

Locality, Listedness, and Morphological Identity in English participial allomorphy

1 Outline

- Presentation of the data and Embick’s (2003) analysis
- Discussion of problematic assumptions/consequences
- Alternative: allomorphy as inflection class
- Unproblematic analysis in Keine’s (2013) version of DM

2 Embick’s (2003) analysis

2.1 The data

The exponence of the past participle varies depending on (i) the actual lexical item (1 vs. 2) and (ii) whether it is in the adjectival (3-a) or passive (3-b) environment.

- (1) a. The *closed* window. (2) a. The *written* note. (3) a. The *rotten* apple.
 b. The window was *closed*. b. The note was *written*. b. The apple was *rotted*.

Two questions (and answers):

1. How can the allomorphy between adjectival and passive participle of the same lexical item (root) be derived?
⇒ structural differences
2. Are form-identical exponents (e.g. *-en* in *written* vs. *rotten*) syncretic or accidentally homophonic?
⇒ syncretic (Syncretism Principle, Müller, 2005: 237)

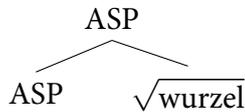
2.2 The analysis

Background assumptions:

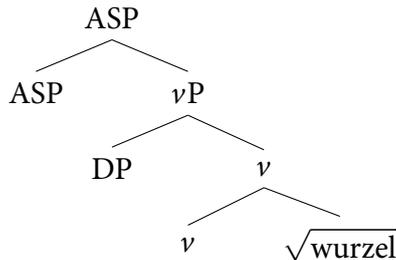
- standard Distributed Morphology (Halle & Marantz, 1993, 1994; Noyer, 1997)
- stems = category neutral roots + categorising heads (Marantz, 1997, 2001; Embick & Noyer, 2007; Embick & Marantz, 2008)
- categorising heads are realised by vocabulary-insertion just like all other functional heads
⇒ derivational morphology = inflectional morphology

Passive participles have two eventive readings (resultative and eventive passive) which suggest the presence of a verbalising head v (Travis, 1994; Harley, 1995; Kratzer, 1996). Participle exponents are inserted into ASP.

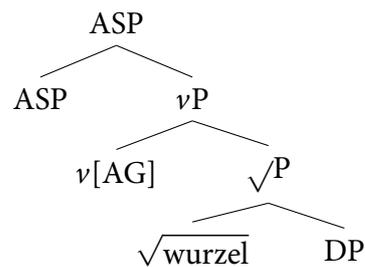
(4) a. *stative*



b. *resultative*

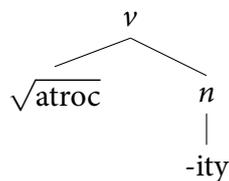


c. *eventive passive*

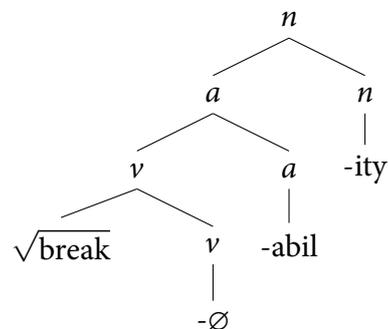


ASP behaves like a categorising head (e.g. n in (5)) merging with more than one category (i.e. bare roots as well as projections of v) which is a general property of derivational morphology (Marantz, 2001). In both environments the same vocabulary item *-ity* is inserted into n .

(5) a. *structure of atroc*



b. *structure of breakability*



Insertion then takes place in two cycles, an inner cycle that only targets root-attached nodes, and an outer cycle that targets all non root-attached nodes. The roots on which a given vocabulary item can occur must be listed in its insertion context. This leads to the list of VIs in (6).

(6) a. *Insertion into ASP: inner cycle*

- ASP ↔ -en/_ {√rot, √shrink, ...}
- ASP ↔ -∅/_ {√open, √empty, ...}
- ASP ↔ -t/_ {√bend, ...}
- ASP ↔ -èd/_ {√bless, √allege, √age, ...}
- ASP ↔ -ed/_ {√close, √obstruct, ...}

b. *Insertion into ASP: outer cycle*

- ASP ↔ -en/_ {√break, √speak, ...}
- ASP ↔ -∅/_ {√hit, √sing, √shrink, ...}

ASP ↔ -t/___{√bend, √bought, ...}
 ASP ↔ -ed

Support for the somewhat special status of root-attachedness and the distinction of root-attached vs. non root-attached comes from semantics. In Chichewa, the meaning of root+STAT (without the intervening *v*-head) may be idiomatic (7-a) whilst it is compositional in root+PASS (with intervening *v*-head) (Marantz, 2001: 5).

(7) Idiomaticity of direct root-attachment in Chichewa

- a. Chaka chatha chimanga chi-na-lim-ika.
 year last corn AGR-PROG-cultivate-STAT
 “Last year corn was bountiful.”
- b. Chaka chatha chimanga chi-na-lim-idwa.
 year last corn AGR-PROG-cultivate-PASS
 “Last year corn was cultivated.”

Are *-en/___*{√rot, √shrink, ...} and *-en/___*{√break, √speak, ...} still syncretic?
 ⇒ there are two kinds of syncretism (Embick, 2003: 163):

- Intra-cyclic syncretism: vocabulary items are identical when they pair identical features/nodes with identical exponents.
- Inter-cyclic syncretism (Substantive Identity): identity of form and function except for the context features (i.e. listed roots).

Usually *v* and other categorising heads are phases (Marantz, 2001). How then can the root be referred to in the outer cycle where there is no strictly local structural relation to ASP?
 ⇒ Insertion of a non-default (non *-ed*) in the outer cycle only ever occurs under linear adjacency of root and ASP. A linearisation operation * applies before insertion in each cycle ordering the terminal nodes. A null-realisation of the intervening *v*-head is transparent by stipulation. This correctly predicts the non-availability of non-default participial morphology with overt verbalisers such as *-ise*.

(8) *Derivation of broken* (Embick, 2003: 166)

INPUT: [[√break *v*] ASP]
 Linearisation 1: [(√break * *v*) ASP]
 Insertion 1: [(√break * -∅) ASP]
 ∅-transparency: (√break * -∅) → (√break)
 Linearisation 2: (√break * ASP)
 Insertion 2: (√break * *-en*)

3 Problems

3.1 Two-cycle insertion

Syncretism:

- substantive Identity = identity up to the contextual features
- all features restricting the insertion of a VI in principle formulatable as contextual features

- syncretism then is identity of phonological form

⇒ undermines the notion of syncretism as identity of form and function

Special status of root-attachment:

- root-attachment often gives non-compositional meaning
- but there are idiomatic meanings of considerably bigger structures
- compositional meanings of root+head are impossible for the independent reason that root are semantically empty (Panagiotidis, 2011)
- idiomatic meanings are possible for any structure but the only meaning for root+head structures

⇒ no extrinsic special status of root-attachment is needed

3.2 Locality

- structural locality (root-attached vs. non root-attached) accounts for adjectival vs. passive allomorphy (3-a vs. b)
- linear locality (root-adjacent vs. non root-adjacent) accounts for root-conditioned allomorphy (1 vs. 2)
- linearity is no concept of Syntax, if word-building is syntactic linearity should play no role in it
- linear adjacency somewhat counteracts the structural locality

⇒ only structural locality should restrict allomorphy

4 An alternative

4.1 Participial allomorphy as inflection class

- set of exponents not predictable from phonological properties of the stem/root → not allomorphy in Eva's sense
- Inflection class is "a set of lexemes whose members each select the same set of *inflectional* realisations". (Aronoff, 1994: 64, my emphasis).
- derivational morphology = inflectional morphology = realisation of syntactic heads (Marantz, 1997; Baker, 1988; Pesetsky, 1995)

⇒ participial morphology in English exhibits the 8 inflection classes in (9).

(9) *Inflection classes of English participles*

| class | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------|-------|-------|-----|------|--------|-----|------|--------|
| I | ed | en | ∅ | t | èd | en | ∅ | en |
| II | ed | en | ∅ | t | ed | ed | ed | ∅ |
| | close | write | hit | bend | allege | rot | open | shrink |

- underlying structures are those in (4)
- ASP is an adjectiviser a (it behaves like a categoriser as mentioned above)
- every categoriser c bears a feature $[c]$ that is realised by its exponent

Implementation 1:

- row I realises the a head, row II the v head
- ⇒ not plausible because (i) 4 of 5 exponents are identical in both conditions and (ii) no agglutinative morphology is found though it would be expected

Implementation 2:

- postsyntactic Fusion of a - and v -head, fused head is structurally adjacent to the root
- ⇒ bidirectional syncretism of $-en$ and $-ed$ hard to account for

General problems:

- Stems are marked with inflection class features in the lexicon and must pass through the syntax to the postsyntactic morphology. But they violate the Legibility Condition (Chomsky, 2000, 2001) because the syntax cannot read them.
- Roots are category-free. They cannot bear inflection class features because these would presuppose a category (Acquaviva, 2009).

4.2 Keine's (2013) modified DM

Morphological inventories consist of a set of exponents Γ and an accessibility relation R defined over it ($R \subset (\Gamma \times \Gamma)$).

(10) *Morphological inventory* (Keine, 2013: 3)

Morphological inventories are ordered pairs $\langle \Gamma, \Delta \rangle$ with Γ a set of exponents and Δ an accessibility relation defined over Γ .

a. *Exponent*

An exponent \mathcal{A} is an ordered pair $\langle \sigma, \pi \rangle$, where σ is a set of morpho-syntactic features and π is a phonological string.

b. *Accessibility relation*

The accessibility relation is a set of ordered pairs of exponents. If $\langle \mathcal{A}, \mathcal{B} \rangle \in \Delta$, then $\mathcal{A}, \mathcal{B} \in \Gamma$. $\langle \mathcal{A}, \mathcal{B} \rangle \in \Delta$ will be notated as ' $\mathcal{A} \rightarrow \mathcal{B}$ ' for convenience.

The insertion process is a somewhat adapted finite state automaton.

(11) *State* (Keine, 2013: 3)

A state is an ordered triple $\langle \mathcal{A}, \Sigma, \Pi \rangle$ such that \mathcal{A} is an exponent, Σ is a set of morpho-syntactic features, and Π is a phonological string.

(12) *Insertion* (Keine, 2013: 4)

Given a morphological inventory $\langle \Gamma, \Delta \rangle$,

a. *initial state*:

$\langle \varkappa, \Sigma, \Pi \rangle$, with Σ being some syntactically well-formed set of morpho-syntactic features and Π being some lexically determined phonological string;

b. *transition* ' \triangleright ':

given some state $\langle \mathcal{A}, \Sigma, \Pi \rangle$ and an exponent $\mathcal{B} = \langle \sigma, \pi \rangle$ fulfilling the Subset Principle, $\langle \mathcal{A}, \Sigma, \Pi \rangle \triangleright \mathcal{B} \equiv \langle \mathcal{B}, \Sigma \setminus \sigma, \Pi \oplus \pi \rangle$.

c. *final state*:

a state $\langle \mathcal{A}, \Sigma, \Pi \rangle$ is final if for all exponents $\mathcal{B} \in \Gamma$ with $\mathcal{B} = \langle \sigma, \pi \rangle$, either $\mathcal{A} \rightarrow \mathcal{B}$ or $\sigma \notin \Sigma$ or both.

The Subset Principle is modified to make reference to the accessibility relation.

(13) *Subset Principle* (Keine, 2013: 3)

An exponent $\mathcal{A} = \langle \sigma, \pi \rangle$ is applied to stage $\Omega = \langle \mathcal{B}, \Sigma, \Pi \rangle$ if

a. \mathcal{A} is accessible from \mathcal{B} : $\mathcal{B} \rightarrow \mathcal{A}$,

b. the morpho-syntactic features of \mathcal{A} are a subset of the morpho-syntactic features of Σ : $\sigma \subseteq \Sigma$,

c. there is no exponent $\mathcal{C} = \langle \sigma', \pi' \rangle$, such that $\mathcal{B} \rightarrow \mathcal{C}$, $\sigma' \subseteq \Sigma$, and \mathcal{C} is more specific than \mathcal{A} .

- the initial state comprises the insertion of the root which is governed by different principles than insertion of inflectional/derivational exponents
- insertion terminates if and only if a finite state is reached
- all heads bearing features that are to be realised must undergo Fusion
- contextual features cannot play a role in determining insertion

4.3 Proposal

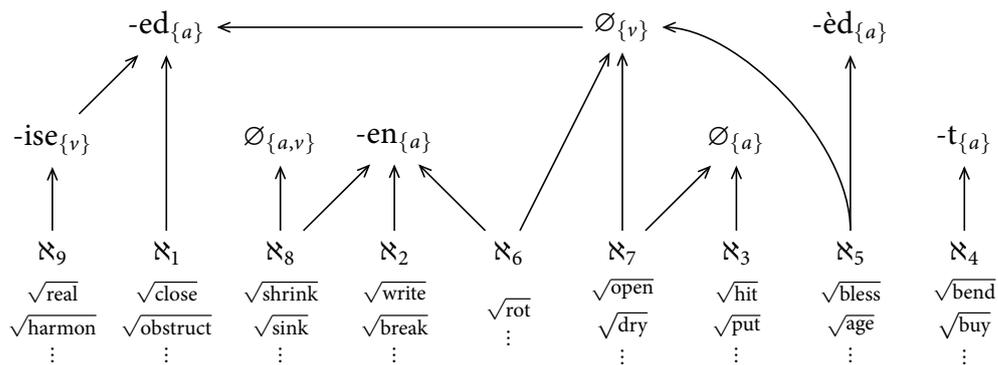
Extend Keine's machinery in a way that there can be more than only one initial state.

- one initial state \varkappa per inflection class
- roots that can be inserted into each initial state must be listed at this state

(14) *Inflection classes of English participles*

| class | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------|-------|-------|-----|------|--------|-----|------|--------|
| I | ed | en | ∅ | t | èd | en | ∅ | en |
| II | ed | en | ∅ | t | ed | ed | ed | ∅ |
| | close | write | hit | bend | allege | rot | open | shrink |

(15) VI-specifications and accessibilities of English participles



- except for the \emptyset all exponents have only one underlying representation
- (it might be debatable to what extent \emptyset -exponents can actually be identical in form)
- ideally (15) is only a detail of the whole morphological system of English morphology (i.e. there should be accessibilities from *-ise* to *-able*, *-ation*, *-s*, ...)

5 Conclusion

- no reformulation of syncretism is needed
- insertion applies only once, not in two cycles
- true unification of inflectional and derivational morphology in one system
- compatible with notion of roots and the Legibility Condition
- Keine's approach independently accounts for further phenomena including extended exponence, obligatory co-occurrence and possibly paradigmatic gaps

⇒ It remains to be checked whether it is possible to extend the account to other derivational exponents (e.g. *-ity*, *-ism*, *ly*, etc.) and to inflection classes in other languages (e.g. nominal inflection in Icelandic, German, Russian, etc.).

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