INTONATION IN A LINGUISTIC AREA
BUILDING AN INTONATIONAL TYPOLOGY OF SOUTH ASIA

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Goals for this talk

- Introduce you to the work I do
- Describe a method for approaching intonation in an unfamiliar lg
- Share findings from applying this approach to a diverse range of South Asian lgs (SALs)
- Argue that the intonation of SALs is more complex than previously thought…
- …even just at the word-level
What I do

- “I work on all speech sounds other than Cs and Vs”
- Voice quality/phonation
  - Breathiness in Gujarati
  - Creak in American English
- Intonational phonology
  - Deep view: Bangladeshi Bengali
  - Broad view: South Asian lgs in general

Sameer (they/he)
Background

- South Asia includes:
  - Bangladesh
  - Bhutan
  - India
  - Maldives
  - Nepal
  - Pakistan
  - Sri Lanka

- Also sometimes:
  - Tibet
  - Burma
  - Afghanistan
South Asia has four large language families:

- **Indo-European**
  - Indo-Aryan (IA)
  - Nuristani
  - Iranian
- **Dravidian** (Dr)
- **Austroasiatic** (AA)
  - Munda
  - Khasic
  - Nicobarese
- **Tibeto-Burman** (TB)

South Asian language families (map produced by Suresh Kollur, 2015)
Background

- But it’s also identified as a region of convergence: a “linguistic area” (Emeneau 1956)
- Even across language families, South Asian Igs (SALs) typically have:
  - Retroflexion (ṭ ḍ ṅ ⋯ [ṭ ḍ ṅ ⋯])
  - Echo reduplication (“doctor-voctor” = “doctors etc.”)
  - SOV order (“they rice eat”)
  - Non-NOM experiencers (“to me hunger strikes”)
  - Vector verbs (“they written-took the address”)

...
Background

- But it’s also identified as a region of convergence: a “linguistic area” (Emeneau 1956)

- Even across language families, South Asian lgs (SALs) typically have:
  - Retroflexion (except Assamese and most TB lgs!)
  - Echo reduplication (but what pattern? b-, v-, s-, gi-, -u-…)
  - SOV order (except Kashmiri and Khasic)
  - Non-NOM experiencers (but which case? see next slide)
  - Vector verbs
Experiencers:

‘I’m hungry/angry’ uses: (Subbārāo 2012)

- DAT “to me” in Munda lgs, Dr lgs, most IA lgs
- NOM “I’m/have” in Khasic, most TB lgs
- GEN “of me” in East IA lgs; some TB lgs

(map produced by Suresh Kollidala, 2015)
Base map taken from Hock (2016, p.7)
Questions

- So if there’s a typical SAL in all these other areas + exceptions & smaller patterns...
- ...is there also a **typical SAL intonation**?
  - If so, what are the common characteristics?
  - What are the exceptions and smaller patterns?
- What does **having no tone or stress contrasts** (in most lgs) do to the intonation system?
- What **new phenomena** do SALs contribute to our knowledge of intonational systems?
Background

With no stress or tone contrasts, what does SAL intonation look like?

Some claim they are **strikingly uniform** (Féry 2010, Hock 2016, Féry & Fanselow 2020)

- **Identical patterns** across lgs
- **LH pattern**: 2 boundary tones per word-ish-sized unit

“Phrase-language” model of four SALs: Bengali, Hindi, Malayalam, Tamil (Féry 2010)

\[ \sigma \sigma \sigma \sigma \]
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  - **LH pattern**: 2 boundary tones per word-ish-sized unit
- **“Phrase-language” model** of four SALs: Bengali, Hindi, Malayalam, Tamil (Féry 2010)
Clip of **Urdu** demonstrating the “typical” SAL pattern described in literature: LH’s forever…

‘…emerged from there, wearing a warm shawl.’

<NWS-Urdu-R01b>
Here I hope to demonstrate that there is a typical SAL intonation, but it is more complex and variable than this.

My focus: “word”-level intonation: LH and more
  * Easier to relate to existing literature

Preview: while the LH rise is indeed pervasive...
  * ...we need to interpret exactly what it is
  * ...and we add its many alternatives to our models
But how might this simple-seeming rise be analyzed (by linguists and speakers)?

- L on initial, H on final
- L on stress, H on final
- L on stress, H follows
- H on final, L on penult
- LH anchored to stress

What happens when we look at longer words, or words with different stress patterns?
In fact, we will see **evidence of all these interpretations** of the rise, across different SALs:

- L on initial, H on final
  
  \[ [\ˈσ\ ˈσ\ ˈσ\ ] [\ σ\ˈσ\ ˈσ\ ] \]

- L on stress, H on final
  
  \[ [\ˈσ\ ˈσ\ ˈσ\ ] [\ σ\ˈσ\ ˈσ\ ] \]

- L on stress, H follows
  
  \[ [\ˈσ\ ˈσ\ ˈσ\ ] [\ σ\ˈσ\ ˈσ\ ] \]

- H on final, L on penult
  
  \[ [\ˈσ\ ˈσ\ ˈσ\ ] [\ σ\ˈσ\ ˈσ\ ] \]

- LH anchored to stress
  
  \[ [\ˈσ\ ˈσ\ ˈσ\ ] [\ σ\ˈσ\ ˈσ\ ] \]
Preview of results

- The main patterns I plan to cover are:
  - The alignment of L to the stress σ
  - The variable alignment of H
  - The presence of more complex contours than LH
  - The effect of lexical pitch accent ("lexical tone")
Approaching a new language

- How does one analyze the intonation of a language they have no intuitions in?

- **Speech type**
  - Avoid fully naturalistic speech (too much variability & reduction, hard to parse)
  - Avoid formal reading (too slow, speakers aren’t really “feeling” what they’re saying)
  - Best compromise: reading a brief story
Approaching a new language

- How does one analyze the intonation of a language they have no intuitions in?

**Scope of study**

- IP boundaries often rely on native judgment about turn-taking, speaker confidence
- Question-answer pairs often rely on native judgment of given and focused items
- Best compromise: **non-phrase-final word-level prosody in storytelling**
Approaching a new language

How does one analyze the intonation of a language they have no intuitions in?

Data collection

- Rely less on diasporic speakers whose intonation may reflect multiple lgs at once
- Avoid recording people in a lab while surrounded by speakers of other lgs
- Pay (use Wise, WesternUnion) bilingual native speakers in situ to translate stories for you
- Have them find (effective-) monolinguals to self-record without fancy gadgets (use WhatsApp)
Data sources

Data come from **corpus in progress** (Khan 2023, in prep):

- **North Wind and Sun** fable
  - **JIPA**  
    IA: Assamese, Bengali, Hindi, Kalasha, Khowar, Kholosi, Nepali, Punjabi, Saraiki, Sindhi  
    Dr: Malayalam, Telugu, Tamil  
    TB: Sumi
  - **UCLA Archive**  
    IA: Hindi, Sindhi, Urdu  
    Dr: Kannada, Telugu, Tamil

- **North Wind and Sun + Frog, Where Are You?** (Mayer 1969)
  - **Reed College LoL**  
    IA: Hindi, Nepali, Urdu  
    Dr: Kannada, Malayalam

- **Socially-distant self-recording**: 50 languages (IA, Ir, Dr, TB)  
  Most recordings both made and sent using WhatsApp

**PANDEMIC-FRIENDLY!**
Data sources

- **Lgs in the corpus:**
  - IA: 41 lgs
  - Ir: 3 lgs
  - Dr: 5 lgs
  - TB: 2 lgs
  - isol.: 1 lg (Burushaski)

**55 lgs total**

Base map taken from Hock (2016, p.7)
Data sources

- Lgs studied here:
  - IA: 19 lgs
  - Ir: 1 lg (Pashto)
  - Dr: 5 lgs

25 lgs of 3+ spkrs in the corpus
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South Asian language families (map produced by Suresh Kolichala, 2015)
Base map taken from Hock (2016, p.7)
Data transcription: InTraSAL

- For **crosslinguistic consistency**, examples are transcribed using **InTraSAL**
  - Intonational Transcription of South Asian lgs
  - A substantial elaboration of B-ToBI (Khan 2008/2014)
- Uses *Intonation in Romance* (Frota & Prieto 2015) as a model for how to build an abstract analysis combining different languages
Data transcription: InTraSAL

- What does InTraSAL look like?
  - Here’s a spectrogram and pitch track of Sindhi
  - First the transcriber just listens to the pitch movements and their timing

  ‘...with that much more force...’ <NWS-Sindhi-J>
Data transcription: InTraSAL

- Label the **Landmarks Tier**: label for each target
  - Just label; don’t think too hard about “why”
  - Mitigates unconscious shoehorning of a new Ig into tunes we find familiar
Data transcription: InTraSAL

- Then the Words and English tiers
  - Words tier: consonant+vowel transcription
  - English tier: technical translation
Data transcription: InTraSAL

- Last, the Tones tier
  - This is when you’re ready to interpret the Landmarks based on your (evolving) model
  - Use InTraSAL labels, from AM Theory
Patterns to cover

The main patterns I plan to cover are:

- The alignment of L to the stressed σ
- The variable alignment of H
- The presence of more complex contours than LH
- The effect of lexical pitch accent ("lexical tone")
Let’s first describe the initial L of the rise

Some call it a boundary tone, aiming for the left edge of a phrase (aL) (Féry 2010)


\[
\begin{array}{c}
\text{aL} \quad H \\
[\sigma \sigma \sigma \sigma]
\end{array}
\quad
\begin{array}{c}
L^* \quad H \\
[\sigma \sigma \sigma \sigma \sigma]
\end{array}
\]
L tone alignment

Stress assignment
(Hock 2016:398-400):
- initial
- initial+weight
- penult+weight
- contrastive

South Asian language families (map produced by Suresh Kollidala, 2015)
Base map taken from Hock (2016, p.7)
L tone alignment

- Stress assignment
  (Hock 2016:398-400):

  - penult+weight
  - contrastive

South Asian language families (map produced by Suresh Kolichala, 2015)
Base map taken from Hock (2016, p.7)
L tone alignment $[\text{̄σ} \sigma \sigma \sigma] [\sigma' \sigma \sigma \sigma]$

- L* in Urdu: on heavy $\sigma$, not strictly 1st $\sigma$/left edge

- ‘...in agreement...’

- ‘...the North Wind...’
L in northern SALs aligns with stressed $\sigma$, even when not on the left edge: L*$

This stress pattern is determined by weight and/or lexical marking

\[
\begin{array}{l}
\text{L}^* & \text{H} \\
[\sigma \sigma \sigma \sigma] & \text{'mut ta fiq} \\
\text{fiq} \end{array}
\]

\[
\begin{array}{l}
\text{L}^* & \text{H} \\
[\sigma \Sigma \sigma \sigma] & \text{ši 'mā lī} \\
\text{ši} \end{array}
\]
L tone alignment

- Stress assignment 
  (Hock 2016:398-400):
  - initial
  - initial+weight

[Map showing distribution of L tone alignment in various South Asian languages]
L tone alignment [ˈσσσ] [σ′σσσ]

- **L** in **Assamese**: ignores weight, always initial

- ‘The North Wind…”  

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>'uttôrôr</td>
<td>bô'tah</td>
<td>'aru</td>
</tr>
<tr>
<td>north-GEN</td>
<td>wind</td>
<td>and</td>
</tr>
</tbody>
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300 Hz landmarks (174)
150 Hz tones (158)
words (5/121)
English (121)
L tone alignment [ˈσσσ] [σ′σσ]

- L* in Malayalam: ignores weight, always initial

- ‘On earth, a monk…’ <NWS-Malayalam-R01c>
L tone alignment \([\text{ˈσ σ σ}] [\text{σ' σ σ}]\)

- L* in Odia: ignores weight, always initial

- ‘Having gotten irritated, the traveler...’

< NWS-Odia-D01b >
L tone alignment [ˈσ σ σ σ ] [ əσ′σ σ σ ]

- In Dr and most IA lgs, it seems the L is strictly on the 1\textsuperscript{st} \( \sigma \)
- Ignores \( \sigma \) weight, no word-specific behavior
- Two interpretations: aL or L*?

\[
\begin{array}{c}
\text{bhū mi yil} \\
[ \sigma \; \sigma \; \sigma \; \sigma ]
\end{array}
\quad
\begin{array}{c}
\text{sa nyā si} \\
[ \sigma \; \sigma \; \sigma \; \sigma ]
\end{array}
\]
L tone alignment \([ˈσ σ σ ] [ σ'σ σ ]\)

- **aL** interpretation: L on word’s left edge
- Would mean that L is attracted to left edges, and ignores stress
- This would mean that stress has no role in the intonation of such lgs

```
'aL H
[ˈσ σ σ ]
'bhuṃi yil
```
```
aL H
[σ'σ σ]
'sa 'nyāṣi
```
L tone alignment \([\text{ˈo o o }]\)

- **L* interpretation:** L on stress
- Would mean that in these lgs, stress is weight-insensitive and always initial
- Indeed, evidence from Bengali & Tamil data show the initial \(\sigma\) is phonologically “special”

\[
\begin{align*}
\text{L*} & \quad \text{H} \\
\text{ˈbhū mi yil} & \quad \text{ˈsa nyā si}
\end{align*}
\]
L tone alignment $[ˈσσσ\sigma]$  

- Considering all this, we can adopt the L* interpretation, with reservations (Keane 2014)  
  - Allows for cross-SAL transparency  
  - Takes into account phonological status

\[ \begin{align*}  
\text{L*} & \quad H \\
[ˈ\sigma\sigma\sigma\sigma] & \quad \text{ˈbhū mi yil} \\
\text{ˈsa nyā si} & \quad [ˈ\sigma\Sigma\sigma\sigma] 
\end{align*} \]
L tone alignment

- Stress assignment (Hock 2016:398-400):
  - initial
  - initial+weight
  - penult+weight
  - contrastive

Base map taken from Hock (2016, p.7)

South Asian language families (map produced by Suresh Kolichala, 2015)
Base map taken from Hock (2016, p.7)
L tone alignment

L* location:
- initial
- penult+weight
- contrastive

Base map taken from Hock (2016, p.7)
Patterns to cover

- The main patterns I plan to cover are:
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H tone alignment

- Most accounts of SALs describe strict **right-alignment** of the rise’s H tone: **Ha** (Genzel 2007)

- Ha location is useful for describing:
  - Disambiguation of sentence structure (Lahirí & Fitzpatrick-Cole 1999, Féry & Fanselow 2020)
H tone alignment ['σ σ σ']

Two examples of Ha in Assamese

‘...was obliged to accept...’ <NWS-Assamese-J>
But occasionally, researchers mention a mysteriously early appearance of this H:

- H immediately after the σ with L*, regardless of distance to word edge, in:
  - Bengali (Khan 2014)
  - Tamil (Keane 2014)

- Complex pitch accent L*H?
H tone alignment

- This suggests that “the” rise in a conflation of at least two different structures
  - L*...Ha: rise peaks at AP edge  
  - L*H: rise peaks just after L*  

- Most SAL research looks mostly/only at words of two syllables (which are highly frequent)
- This means L*...Ha and L*H could not be adequately distinguished
- We need to look at longer stems
H tone alignment \[\text{ˈσ σ σ}\]

- Four examples of \(L^*H\) in Bengali
- Peak at end of 2\(^{nd}\) \(\sigma\), can persist into 3\(^{rd}\) \(\sigma\)

\[\sigma\]

‘Finally, the North Wind was obliged to admit...’

\(<\text{NWS-Bengali-J}>\)
H tone alignment \([\overset{\cdot}{\sigma} \sigma \sigma]\)

- Examples of \(L^*H\) in **Tamil**
- Peak reached on 1\(^{st}\) or 2\(^{nd}\) \(\sigma\) (based on weight)

- ‘...in that wager...’
- ‘...the Wind and Sun...’

\(<\text{NWS-Tamil-J}>\)
Patterns to cover

- The main patterns I plan to cover are:
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More complex contours

- So far, we’ve assumed that even with some variation, SALs use LH contours on all words.
- But exploring this corpus reveals more complex rises, involving medial tones:
  - LLH (late rise): \[ \text{L}^{*}\ldots\text{LHa} \quad [\overset{\sigma}{\sigma} \overset{\sigma}{\sigma} \overset{\sigma}{\sigma}] \]
  - LHH (early rise): \[ \text{L}^{*}\text{H}\ldots\text{Ha} \quad [\overset{\sigma}{\sigma} \overset{\sigma}{\sigma} \overset{\sigma}{\sigma}] \]
- We also see contours that involve falls:
  - LHL (rise-fall): \[ \text{L}^{*}\text{H}\ldots\text{La} \quad [\overset{\sigma}{\sigma} \overset{\sigma}{\sigma} \overset{\sigma}{\sigma}] \]
  - HLH (fall-rise): \[ \text{H}\text{L}^{*}\ldots\text{Ha} \quad [\overset{\sigma}{\sigma} \overset{\sigma}{\sigma} \overset{\sigma}{\sigma}] \]
  - LHLH (double rise): \[ \text{L}^{*}\text{H}\ldots\text{LHa} \quad [\overset{\sigma}{\sigma} \overset{\sigma}{\sigma} \overset{\sigma}{\sigma}] \]
More complex contours

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- We also see contours that involve falls:
  - LHL (rise-fall): \( L^*H...La \) \( [ \underline{\sigma \sigma \sigma} ] \)
  - HLH (fall-rise): \( HL^*...Ha \) \( [ \underline{\sigma \sigma \sigma} ] \)
  - LHLH (double rise): \( L^*H...LHa \) \( [ \underline{\sigma \sigma \sigma} ] \)
Late rises: L*...LHa

Two examples of L*...LHa in Nepali*

ʻThat one will be accepted as the stronger.ʻ
<NWS-Nepali-J>

*stress marks reflect the weight-sensitive stress pattern in Riccardi (2003), but this does not reliably reflect L* alignment in the current study
Late rises: L*...LHa [ˈʃʃʃ]

Three examples of L*...LHa in Assamese*

'xî'man  'zûrêcê  nî'zôr  'sûlatû  'meriai
GVN.how.much  strength-INS  self-GEN  shirt-CL  wrap-PRF

'That much more tightly did (he hold) his shirt.'
<NWS-Assamese-J>

*stress marks reflect the weight-sensitive stress pattern from Mahanta (2012), but this does not reliably reflect L* alignment in the current study
Late rises: L*...LHa [ˈσ σ σ ]

Two examples of L*...LHa in Malayalam

‘…wrapped in a cloak on (him)…’

<NWS-Malayalam-J>
Late rises: L*...LHa [ˈσσσ]

- This late rise (L*...LHa) might just be a variant of the direct rise (L*...Ha)
- Variation within speaker, within a sentence
- “Free” variation, w/ lg-specific preferences?

- Fortunately, for those using the H as a sign of phrasing: H is still at the end of the unit
Early rises: L*H...Ha [ˈσσσ]

Two examples of early rise L*H...Ha in Odia

- ‘The Wind (told) the Sun…’ <NWS-Odia-D01b>
- Notice the slight fall after L*H peak
Early rises: L*H...Ha ['σ σ σ ]

Example of early rise L*H...Ha in Tamil

‘...the Wind and the Sun...’ <NWS-Tamil-J>
Early rises: L*H…Ha [ˈσσσ]

- This early rise (L*H…Ha) might also be a variant of the direct rise (L*…Ha)
- Variation within speaker, within a sentence
- “Free” variation, w/ lg-specific preferences?

- However, for those using the H as a sign of phrasing: **peak is generally not on the edge**
- Overlooking this could affect analysis
Early and late rises

- Most frequent rise, aside from L*…Ha:
  - Early rise (L*H…Ha)
  - Late rise (L*…LHa)
  - neither found

- E & S lgs make substantial use of alternative rises

- Other lgs have no alternative rise
  - We’ll return to Punjabi, Khowar

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Base map taken from Hock (2016, p.7)
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  - LHL (rise-fall): \( L^*H \ldots La \) \([\sigma \sigma \sigma]\)
  - HLH (fall-rise): \( H L^* \ldots Ha \) \([\sigma' \sigma' \sigma']\)
  - LHLH (double rise): \( L^*H \ldots LH_a \) \([\sigma \sigma \sigma]\)
Rise-falls: L*H...La [ˈσ σ σ]

Example of L*H...La in Tamil

‘...can make (the traveler) take off the shawl...’
Alt. rise-falls: LH*...La [σ'σσ]

- **Sindhi** has another rise-fall, with H on stress:

  ‘That whoever...the traveler’s coat...’ <NWS-Sindhi-J>
Fall-rises: HL*...Ha $[\text{σ' σ σ}]$

- As fall-rises involve a pitch accent *preceded* by H, they only occur in SALs with non-initial stress.
- Two examples of HL*...Ha in Urdu

>'The one who...in taking off the traveler’s sheet…’

<NWS-Urdu-R01b>
Double-rises: $L^*H \ldots LHa [\overset{'}\sigma \sigma \sigma ]$

- Double rises are characteristic in Dravidian lgs e.g. **Tamil**:

---

---

- ‘The North Wind and the Sun…’ <NWS-Tamil-J>
Double-rises: L*H...LHa [ˈσσσ]

Three double rises in Kannada:

‘In the end the Wind admittedly (?) lost…’

<NWS-Kannada-R01d>
Complex pitch accents

- We’ve now seen an expanded inventory of pitch accents across SALs
- We can distinguish them based on the position of the H vis-à-vis the stressed σ
Complex pitch accents

- Stress-attracted H tone typically:
  - Trails stress (L*H)
  - Is on stress (LH*)
  - Leads stress (HL*)
  - Poorly attested

- N & far N lgs prefer H on or before the stress
- S & E lgs prefer H after the stress

Base map taken from Hock (2016, p.7)
Complex pitch accents

- As we move north and west, the SALs...
  - ...are weight-sensitive
  - ...have right-leaning stress placement
  - ...have earlier H in complex pitch accents
  - ...resemble Arabic, English, Swedish
- As we move south and east, the SALs...
  - ...have a fixed, left-leaning stress pattern
  - ...have a later H in complex pitch accents
  - ...rely less on “default” Ha
  - ...resemble Korean, Mongolian, French
Patterns to cover

- The main patterns I plan to cover are:
  - The alignment of L to the stressed σ
  - The variable alignment of H
  - The presence of more complex contours than LH
  - The effect of lexical pitch accent ("lexical tone")
Lexical pitch accent $[\sigma \sigma \sigma ]$

- Stressed $\sigma$’s with historical breathy onsets in Punjabi bear **falling lexical accent** Hx*L, not L*

> ‘…were arguing on this matter…’ <NWS-Punjabi-D02b>
Lexical pitch accent $\left[ \sigma \sigma \sigma \right]$

- Stressed $\sigma$'s followed by historical breathy C's in Punjabi bear **rising lexical accent** $L^*Hx$
- Can be hard to distinguish from $L^*...Ha$ rise

‘...took off his shawl...’
Lexical pitch accent

- In Shekhawati, stressed σ’s with historical breathy onsets bear a **rising lexical accent Lx*H**
  - NB: Punjabi has falling HxL* in this position
- Can be hard to distinguish from L*...Ha

> ‘...were arguing on this matter of (who) among the two of us...’ <NWS-Rajasthani-Shekhawati-D01a>
Lexical pitch accent

In Shekhawati, and (to a lesser extent) Dhundhari, Merwari, and Bagdi (Gusain 1999), stressed σ’s followed by historical breathy C’s bear high lexical accent Hx*
Lexical pitch accent

The more robust (e.g. Shekhawati) pattern is:

- Historically **breathy onset** → **rising** lexical accent:
  - 'dʒʱəɡəɽ → ˈdʒəɡəɽ ‘argument’
  - 'mʱəɾə → ˈmɜɾə ‘us’
  - bəʈʱəɾtʃi → bəʈəɾtʃi ‘increasing (FSG)’

- Historically **breathy offset** → **high** lexical accent:
  - 'ɪɦ → ˈɪ ‘this (OBL)’ (cf. Hindi ɪs)
  - 'pɛɦli → ˈpɛli ‘first’
  - 'səmdʒʱjo → ˈsəmdʒo ‘understood (MSG)’

- Similar to the pattern described for Bagdi (Gusain 1999)
Lexical pitch accent

- Lexical input in pitch accent?
  - Yes ("tonal"): 7
  - No: 18

South Asian language families (map produced by Suresh Kolichala, 2015)
Base map taken from Hock (2016, p.7)
Returning to our questions

- Is there a **typical SAL intonation**?
- What does **having no contrastive tone or stress** do to the intonation system?
- What **new phenomena** do SALs contribute to our knowledge of intonational systems?
Returning to our questions

- Is there a typical SAL intonation?

- In some very basic ways, yes:
  - Stress placement is generally not contrastive
  - Tone is generally not contrastive
  - Words generally bear rising contours

- We already knew these things though
Returning to our questions

- Is there a typical SAL intonation?

- Beyond that, we see substantial differences within/across lgs
  - L of rise might mark L-edge and/or stressed σ
  - H of rise can mark R-edge and/or stressed σ
  - Lots of alternative patterns: medial tones, falls
Returning to our questions

- Is there a **typical SAL intonation**?

- Our inventory is much larger than any previous model of SALs
  - Pitch accents: L*
  - Boundary tones: Ha
Returning to our questions

- Is there a typical SAL intonation?

- Our inventory is much larger than any previous model of SALs
  - Pitch accents: L*, L*H, LH*, H*, HL*
  - Boundary tones: Ha, La, LHa, HLa
Returning to our questions

- Is there a **typical SAL intonation**?

- Our inventory is much larger than any previous model of SALs
  - Pitch accents: L*, L*H, LH*, H*, HL*
  - Boundary tones: Ha, La, LHa, HLa
  - ip/IP boundary tones: those at the ends of larger units e.g. sentences
Returning to our questions

- What does **having no contrastive tone or stress** do to the intonation system?

- **Wide variability** within and across SALs in tonal inventory and frequency

- The conflation of stressedness and initialness also allows for **ambiguity in analysis**

- Even in lgs where the two are not conflated, **speakers vary** as to whether stressedness or initialness attracts the L tone of the rise
Returning to our questions

- What does **having no contrastive tone or stress** do to the intonation system?

- These observations suggest that an intonation system without contrastive tone or stress will **concentrate its tones at phrase edges**
  - cf. Féry’s (2010) “phrase languages”

- Initial stress arguably can be an “edge”

- Only in a subset of IA lgs (in N/FN) is the stress “strong” enough to draw a pitch accent away from a phrase edge
Returning to our questions

▶ What **new phenomena** do SALs contribute to our knowledge of intonational systems?

▶ AM Theory may need to incorporate **tones with variable association**
  ▶ The L of a rise can behave like a pitch accent (L*) or a boundary tone (aL)
  ▶ The H of a rise a boundary tone (Ha) or part of the pitch accent (L*H)
  ▶ If L*H, is the H a sort of **boundary tone for a foot**?
Remaining questions

- Other language families: TB, AA?
- Language-internal variability?
- Effects of multilingualism?
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ôšoňkho dhonnobad

অসংখ্য ধন্যবাদ!
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