Phonetic Transcription of Tone in the IPA

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1 The IPA provides five tone levels for transcription.

TONES AND WORD ACCENTS

LEVEL		CONTOUR	
a̋ or ◥a	Extra high	ǎ or ◤a	Rising
á ◥a	High	â ◢a	Falling
ā ◥a	Mid	ă ◤a	High rising
à ◥a	Low	ǎ ◤a	Low rising
ȁ ◥a	Extra low	ȃ ◤a	Rising-falling
↓	Downstep	↗	Global rise
↑	Upstep	↘	Global fall

Other contours are not explicitly accounted for in the IPA.

Ligatures are used to create contours rather than actual Unicode characters.

Should we have one Unicode character per symbol?

Tone letters and diacritics are not equivalent.
[IPA Handbook p.14]

2 Phonological or phonetic transcription?

The tone letter system presumes that there are only five pitch heights within the human production spectrum.

Are *tonal contrasts* contrasting with *segments*, or with other *pitches* in the prosodic unit?

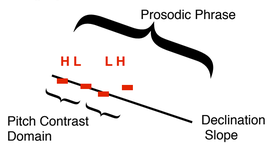
Upstep and *downstep* are considered to be phonological processes.

Do these predefined categories presume phonological analysis before phonetic description can be transcribed?

〈 [ ] 〉 or 〈 / / 〉 can apply to transcriptions, but does our choice of representative symbol already presume an analysis?

How should we best transcribe the phonetic correlates to phonological processes?

Does a phonetic pitch height determine a phonological category?



What is the background point of comparison when we evaluate pitch?

- Other tones in the phrase?
- Absolute pitch?
- Tone patterns within the phonological system?

3 Pitch heights: Are five levels of enough?

Six levels of pitch

Languages with six levels of *level pitch*

Chori	[cry]	- Africa
Benč[4] non[4] (Gimira)	[bcq]	- Africa

Languages with *contours* establishing six levels of pitch

Cantonese	[yue]	- Asia
San Juan Quiahije Chatino	[cpt]	- Mexico
Itunyoso Trique	[urh]	- Mexico

Languages with *Upstep* or *Downstep* creating six levels of pitch

Southern Puebla Mixtec (Upstep)	[mit]	- Mexico
Engenni (Upstep)	[enn]	- Africa
Coatzospan Mixtec (Downstep)	[cpt]	- Mexico

Some languages are claimed to have six pitch levels.

Limited contours in the IPA

Languages with three or more *rising* contours

San Juan Quiahije Chatino	[cpt]	- Mexico
Western Highland Chatino	[ctp]	- Mexico
San Juan Copala Trique	[trc]	- Mexico

Languages with three or more *falling* contours

Western Highland Chatino	[ctp]	- Mexico
Itunyoso Trique	[urh]	- Mexico
连云港 Lian-Yun-Gang Dialect	[und]	- Asia
Jalapa Mazatec	[maj]	- Mexico

How are we to describe the pitch contours in languages with more than three contours?

Which diacritics are we to use when we need to indicate more than three pitch contours in a single direction?

The IPA diacritic system has insufficient distinctions to cover the demonstrated need for describing contours across the world's languages.

4 Bar notation

Bar notation:

- Allows for more detailed height options
- Is based on relative pitch height in the utterance
- Is not representative of absolute acoustic space
- Is not directly attached to segments

Bar notation consists of:

- A series of dashes produced relative to the pitch height of the previous pitch unit
- Horizontal dashes to indicate level pitches
- Diagonal dashes to indicate contour pitches

(A) [˗ ˍ ˗]

yìká bè mìtɛ̀ → yika bɛ mɪtɛ 'to press against'

1 2 3 4 5

(B) [˗ ˗ ˩˥]

/ ò gbò vɔ̀ / → [ò ˩gbò ˩vɔ̀]

2SG cut(PERF) finish

'You already cut.'

(C) jɔ̄-ɔ̄ pɛ̄ɛ̄-n-ˋ 'white man'

man-NC white-NC-BT

[˗ ˩˥]

[jɔ̄ɔ̄ pɛ̀ɛ̀n]

5 Conclusions

Current provisions in the IPA for tone transcription, leave a gap in how to clearly communicate the phonetic detail of tone. The bar method fills this gap by not making phonological assumptions about tone prior to phonological analysis. Current transcription systems may be sufficient for descriptions after phonological analysis, but they fail in multiple ways when attempting to use them to describe the relative phonetic details of tone within the utterance.

	Phonetic pitch height	2+ contours	Iconic pitch height	Segmental attachment
Tone letter	-	+	+	-
Diacritic	-	-	-	+
Bar notation	+	+	+	-/+

Different transcription systems excel when highlighting different kinds of contrasts. Bar notation excels when doing narrow phonetic transcription of tone. This kind of transcription is often necessary when doing tone analysis and eliciting tone paradigms in frames. Elicitation is one of the environments for which the IPA has been designed, yet existing solutions in the IPA are found wanting.

An important question remains: *How many pitch heights should a transcriptionist be able to indicate?*

Hyman indicates that he uses the bar method to represent the five heights already available in the IPA systems. However, Anderson argues that the levels of phonetic pitch should be boundless and should reflect the needs encountered in individual languages. Both of these suggestions present challenges to encoding needed levels of detail. It seems to me that most utterances in frames, even if the language has terraces, will not have more than nine variations in height, and that most short utterances used in elicitation would not need more than seven variations in height.

The bar method has been used by over twenty-two authors in a variety of publication settings, from Pike in 1945 to Hyman in 2014. However, bar notation remains problematic to use because it has not been codified in Unicode. Because of the *International Phonetic Alphabet's* importance in the linguistic sciences, the *International Phonetic Association* has a weighty position when making recommendations for new characters to Unicode.

The International Phonetic Alphabet is a foundational element of data exchange for the rest of the linguistic sciences. The bar notation method enables researchers to discuss tonal phenomena more clearly, without bias to phonological claims. Having it as a formal option within the IPA would clarify the scientific communication conducted in the process of researching a great many languages.

6 Interact and comment

Read the paper!

Extensive references and citations in the version published in the conference proceedings.

Discuss on Reddit: http://redd.it/3fkgid

Email: hugh.paterson@sil.org

Contact via twitter: @thejourneyler

#ToneIPA

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