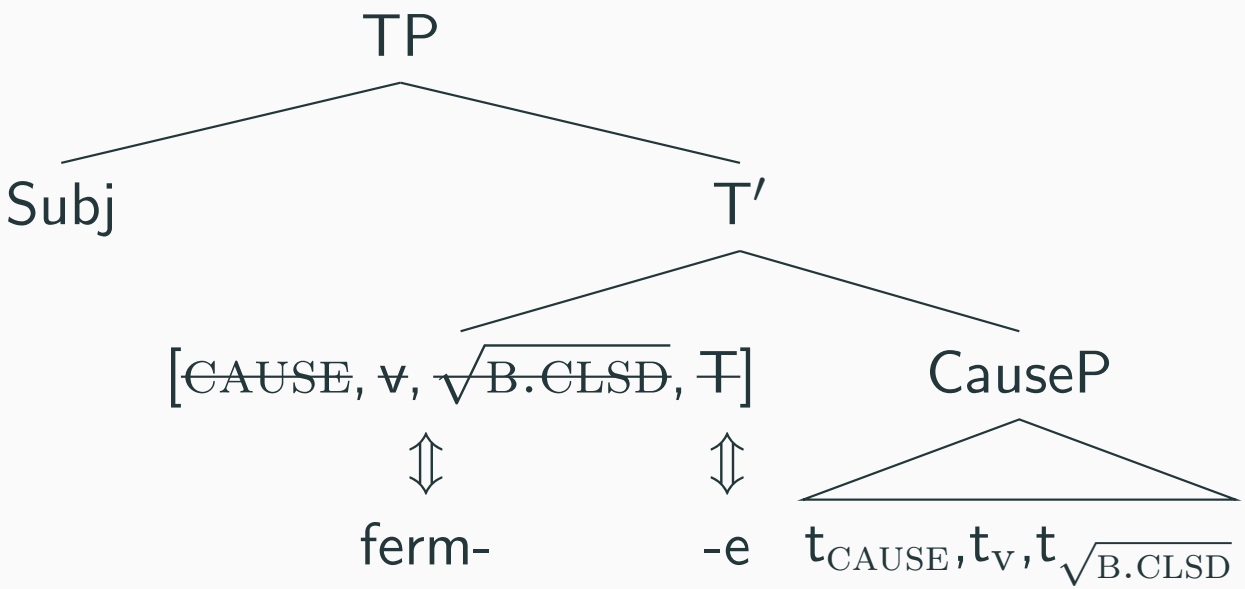
(25) *Vocabulary items*

a. *fermer* $\leftrightarrow$ $[\textsc{cause}, \mathrm{v}, \sqrt{\textsc{be.closed}}]$

b. *clos* $\leftrightarrow$ $[\mathrm{v}, \sqrt{\textsc{be.closed}}]$

c. *faire* $\leftrightarrow$ $[\textsc{cause}]$

(26)



DM: Commissive ‘faire fermer’

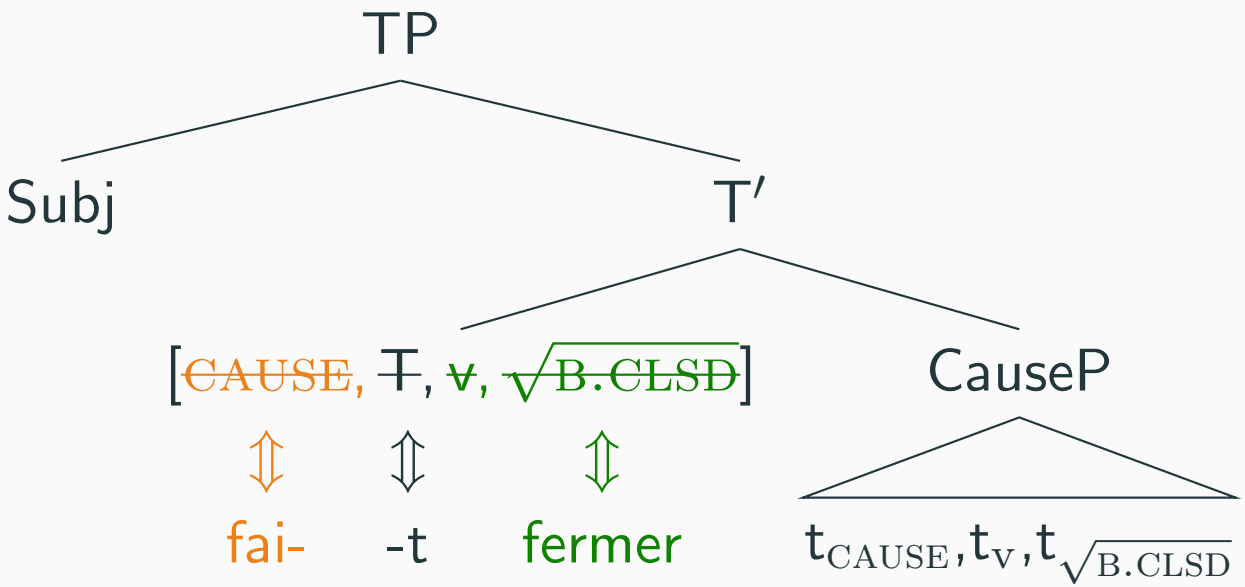
(27) *Vocabulary items*

a. *fermer* $\leftrightarrow$ [CAUSE,v,$\sqrt{\text{BE.CLOSED}}$]

b. *clos* $\leftrightarrow$ [v,$\sqrt{\text{BE.CLOSED}}$]

c. *faire* $\leftrightarrow$ [CAUSE]

(28)



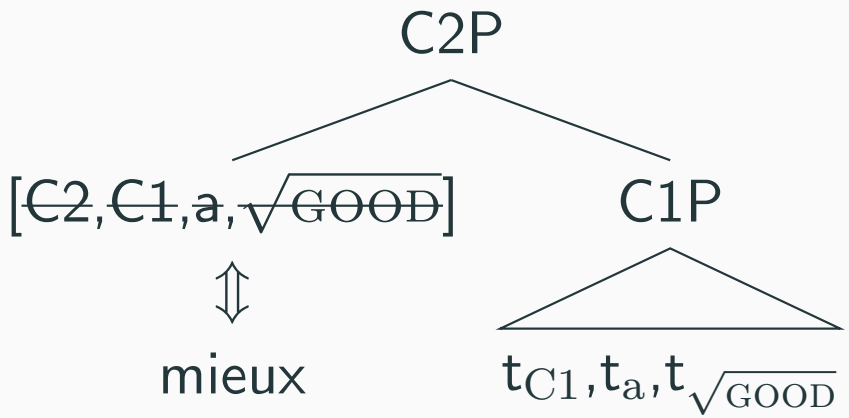
DM: Comparative ‘mieux’

(29) *Vocabulary items*

a. *mieux* $\leftrightarrow$ [C2,C1,a,$\sqrt{\text{GOOD}}$]

b. *bon* $\leftrightarrow$ [a,$\sqrt{\text{GOOD}}$]

(30)



DM: Commissive ‘plus mieux’

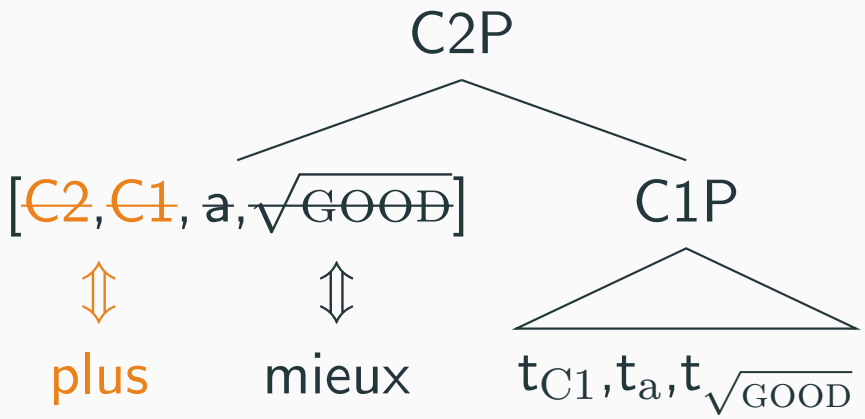
(31) *Vocabulary items*

a. *mieux* $\leftrightarrow$ [C2,C1,a,$\sqrt{\text{GOOD}}$]

b. *bon* $\leftrightarrow$ [a,$\sqrt{\text{GOOD}}$]

c. *plus* $\leftrightarrow$ [C2,C1]

(32)



DM: Commissive ‘more bigger’

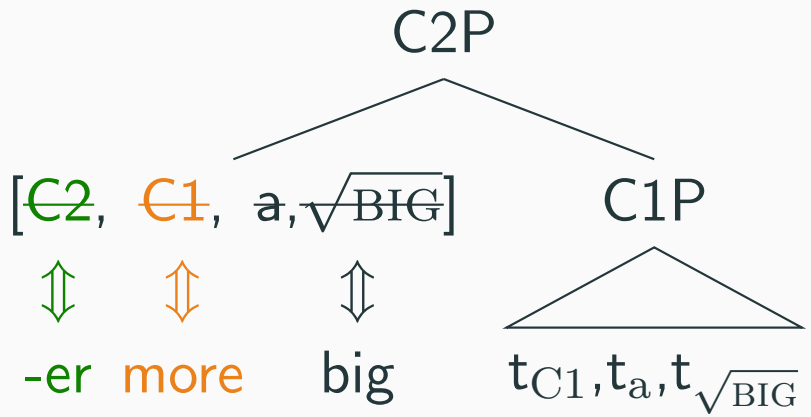
(33) *Vocabulary items*

a. *big* $\leftrightarrow$ [C1,a,$\sqrt{\text{BIG}}$]

b. *-er* $\leftrightarrow$ [C2]

c. *more* $\leftrightarrow$ [C2,C1]

(34)



DM vs. Nanosyntax

DM:

- Without further restrictions *mieux* could equally well discharge only [C2,C1]. We would expect [a,$\sqrt{\text{GOOD}}$] to be realized by *bon* resulting in unattested **mieux bon*.
- We cannot appeal to directionality (bottom-up) as all features are fused on one terminal without hierarchical order.

Nanosyntax:

- In overlapping C-lexicalization and S-lexicalization, the latter applies exclusively to higher material.
- Correctly predicts multiple exponence of high/functional elements rather than root material.
- Linearization doesn't seem to be straightforward.

Extension

Functional cases

- Some cases of multiple exponence in child language only involve functional material
- It is again the higher element which tends to be doubled
- Locative prepositions

Locative prepositions

- Svenonius (2006): Locative prepositions have a structure consisting of three locative concepts
  - English *behind*, *in*, *under*, *above*
  - French *derrière*, *dans*, *sous*, *sur*

(35) a. [PLACE [AXPART [EIGEN [GROUND]]]]

b.	be	-hind	∅	the car
c.	de	-rrière	∅	la voiture

- Some child languages exhibit multiple exponence of the PLACE concept

Locative prepositions

- French *sous* 'under' spells out the three locative concepts PLACE, AXPART, EIGEN
- *sous* can occur with redundant *de* in child French, thus spelling out PLACE twice
  - *dessous* exists as an independent preposition in French but cannot be used with a following DP

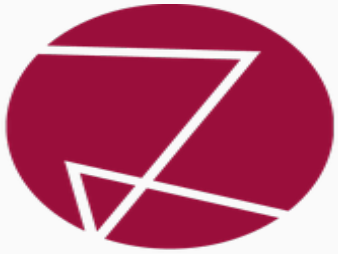
(36) *MOT: i(l)s sont cachés sous les ailes.
they are hidden under the wings

(37) *CHI: est caché dessous les ailes.
is hidden PLACE.under the wings

'They are hidden under the wings.'
(Théotime 2;05, Demuth and Tremblay 2008)

Conclusion

- Redundant commission errors are pervasive in child language
- These errors can occur across word boundaries and should be considered true cases of multiple exponence
- Cross-word multiple exponence favors syntactic approaches to word formation
    - Multiple exponence of high/functional elements is straightforwardly predicted in a Nanosyntactic approach
- Multiple exponence in child language reflects an intermediate stage of acquisition in which children attempt to maximize both transparency and economy



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