### Phonetics in phonology: Root shortening in Mixtec

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**Research question**

Are phonology and phonetics strictly modular in nature?

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**Phonology**

- Disallowed
- Allowed

**Phonetics**

- Disallowed
- Allowed

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**Root shortening is a fast-speech process**

An informal production task found shortening much more likely to occur in fast speech than slow speech.

<table>
<thead>
<tr>
<th>Fast speech</th>
<th>Slow speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% (7)</td>
<td>2% (7)</td>
</tr>
<tr>
<td>40% (7)</td>
<td>6% (7)</td>
</tr>
</tbody>
</table>

In abstractionist models of phonology, fast-speech processes are phonetic, not phonological (McCarthy, 1986, Keating, 1996; Myers, 2000).

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**Root shortening is gradient**

There are many intermediate forms between long (left) and short (right) forms, mirroring a tendency in Otomanguean for laryngealization to vary widely in its realization (Gerfen & Baker 2005, Avelino 2010).

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**Vocalic portions of three productions of the word l'ui ("small") in the same syntactic position by the same speaker.**

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**Root shortening feeds general tone sandhi**

In SMPM, a word-final LH rise neutralizes to L when it is followed by an H tone.

(5) Non-application

- na'ksišku [n̥a'ksišku] leko
  - coors-chase turkey
  - rabbit
  - 'The turkey chased the rabbit.'

(6) Application

- na'ksišku [n̥a'ksišku] šenko
  - coors-chase turkey
  - skunk
  - 'The turkey chased the skunk.'

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**Root shortening counterfeeds lexically-specified tone sandhi**

For some words, an initial H tone becomes a LH contour when following an L-final word.

(9) Non-application

- jë/ [kâ/ní] kóom
  - door big
  - 'A big door.'

(10) Application

- jë/ [kâ/ní] liqom
  - raccoon big
  - 'A big raccoon.'

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**General tone sandhi is phonological**

This sandhi process applies whenever its structural condition is met, and it collapses the distinction between LH-final and L-final words.

- Further work is needed to determine the completeness of categorization neutralization.

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**It does not apply to grammatical tone**

There are many lexical exceptions to the process, and they cannot be predicted based on syntactic or phonological factors.

- (13) a. [ká/vá] pedé
  - Pedro
  - 'Pedro will dance.'

- (14) a. [kí] na
  - NEG 3PL
  - 'No one.'

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**Lexically-specified sandhi is early phonology**

Lexically specified sandhi bears several characteristics of early phonology, specifically phonologically-conditioned allomorphy (Nevins 2011).

- (15) (16) Non-application

- ká [kí]/ní
  - pig big
  - 'A big pig'

- (17) Non-application

- ká [kí]/ní
  - pig green
  - 'A green pig'

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**It is not phonologically optimizing**

Word-initial rises are marked in SMPM, and analyzing this process as purely phonological makes incorrect predictions about SMPM’s phonology (Eischen 2020).

- (18) [bú/šú] kái/ [kí]/ní
  - turkey big
  - 'A big turkey.'

The phonetic process of root shortening counterfeeds lexically-specified sandhi, suggesting there is a level of phonology that phonetics does not feed into.

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**Conclusion**

A semi-modular view of the phonetics-phonology interface is the best fit.

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**Selected References**