On the role of phonology at Vocabulary Insertion

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1. Introduction

Plural agreement in Vata: phonologically conditioned agreement mismatch

Class 1: all human nouns and some animals; agreement marker [wa] on adjectives:

(1) Class 1: ŋl-ɨ4 zal-wa1.1
woman.CL1-PL red.CL1.PL

Class 2: default, agreement marker [i/i] on adjectives:

(2) Class 2: ful-i3.1 zal-i1.1
rat.CL2-PL red.CL2.PL

Agreement mismatch:
Class 1: adjectives with a stem containing [ɔ] take [i] (class 2) instead of [wa].

(3) Class 1: ŋl-ɨ4 zal-wa1.1 pɔp-i3.4 *(pɔp-wa)
woman.CL1-PL red.CL1.PL white.CL2.PL
1. Introduction

Plural agreement in Vata: phonologically conditioned agreement mismatch

(4) a. Class 1: $ŋl-\text{ɪ}^4$ 
   woman.\text{CL}1-PL 
   $\text{zal-wa}^1.1$ 
   red-\text{CL}1.PL 
   $\text{pɔp-ɪ}^3.4$ 
   white-\text{CL}2.PL 
   *(pɔp-wa)

b. Class 2: $\text{ful-ɪ}^3.1$
   rat.\text{CL}2-PL 
   $\text{zal-ɪ}^1.1$ 
   red-\text{CL}2.PL 
   $\text{pɔp-ɪ}^3.4$

➢ Class 1: The stem-vowel [ɔ] creates an overt mismatch in class between adjective and noun.

➢ The two functions of the morpheme [ɪ]:
   • Class-1-agreement: \textbf{Phonologically conditioned allomorph} in the context of [ɔ].
   • Class-2 agreement: Realizes agreement in \textit{all cases}. 
1. Introduction

How decisive can phonology be in morphology?

Realizational models (Halle 1990)

- Morphology maps an abstract syntactic structure to a phonological representation.
- Determined by vocabulary items (VIs): [SYNT features ↔ PHON features]

Separationist (Wolf 2008) theories: Phonology has no effect on Vocabulary Insertion

- Distributed morphology (Halle 1990; Halle & Marantz 1993), Nanosyntax (Starke 2009)
- Syntax → Vocabulary Insertion → Phonology

Integrationist (Wolf 2008) theories: Phonology and Vocabulary Insertion apply in parallel.

- Syntax → Vocabulary Insertion & Phonology
1. Introduction

How decisive can phonology be in morphology?

Proposal
• Integrationist model:
  • OT-model: Phonological constraints are active at Vocabulary Insertion.
• BUT: Effect of phonological constraints is restricted:
  • Phonological constraints cannot insert morphosyntactic features.
1. Introduction

Goals of the presentation:

• Show the effect of phonology in Vata agreement

• Lay out an OT-analysis where the effect of phonology is restricted

• Discuss typological predictions
Plural agreement in Vata

Morphosyntactic representation of classes

Class-1 (all human nouns and some animals)
- Features: \{PERSON\}, noun feature \{N\}, \{PL\} (see Sande 2018 for Guébie).
- Agreement for \{N, PERSON, PL\}.

(5) $\eta\hat{I}^{4}$ zal-$wa^{1.1}$
woman.$N.3P-PL$ red-AGR:$N.3P.PL$

Class-2 (default)
- Features: \{N\}, \{PL\}
- Agreement for \{N, PL\}.

(6) $ful-i^{3.1}$ zal-$x^{1.1}$
rat.$N-PL$ red-AGR:$N.PL$
2. The effect of phonology

Plural agreement in Vata and separationist models

*Distributed Morphology*

- Vocabulary Insertion applies independently from phonology.
- Syntax → Vocabulary Insertion → Phonology
  - No general phonological constraints apply at Vocabulary Insertion.

(7) *Subset Principle* (Halle 1997):
I. A vocabulary item may apply, when all or a subset of its features are specified in the input.
II. Where more than one vocabulary item may apply, only the most specified vocabulary item applies.
2. The effect of phonology

Plural agreement in Vata and separationist models

(8) VIs: a. [\text{AGR:N.3P.PL} \Leftrightarrow \text{wa}] b. [\text{red-AGR:N.PL} \Leftrightarrow \text{i}]

(9) Morphosyntactic Input Possible VI-combinations

a. Class 1
   \{\sqrt{\text{red-AGR:N.3P.PL}}\} \quad \Rightarrow \quad [\sqrt{\text{red}} \Leftrightarrow \text{zal}]-[\text{AGR:N.3P.PL} \Leftrightarrow \text{wa}]
   \quad \Rightarrow \quad [\sqrt{\text{red}} \Leftrightarrow \text{zal}]-[\text{AGR:N.PL} \Leftrightarrow \text{i}]
   \quad \Rightarrow \quad [\sqrt{\text{red}} \Leftrightarrow \text{zal}]

b. Class 2
   \{\sqrt{\text{red-AGR:N.PL}}\} \quad \Rightarrow \quad [\sqrt{\text{red}} \Leftrightarrow \text{zal}]-[\text{AGR:N.PL} \Leftrightarrow \text{i}]
   \quad \Rightarrow \quad [\sqrt{\text{red}} \Leftrightarrow \text{zal}]

Subset-Principle (Halle 1997):
I. A vocabulary item may apply, when all or a subset of its features are specified in the input.
II. Where more than one vocabulary item may apply, only the most specified vocabulary item applies.
2. The effect of phonology

Plural agreement in Vata and separationist models

Adjectives with the stem vowel [ɔ]

(10) Morphosyntactic input

{√white-AGR:N.3P.PL}

Possible VIs in the output

* [√white ↔ pɔp]-[AGR:N.3P.PL ↔ wa]
[√white ↔ pɔp]-[AGR:N.PL ↔ i]
[√white ↔ pɔp]

Subset-Principle (Halle 1997):

I. A vocabulary item may apply, when all or a subset of its features are specified in the input.
II. Where more than one vocabulary item may apply, only the most specified vocabulary item applies.
2. The effect of phonology

Plural agreement in Vata: the effect of phonology

(11) Phonological constraint: *[ɔ-w]: The segments [ɔ] and [w] must not cooccur in adjacent syllables.

(12) Agreement mismatch:
- Morphosyntactic input
- Possible VI-combinations
  - [√white ↔ pɔp]-[AGR:N.3P.PL ↔ wa]
  - [√white ↔ pɔp]-[AGR:N.PL ↔ I]
  - [√white ↔ pɔp]

Phonologically triggered Impoverishment: Phonological constraints blocks the insertion of the most specific applicable VI (Contrary to Part II of the Subset Principle).

- Impoverishment of {3P}
  - *[ɔ-w] blocks [AGR:N.3P.PL ↔ wa] → {3P} is not realized.
2. The effect of phonology

The avoidance of [ɔ+w] in Vata

• The combination of [ɔ] and [w] seems to be avoided noun-internally.

• The combination [w+ɔ] is not allowed in offglides ⇒ deletion of [w].

(13) UR SR meaning (Kaye 1981, 82-83)

a. /lwɛ'2/ [lwɛ'2] ‘elephant’
   /lw-ɔ'2/ [lɔ'2] ‘elephant-PL’

b. /gwɛ'4/ [gwɛ'4] ‘ape’
   /gw-ɔ'4/ [go'4] ‘ape-PL’
3. An OT-account

Basic assumptions
- Integrationist approach
  Syntax $\rightarrow$ **Vocabulary Insertion & Phonology**
  - Phonological markedness constraints
  - Morphological faithfulness constraints

(14)
3. An OT-account

The GENERATOR
- Restricted to Vocabulary Insertion
- Subset Requirement
  A vocabulary item may only be inserted, when all or a subset of its features are specified in the input. (= Part I of the Subset Principle)

\[(15)\]
\[
\text{Input} \quad \text{GEN} \quad \text{EVAL} \quad \text{Output}
\]
\[
\text{CL1} \quad \{\sqrt{\text{red}}\text{-AGR:N.3P.PL}\} \quad \rightarrow \quad [\sqrt{\text{red}} \leftrightarrow \text{zal}]-[\text{AGR:N.PL.3P} \leftrightarrow \text{wa}]
\]
\[
\quad \rightarrow \quad [\sqrt{\text{red}} \leftrightarrow \text{zal}]-[\text{AGR:N.PL} \leftrightarrow 1]
\]
\[
\quad \rightarrow \quad [\sqrt{\text{red}} \leftrightarrow \text{zal}]
\]

\[
\text{CL2} \quad \{\sqrt{\text{red}}\text{-AGR:N.PL}\} \quad \rightarrow \quad [\sqrt{\text{red}} \leftrightarrow \text{zal}]-[\text{AGR:N.PL} \leftrightarrow 1]
\]
\[
\quad \rightarrow \quad [\sqrt{\text{red}} \leftrightarrow \text{zal}]-[\text{AGR:N.PL} \leftrightarrow 1]
\]

impossible:
\[
[\sqrt{\text{red}} \leftrightarrow \text{zal}]-[\text{AGR:N.PL.3P} \leftrightarrow \text{wa}]
\]
3. An OT-account

Constraints

Morphological faithfulness constraints
• Realize a feature in the input by a VI in the output.

(16) \text{PARSE\{PL\}}: \text{Realize input-PL-features by a VI in the output.}
(17) \text{PARSE\{3P\}}: \text{Realize input-3P-features by a VI in the output.}

(18) Input: \{\text{\sqrt{red}-AGR:N.3P.PL}_1\} \quad \text{Output: } [\text{\sqrt{red} \Leftrightarrow zal}]-[\text{AGR:N.3P.PL}_1 \Leftrightarrow \text{wa}]

Phonological markedness constraint
(19) ^\ast [\text{ɔ-w}]: \text{The segments } [\text{ɔ}] \text{ and } [\text{w}] \text{ must not cooccur in adjacent syllables.}
3. An OT-account

Constraints

Morphological faithfulness constraints
• Realize a feature in the input by a VI in the output.

(16) \textsc{parse}\{PL\}: Realize input-PL-features by a VI in the output.
(17) \textsc{parse}\{3P\}: Realize input-3P-features by a VI in the output.

(18) Input: \{√\text{red-AGR:N.3P}_2.PL}_1\} Output: [√\text{red ↔ zal}]-[\text{AGR:N.3P}_2.PL_1 ↔ wa]

Phonological markedness constraint
(19) *[ɔ-w]: The segments [ɔ] and [w] must not cooccur in adjacent syllables.
3. An OT-account

Agreement mismatch

(20)

<table>
<thead>
<tr>
<th>input:</th>
<th>*[ɔ-w]</th>
<th>PARSE{PL}</th>
<th>PARSE{3P}</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [\text{white} \Leftrightarrow pɔp]-[\text{AGR:N.3P.PL} \Leftrightarrow wa]</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. [\text{white} \Leftrightarrow pɔp]-[\text{AGR:N.PL} \Leftrightarrow i]</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. [\text{white} \Leftrightarrow pɔp]</td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

- *[ɔ-w] >> PARSE{3P}: Phonologically triggered impoverishment of {3P}
How decisive can phonology be in morphology?

Subset requirement
A vocabulary item may only be inserted, when all or a subset of its features are specified in the input.

Predictions:
1. Phonologically conditioned allomorphy
2. Phonologically triggered Impoverishment
3. Empty morphemes

Not predicted:
Insertion of morphosyntactic features
4. Typological predictions

How decisive can phonology be in morphology?

1. Phonologically conditioned allomorphy:
   Selection between VIs specified for the same features.

   (21) Indefinite determiners in English:
   a. \([\text{DET.-DEF.SG} \leftrightarrow \text{an}] \ [\sqrt{\text{end}}] \ (*[\text{a end}] \text{ violates ONSET})\)
   b. \([\text{DET.-DEF.SG} \leftrightarrow \text{a}] \ [\sqrt{\text{dog}}] \ (*[\text{an dog}] \text{ violates NO CODA})\)

2. Phonologically triggered impoverishment
   Phonological constraints block the insertion of the most specific applicable VI.
4. Typological predictions

3. Empty morphemes
   • Not specified for morphosyntactic features
   • Only inserted for phonological purposes

Morpheme /pa/ in Pitjantjatjara (Hale 1973, Wolf 2008)

(22) [∅ ↔ pa]

• On uninflcted noun-stems:

(23) a. mankur-\textit{pa} ‘three’ b. punpun-\textit{pa} ‘fly’ c. malanj-\textit{pa} ‘younger brother’
   (Hale 1973: 450)

• Verbs: after the consonant-final suffixes (Hale 1973: 450):
   /–n, -ɲin, ɲin/ → /–n-\textit{pa}, -ɲin-\textit{pa}, ɲin-\textit{pa}, -nin-\textit{pa}/
4. Typological predictions

3. Empty morphemes

(22) [∅ ↔ pa]

(23) a. mankur-\textit{pa} ‘three’ b. punpun-\textit{pa} ‘fly’ c. malanj-\textit{pa} ‘younger brother’

• \textit{*C}_{PWd}: avoidance of consonant-final stems (Wolf 2008) (*mankur)
• [∅ ↔ pa]: Not specified for morphosyntactic features → Subset Requirement not violated

\textbf{NOT predicted by the Subset Requirement:}

• VIs specified for morphosyntactic features.
• Inserted for phonological reasons without realizing morphosyntactic features.
• \textbf{Not attested}
4. Typological predictions

Phonology does not insert features

Modern Hebrew: plural markers (Becker 2008)

(24) masculine: [im] feminine: [ot]

(25) a. yelad-ím ktan-ím b. yelad-ót ktan-ót
boy-PL little-PL girl-PL little-PL

(26) Gender mismatches
a. masculine: xalon-ót gdol-ím b. feminine: nemal-ín ktan-ót
window-PL big-PL ant-PL big-PL

• masculine nouns: most nouns contain [o] in the stem
• Wolf (2008): phonology of stem causes realization of {FEM} by [ot].
4. Typological predictions

Phonology does not insert features

masculine nouns with feminine PL-morpheme feminine nouns with masculine PL-morpheme

(26) a. xalon-ót gdol-ím b. nemal-ím ktan-ót
window-PL big-PL ant-PL BIG-PL

• Wolf (2008): Phonology of stem causes realization of \{FEM\} by [ot].
• Masculine nouns: most nouns contain [o] in the stem.
  ➢ Not productive: only 146 out of 230 nouns (Becker 2008)
• No phonological generalization for feminine nouns with [im].
  ➢ Subcategorization in the lexicon for both [ot] and [im] => Phonology does not insert features.
Phonological constraints apply at Vocabulary Insertion, but their effect is restricted.

Subset Requirement

1. Phonologically conditioned allomorphy

2. Phonologically triggered Impoverishment: Phonological constraints blocks the insertion of the most specific applicable VI.
   - Vata:
     - *[ʃ-w]: [AGR:N.PL ⇔ ʃ] over [AGR:N.3p.PL. ⇔ wa]

3. Empty morphemes
   - [∅ ⇔ pa] in Pitjantjatjara

- No hard evidence for feature insertion by phonology.
- Restricts possible analyses for a given phenomenon.
- Potentially easier for acquisition and processing

4. Conclusion
References


References


Thank you for your attention!
Phonology does not insert features

Spanish: some female nouns that start on stressed [a] take a masculine article [el].

() El árma
det.MASC weapon.FEM

However:
• Not productive
• Intervening adjective take masculine agreement as well.

() el nuevo arma secreta
Det.MASC new.MASC weapon.FEM secret.FEM
‘the new secret weapon’