Seenku argument-head tone sandhi: Morphosyntax, phonology, or both?

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Introduction
Seenku

- “An Asian language in the Afro-sphere”
- Northwestern Mande language with Asian-esque phonology
- Tone sandhi system reminiscent of East Asian languages
Seenku tone sandhi

- “Argument-head tone sandhi”
- Calls into question the role of different grammatical components in...
  - Motivating changes in tonal form
  - Defining application domains
- Challenges the notion of underlying representations
Seenku tone sandhi

**Sandhi:**
à nǎ à sả
‘he will buy it’

à nǎ mó sả
‘he will buy me’

à nǎ mí sả
‘he will buy us’

**No sandhi:**
à lễ à sả
‘he bought it’

à lễ mó sả
‘he bought me’

à lễ mí sả
‘he bought us’
The question

• What roles do phonology, morphology, and syntax play in Seenku tone sandhi?
• How does Seenku sandhi fit into the typology of sandhi?
Today’s talk

• Seenku: Language and data
• Brief typology of tone sandhi
• Tonal alternations in tone sandhi
• Domains for tone sandhi
• Conclusions
Seenku: Language and data
Seenku

- Spoken in Burkina Faso by 17,000 speakers between two dialects
  - Northern Seenku (Prost 1971)
  - Southern Seenku (current work, NSF BCS-1664335)
Fieldwork and data

• All data come from my primary field notes
• NSF-funded documentation project (BCS-1664335)
• Approximately 9 months total since 2013
  • Burkina Faso
  • New York City
  • Vienna
Genetic affiliation

• Northwestern Mande
• Samogo group
  • Dzùungoo (Solomiac 2014)
  • Jowulu (Djilla et al. 2004)
  • Duungooma (Hochstetler 1996, Tröbs 2008)
  • Bankagooma
  • Kpeengo
Genetic affiliation
Typological characteristics

• S Aux O V X Neg word order

mənĩ nã bĩ sã kẽẽ Ṉे
woman PROSP goat buy tomorrow NEG
‘The woman won’t buy a goat tomorrow.’

• Minimal (segmental) morphology
• Tense expressed post-subject, aspect on the verb
Seenku tone

- Four contrastive levels of tone
- Straightforwardly captured in a two feature system (Yip 1980, Pulleyblank 1986, McPherson 2017a)

<table>
<thead>
<tr>
<th></th>
<th>Super High (S)</th>
<th>High (H)</th>
<th>Low (L)</th>
<th>Extra Low (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[upper]</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[raised]</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

- Tone features active in the morphology (McPherson 2017b)
# Contour tones

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>H</th>
<th>L</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td>Morph.</td>
<td></td>
<td>Morph.</td>
</tr>
<tr>
<td>H</td>
<td>Lex.</td>
<td></td>
<td>Morph.</td>
<td>Tonotactic</td>
</tr>
<tr>
<td>L</td>
<td>Lex.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Morph.</td>
<td>Morph.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rising**
- HS: ñáä ‘yawn’
- LS: kãa ‘next to’
- XS: ãã ‘3SG.PST’

**Falling**
- SH: mĩi ‘1PL.SUBORD’
- SX: mii ‘1PL.NARR’
- HL: bã (wè) ‘(with) balafon’
- HX: bã ‘balafon’
Contour tones

• Even some tritone contours

  XHX  đaân  ‘basket hanger’

  LSX  nãà  ‘come.PERF’

  HXS  dõŏn  ‘child.PST’
Asian-esque characteristics

- Mostly mono- and sesquisyllabic (Matisoff 1990) vocabulary

  toge ‘chicken’
  somâ ‘dance’
  jóbé ‘cloth’

- “Contractive”: result of heavy iambic reduction
Asian-esque characteristics

• Prototypical Mande/African vowel inventory at its base:
  ▫ 7 vowel qualities, with length/nasality contrasts
• But also a large diphthong inventory

\[
\begin{array}{ll}
\text{ɲũi} & \text{‘honey’} \\
\text{səgũa} & \text{‘stack’} \\
\text{ṱie} & \text{‘black’} \\
\text{mɔɛ} & \text{‘millet’ etc.}
\end{array}
\]
Sample of spoken Seenku
Typology of tone sandhi
Tone sandhi

• In principle, any tone changes between words or morphemes in context
• In practice, used most commonly to describe East Asian systems
African tone sandhi

• Common processes include:
  ▫ Spreading
  ▫ Polarity
  ▫ Downstep
  ▫ Contour tone simplification (e.g. tonal absorption)
Asian tone sandhi

- Paradigmatic or syntagmatic tone changes
- Phonetically arbitrary
Typological parameters (Zhang 2014)

• Tonally induced
  ▫ Mandarin “third-tone sandhi”

\[ 213 \rightarrow 35 / \underline{213} \ (T_3 \rightarrow T_2 / \underline{\_ \ T_3}) \]

• Positionally induced
  ▫ Taiwanese “tone circle”

\[ T \rightarrow T’ / \text{non-XP final position} \]
Typological parameters (Zhang 2014)

- **Right-dominant**
  - Preserves final tone
  - Tone changes more paradigmatic

- **Left-dominant**
  - Preserves initial tone
  - Tends to involve spreading

\[
\text{ma}^{\text{LH}} + \text{m}^{\text{LM}} \rightarrow \text{ma}^{\text{L}}\text{-m}^{\text{H}} \quad \text{(Shanghai)}
\]

buy   hat   ‘buy a hat’
Argument-head sandhi: tonal alternations
Characteristics of Seenku sandhi

• Left-dominant:
  ▫ Argument triggers tonal alternations on the following head
  ▫ But changes are partially paradigmatic (especially with pronominal arguments)

• Both tonally and positionally induced
  ▫ Surface form depends on both argument’s and head’s underlying tone in particular domains
# Pronominal arguments

<table>
<thead>
<tr>
<th>Argument tone</th>
<th>Head tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>H</td>
</tr>
<tr>
<td>X</td>
<td>L</td>
</tr>
<tr>
<td>H</td>
<td>S</td>
</tr>
<tr>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

mọ́ + sǎ → mọ́ sǎ ‘buy me!’
H       X       H       S

mọ́ + sóč → mọ́ sóč ‘buy me!’
H       H       H       X
X-toned head

/kɔ̰/ ‘head’

<table>
<thead>
<tr>
<th></th>
<th>ä</th>
<th>3sg</th>
<th>à kɔ̰</th>
<th>‘his head’</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>ñ</td>
<td>1sg</td>
<td>ñ kɔ̰</td>
<td>‘my head’</td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó kɔ̰</td>
<td>‘my head’</td>
</tr>
<tr>
<td>S</td>
<td>mí</td>
<td>1pl</td>
<td>mí kɔ̰</td>
<td>‘our head’</td>
</tr>
</tbody>
</table>
# X-toned head

/kɔ̥/  ‘head’

<table>
<thead>
<tr>
<th></th>
<th>ã</th>
<th>3sg</th>
<th>à kɔ̥</th>
<th>‘his head’</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>ń</td>
<td>1sg</td>
<td>ŋ kɔ̥</td>
<td>‘my head’</td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó kɔ̥</td>
<td>‘my head’</td>
</tr>
<tr>
<td>S</td>
<td>mǐ</td>
<td>1pl</td>
<td>mĩ kɔ̥</td>
<td>‘our head’</td>
</tr>
</tbody>
</table>
# H-toned head

/ɲá/  ‘mom’

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>ã</td>
<td>3sg</td>
<td>ã ɲà</td>
<td>‘his mom’</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>ŋ</td>
<td>1sg</td>
<td>ŋ ɲà</td>
<td>‘my mom’</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó ɲà</td>
<td>‘my mom’</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>mĩ</td>
<td>1pl</td>
<td>mĩ ɲá</td>
<td>‘our mom’</td>
<td></td>
</tr>
</tbody>
</table>
# H-toned head

/ɲá/  ‘mom’

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>ã</td>
<td>3sg</td>
<td>ã ɲã</td>
<td>‘his mom’</td>
</tr>
<tr>
<td>H</td>
<td>ŋ</td>
<td>1sg</td>
<td>ɲ ɲã</td>
<td>‘my mom’</td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó ɲã</td>
<td>‘my mom’</td>
</tr>
<tr>
<td>S</td>
<td>mĩ</td>
<td>1pl</td>
<td>mĩ ɲã</td>
<td>‘our mom’</td>
</tr>
</tbody>
</table>
S-toned head

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>ã</td>
<td>3sg</td>
<td>ã ní</td>
<td>‘his dad’</td>
</tr>
<tr>
<td>H</td>
<td>ñ</td>
<td>1sg</td>
<td>ñ ní</td>
<td>‘my dad’</td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó nì</td>
<td>‘my dad’</td>
</tr>
<tr>
<td>S</td>
<td>mĩ</td>
<td>1pl</td>
<td>mĩ ní</td>
<td>‘our dad’</td>
</tr>
</tbody>
</table>
S-toned head

/ńí/  ‘dad’

<table>
<thead>
<tr>
<th>X</th>
<th>ǎ</th>
<th>3sg</th>
<th>ǎ ní</th>
<th>‘his dad’</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>ń</td>
<td>1sg</td>
<td>ń ní</td>
<td>‘my dad’</td>
</tr>
<tr>
<td>H</td>
<td>mó</td>
<td>1sg</td>
<td>mó nǐ</td>
<td>‘my dad’</td>
</tr>
<tr>
<td>S</td>
<td>mí</td>
<td>1pl</td>
<td>mí ní</td>
<td>‘our dad’</td>
</tr>
</tbody>
</table>
Some generalizations

- S-toned arguments always spread S
  - Unsurprising for a left dominant systems
- For other tones, patterns are weaker
- No consistent assimilation, dissimilation, spreading
  - Argument and head always share at least one feature
    - *X S, *H L
  - Underlying form always different from sandhi form (except for S after S)
Some generalizations

• Not markedness-driven, because generalizations are not surface true
  ▫ $X S \rightarrow X H \rightarrow X X \rightarrow L L$

• Similar to other sandhi systems with chain shifts
  ▫ E.g. infamous Taiwanese tone circle (Chen 1987, Tsay and Myers 1996, Zhang and Lai 2008, *inter alia*)
Phonology or the lexicon?

• Opaque sandhi systems like Taiwanese have been analyzed as allomorph selection (Tsay and Myers 1996, Zhang and Lai 2008)
  ▫ Base and sandhi forms stored in the lexicon
  ▫ Appropriate allomorph selected for the environment
  ▫ But—only two allomorphs necessary for each tone
Phonology or the lexicon?

- Seenku would require up to three distinct sandhi allomorphs for each word
- Environments are more complicated for allomorph selection
  - Phonological subcategorization
Allomorph selection

à ___  ñ́ ___  mó ___  mǐ ___

X  L  H  S
Allomorph selection
Allomorph selection

/æ/ → /æ/ → /a/  
/í/ → /í/ → /ň/  
/mó/ → /mó/ → /mí/  
/X/ → /X/ → /H/  
/L/ → /L/ → /S/
Allomorph selection

[Diagram with lines connecting symbols /X/, /H/, /S/ to symbols á, ñ, mö, mí]
Phonological account

• Anti-faithfulness (Alderete 2001)
  ▫ Sandhi tones must be different from base tones: ¬IO-Ident(T)

• Sandhi tones shouldn’t change too much
  ▫ Ident(upper), Ident(raised)

• Argument and head must agree in at least one feature
  ▫ Agree(upper)
  ▫ Agree(raised)

• Banned tone sequences:
  ▫ *HH, *SH, *SL
Phonological account

• Contrast preservation (Lubowicz 2003, Barrie 2006 for Taiwanese sandhi)
  ▫ Sandhi tones must be different from each other
  ▫ Evaluates scenarios rather than individual input-output pairs
## Example tableau

<table>
<thead>
<tr>
<th>Input: T/ X__</th>
<th>¬IO(T)</th>
<th>Agree(raised)</th>
<th>PresCont</th>
<th>Agree(upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. S H X</td>
<td><em>!</em>**</td>
<td>*</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>b. S→H→X</td>
<td>*!</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. S H→X</td>
<td><em>!</em></td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>d. S→H X</td>
<td><em>!</em></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>e. S→X</td>
<td>*!</td>
<td></td>
<td></td>
<td>***</td>
</tr>
<tr>
<td>H→X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. S→H→X→L</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>
# Taking stock

<table>
<thead>
<tr>
<th></th>
<th>Allomorphy</th>
<th>Phonology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td>• Sandhi tone is the base for other morphophonology</td>
<td>• Only one form required in lexicon</td>
</tr>
<tr>
<td></td>
<td>• Phonological grammar is simple</td>
<td>• Motivates the exact surface forms</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td>• Redundant patterns stored in the lexicon</td>
<td>• A lot of theoretical machinery (anti-faithfulness, contrast preservation, computation across scenarios)</td>
</tr>
<tr>
<td></td>
<td>• No explanation for why <em>these</em> patterns as opposed to others</td>
<td>• Need multiple levels of phonology to compute sandhi tone before other processes</td>
</tr>
</tbody>
</table>
Complications 1

- Multi-tonal heads are impervious to sandhi
  - More than one tone on a single morpheme

à dòdó  ‘his thigh’
mó dòdó  ‘my thigh’
mǐ dòdó  ‘our thigh’
Complications 2

- Some lexical items are impervious to sandhi

`à tʂʊ̀  ‘its stem’
mó tʂʊ̀  ‘my stem’
Complications 3

- Non-pronominal arguments pattern slightly differently

<table>
<thead>
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</tr>
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<tbody>
<tr>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>X</td>
<td>L</td>
</tr>
<tr>
<td>H</td>
<td>S</td>
</tr>
<tr>
<td>S</td>
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Complications 3

- Non-pronominal arguments pattern slightly differently

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<tr>
<td>H</td>
<td>S</td>
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<tr>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>
Complications 3

`à` + `bẳ` \(\rightarrow\) `à bẳ`  
`X` \(\rightarrow\) `X H`  

`bềề` + `bẳ` \(\rightarrow\) `bềề bẳ`  
`X` \(\rightarrow\) `X X`

‘hit him!’

‘hit a pig!’
Upshot

• All three complications tip in favor of allomorph selection over phonology
  1. Phonological constraints aren’t enough without specific constraints protecting multi-tonal forms
  2. Lexical exceptions lack other listed allomorphs
  3. Sensitivity to more than just phonological form
Argument-head tone sandhi: domains of application
Argument-head domains

• Sandhi takes place between a head and its preceding (internal) argument
• Core domains:
  ▫ Poss Noun (inalienable)
  ▫ Object Verb*
  ▫ Noun Postposition

*Only when the verb is irrealis
## Parallel examples

<table>
<thead>
<tr>
<th>X</th>
<th>H</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>à kọ́</td>
<td>‘his head’</td>
<td>à ɲà</td>
</tr>
<tr>
<td>à sà</td>
<td>‘buy him’</td>
<td>à sỏọ</td>
</tr>
<tr>
<td>à wè</td>
<td>‘with him’</td>
<td>à nè</td>
</tr>
</tbody>
</table>

-but-

Mó… ‘I…’

à sà | ‘bought him’ | à sỏọ | ‘sold him’ | à bà | ‘hit him’
Complex phrases

- Sandhi applies left to right
- Poss N P

\[
\begin{array}{cccccccc}
H & X & X & H & S & X & H & S & S \\
\hat{i} + \text{səɡən} + \text{kən} & \rightarrow & [\hat{i} \text{səɡən}] + \text{kən} & \rightarrow & [\hat{i} \text{səɡən kən}] \\
\end{array}
\]

‘on one’s own stomach’
Complex phrases

- Means even derived X can further raise to L

\[
\begin{align*}
\text{X} & \quad \text{H} & \quad \text{X} & \quad \text{XX} & \quad \text{X} & \quad \text{L} & \quad \text{L} & \quad \text{L} \\
\text{à} + \text{nà} + \text{wè} & \rightarrow & \text{[à nà]} + \text{wè} & \rightarrow & \text{[à nà wè]} \\
\text{‘with his mother’}
\end{align*}
\]
Complex phrases

- Left-to-right application the same regardless of direction of branching

[à [tsín-ŋmǎ]]  [mó [tsì-ŋmà]]
‘his hip’       ‘my hip’

/>tsihn-ŋmà/
Complex phrases

• If calculated right-to-left (bottom-up):

\[
\begin{array}{ccc}
H & S & X \\
\rightarrow & H & S & S \\
& \text{mó tśín-ŋmà} & \rightarrow & \text{mó } [\text{tśín-ŋmà}] & \rightarrow & *H & X & S \\
\end{array}
\]

\[
\begin{array}{ccc}
\text{mó tśín-ŋmà} & \rightarrow & \text{mó } [\text{tśín-ŋmà}] & \rightarrow & [\text{mó tśín-ŋmà}]
\end{array}
\]

• If calculated left-to-right:

\[
\begin{array}{ccc}
H & S & X \\
\rightarrow & H & X & X \\
\rightarrow & \text{mó tśín-ŋmà} & \rightarrow & [\text{mó tśín-ŋmà}] & \rightarrow & H & L & L
\end{array}
\]

\[
\begin{array}{ccc}
\text{mó tśín-ŋmà} & \rightarrow & [\text{mó tśín-ŋmà}] & \rightarrow & [\text{mó tśín-ŋmà}]
\end{array}
\]
Where sandhi does not occur

- Alienable possession with overt genitive P
  - [mǐ tē] jəgè ‘our dog’

- ....except when possessor and genitive merge:
  - [mǐi jəgē] ‘our dog’
  - [móò jəgè] ‘my dog’
Where sandhi does not occur

• Subjects with predicate markers
  - mǐ lể ‘1PL PST’ à lễ ‘3SG PST’
  - mǐ lể ‘1PL SUBORD’ à lể ‘3SG SUBORD’
  - mǐ lề ‘1PL REL SUBJ’ à lề ‘3SG REL SUBJ’

• Nouns and modifiers (adjectives, quantifiers, etc.)
  - gốc bọc ‘tall tree’
  - mặc fị ‘two people’
Where sandhi does not occur

- NPs and demonstratives
  - bè bè ‘this pig’
  - bí bè ‘this goat’

- NPs and relative particle
  - bè lé ‘pig which’
  - bí lé ‘goat which’
Phonology or morphosyntax?

- How are application domains defined?
  - Indirect reference (prosodic hierarchy, e.g. Selkirk 2011)
  - Direct reference (cyclic spell-out and phases, e.g. Pak 2008)
  - Hybrid approaches (prosodic constituents mapped to spell-out domains, e.g. Ahn 2016)
Phonology or morphosyntax?

• How are application domains defined?
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  ▫ Direct reference (cyclic spell-out and phases, e.g. Pak 2008)
  ▫ Hybrid approaches (prosodic constituents mapped to spell-out domains, e.g. Ahn 2016)
Syntactic trees

Nikitina 2009
Indirect reference

• Prosodic constituents are built from syntactic constituents, but may not be isomorphic
• Most likely level for sandhi:
  ▫ Phonological phrase (φ)
• Match Phrase: Align the edges of XP with the edges of φ
Possession

Syntactic bracketing:

\[
[ [ [ bɛɛ ]_{NP} ]_{DP} ɲá ]_{NP} ]_{DP}
\]

Prosodic bracketing:

\[
[ [bɛɛ ]_{φ} ɲá ]_{φ}
\]
Prosodic domain for sandhi

• Tone sandhi occurs left-to-right in $\varphi$
  ▫ Any $\varphi$, whether minimal or maximal
    • Accounts for complex arguments

\[
\begin{align*}
\text{[ [bèmes ]}_\varphi \text{ ná } ]_\varphi & \rightarrow [bèmes \text{ nà}] \\
\text{[ [[mò] }_\varphi \text{ nà } ]_\varphi \text{ wè}]_\varphi & \rightarrow [mò \text{ nà wè}]
\end{align*}
\]
Problem: Dem vs. P

- PPs look like relational NPs
  - $[[b\varepsilon\varepsilon]_\varphi \ w\varepsilon]_\varphi$
  - $[b\varepsilon\varepsilon \ w\varepsilon]$
  - ✔
Problem: Dem vs. P

- So do DemPs...
  - $[[b\dot{\varepsilon}\varepsilon]_{\varphi} b\acute{\varepsilon}]_{\varphi}$
  - $*[b\varepsilon \varepsilon b\varepsilon]$
  - $\times$

- No independent phonological reason to treat them differently
Problem: Dem and P

- Sandhi doesn’t occur across an entire φ:
  - [[[màan] φ bế] φ wề ] φ
  - ![màan bè wè]!
  - ![màan bè wè]!
Solution?

• Sandhi as allomorph selection
  ▫ Demonstrative lacks sandhi allomorphs
  ▫ Only ō can be inserted
Complication 1

• Determiners (definite and discourse definite)
  ▫ Occur pre-nominally
  ▫ Homophonous with possessive pronouns
  ▫ Definite does not trigger sandhi, discourse definite does

à mənī 'the woman' (*à mənī)
kọ mənī bè 'that woman' (*kọ mənī bè)
Complication 1

- Assuming both are in D, no difference in structure
- Allomorph selection cannot account for it, since the target is the same in each case
  - i.e. *mənĩ* must have sandhi allomorphs available
Complication 2

- Verbs only undergo sandhi when they are irrealis
  - No change in word order

<table>
<thead>
<tr>
<th>Irrealis</th>
<th>Realis</th>
</tr>
</thead>
<tbody>
<tr>
<td>mó sả ‘buy me’</td>
<td>mó sả ‘bought me’</td>
</tr>
<tr>
<td>mó sóc ‘sell me’</td>
<td>mó sóc ‘sold me’</td>
</tr>
</tbody>
</table>
Complication 2

- Some evidence that realis might have more structure than irrealis
  - Diphthongization

<table>
<thead>
<tr>
<th>Irrealis</th>
<th>Realis</th>
</tr>
</thead>
<tbody>
<tr>
<td>bő</td>
<td>búo</td>
</tr>
<tr>
<td>fě</td>
<td>fǐɛ</td>
</tr>
<tr>
<td>jɔ̰</td>
<td>jǐɔ</td>
</tr>
</tbody>
</table>
Complication 2

- Greater separation between verb and object
- Unlikely that phonological phrasing would be sensitive to this verb-internal structure
Taking stock

• Tone sandhi occurs between some arguments and their head
• Domains without morphosyntactic or lexical information unable to account for patterns
  ▫ Irrealis vs. realis
  ▫ Definite vs. discourse definite
  ▫ Even notion of argument vs. complement difficult to capture in indirect reference
Conclusions
Seenku tone sandhi

- In terms of tone changes:
  - Seenku sandhi closer to Asian sandhi
  - Tonally (and positionally) induced
  - Left-dominant

- In terms of domains:
  - ( Mostly) argument-head relations
  - Sensitive to morphology
  - Sensitive to lexical item (à vs. kò)
Phonology, morphosyntax, or both?

- **Both:**
  - Changes best analyzed as allomorph selection
  - Phonological subcategorization
  - Domains require morphosyntactic information

- **True of many sandhi processes**
  - Likely began as phonology
  - Grammatical restructuring as the language changes
Interconnected issues

• What is the underlying form?
• Necessarily abstract for inalienable nouns and postpositions
  ▫ Obligatorily appear with an argument
• Even difficult for verbs, which neutralize the H/S contrast in realis
Allomorph selection, revisited

\[ \text{à à __} \quad \text{ń __} \quad \text{mó __} \quad \text{mǐ __} \]

\[ /X/ \]

\[ X \quad L \quad H \quad S \]
Allomorph selection, revisited
Allomorph selection, revisited

\[ \begin{align*}
&\text{à à } \quad \text{ń } \quad \text{mó } \quad \text{mǐ } \\
\end{align*} \]
Future directions

• Explore other approaches to defining domains
• Account for other cases of sandhi:
  ▫ Alienable possession when the possessor and genitive merge
    • mó̂ jəgè ‘my dog’
  ▫ Verbs and their following aspect clitics
    • cèrè wè ‘sleep (habitual)’
  ▫ Objects and “pre-verbs”
    • à lè-kpā nè ‘closing it’
• Wug test the productivity of Seenku tone sandhi
Thank you!
Acknowledgments

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References

References

### Minimal pairs

| X vs. L  | mànän | ‘rice’ | màa | ‘again’ |
| X vs. H  | ìà  | ‘3SG’ | á  | ‘2SG’ |
| X vs. S  | tô  | ‘pond’ tô | ‘ten’ |
| L vs. H  | sà  | ‘second son’ sà | ‘cry’ |
| L vs. S  | sì  | ‘first son’ sì | ‘tree sp.’ |
| H vs. S  | sú  | ‘get up’ sú | ‘duiker’ |
Example tableau

<table>
<thead>
<tr>
<th>Input: T/ H__</th>
<th>*HH</th>
<th>¬IO(T)</th>
<th>AGREE(raised)</th>
<th>PresCont</th>
<th>AGREE(upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. S H X</td>
<td>*!</td>
<td>***</td>
<td>*</td>
<td></td>
<td>*</td>
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<tr>
<td>b. S→H→X</td>
<td>*!</td>
<td>*</td>
<td>*</td>
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<td>**</td>
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<tr>
<td>c. S H→X</td>
<td><em>!</em></td>
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<td>d. S→H X</td>
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<td>g. S→H→S</td>
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Other domains of sandhi

- Other sandhi domains derived from repurposed postpositions and relational nouns
  - Post-verbal aspect particles
  - “Pre-verbs”
Post-verbal aspect particles

- Postpositions /né/ (locative) and /wè/ (associative) are found post-verbally in the progressive and habitual

Mɔɔɔ  à  təmè  wè  
person.PST  3SG  tell.IRREAL  HAB

‘People used to tell it.’
Post-verbal aspect particles

Mɔ̌ɔ̀ à təmè wè
person.PST 3SG tell.IRREAL HAB
‘People used to tell it.’

X H X X X X L L L
à təmè wè → [à təmè] wè → [à təmè wè]
Pre-verbs

• Mande has strict S Aux O V word order, with a single direct object before the verb
• But many Mande languages display incorporated postpositions or relational nouns before the verb
  ▫ Undergo tone sandhi with the preceding object (and optionally with following verb, depending on realis/irrealis)
Pre-verbs

- Bracketing mismatch: Grouped with preceding object in terms of **phonology**, but with following verb in terms of **syntax/semantics**

mó s.setEmail: [à [ně]-b Bah] ně
1SG be 3SG LOC-beat LOC
‘I am mashing it.’