Prosodic Geography of Island Southeast Asia

Daniel Kaufman

Queens College & ELA

November 12, 2018

- Most languages of the world have some kind of word-based pattern of prosodic prominence.
  - Phonemic systems (e.g. /ˈpərmɪt/ vs. /pərˈmɪt/)
  - Rule-based patterns
- For reasons yet to be understood, languages that make phonemic use of tone are rarely described as having stress
- Another, more exotic, type makes no use of intonation nor stress.
- Here, prosodic phenomena can only "see" edges of the prosodic phrase and higher.

Austronesian prosody

- A new prosodic typology for the Austronesian languages of Island Southeast Asia (Kaufman & Himmelmann forthcoming).

Austronesian prosody

- A new prosodic typology for the Austronesian languages of Island Southeast Asia (Kaufman & Himmelmann forthcoming).
  - Prosodic typology: a system for understanding stress and prosodic phenomena, including intonational phenomena on the level of phrases and utterances.

Austronesian prosody

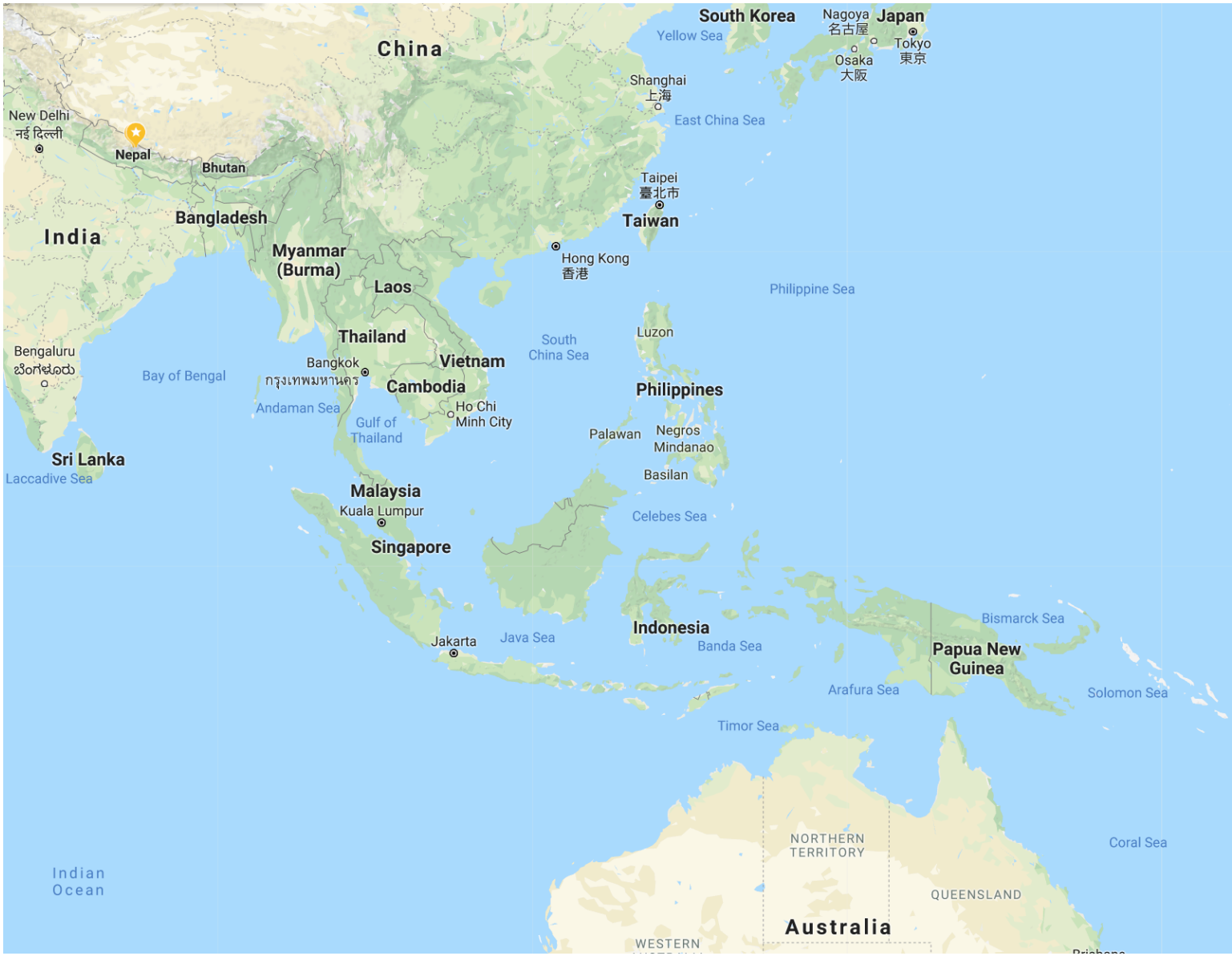
- A new prosodic typology for the Austronesian languages of Island Southeast Asia (Kaufman & Himmelmann forthcoming).
  - Prosodic typology: a system for understanding stress and prosodic phenomena, including intonational phenomena on the level of phrases and utterances.
  - Austronesian: A large language family of ~1,250 languages that spans from Madagascar to Easter Island, originating in Taiwan ~6,000 years ago.

Austronesian prosody

- A new prosodic typology for the Austronesian languages of Island Southeast Asia (Kaufman & Himmelmann forthcoming).
  - Prosodic typology: a system for understanding stress and prosodic phenomena, including intonational phenomena on the level of phrases and utterances.
  - Austronesian: A large language family of ~1,250 languages that spans from Madagascar to Easter Island, originating in Taiwan ~6,000 years ago.
  - Island Southeast Asia: The areal focus of today's talk - the Philippines and Indonesia.

The region

The region



The region

What is stress?

- “Stress” is too often treated as a universal property “manifested” in language X with duration, language Y with pitch, language Z with intensity, etc.

What is stress?

- “Stress” is too often treated as a universal property “manifested” in language X with duration, language Y with pitch, language Z with intensity, etc.
- More careful analyses show the need to separate durational prominence, pitch movements and intensity levels, as these may all have their own organizing principles.

What is stress?

- “Stress” is too often treated as a universal property “manifested” in language X with duration, language Y with pitch, language Z with intensity, etc.
- More careful analyses show the need to separate durational prominence, pitch movements and intensity levels, as these may all have their own organizing principles.
- A major problem in studies of stress is that speakers of canonical stress languages hear word stress where it doesn’t exist.

What is stress?

- Hyman (2006:231) identifies the following two key properties of stress systems:

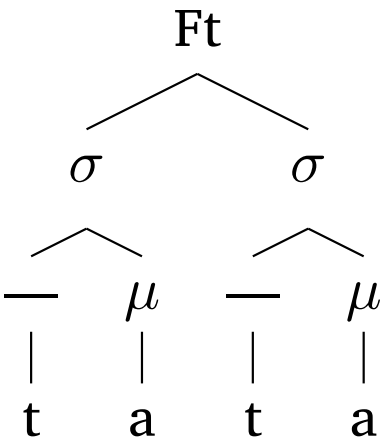
(1) "A language with stress accent is one in which there is an indication of word-level metrical structure meeting the following two central criteria:

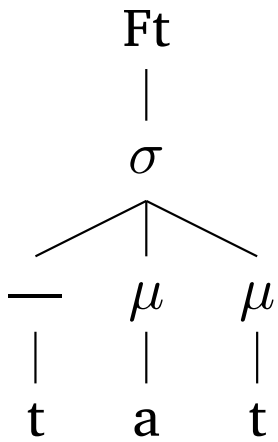
a. OBLIGATORINESS: every lexical word has at least one syllable marked for the highest degree of metrical prominence (primary stress);

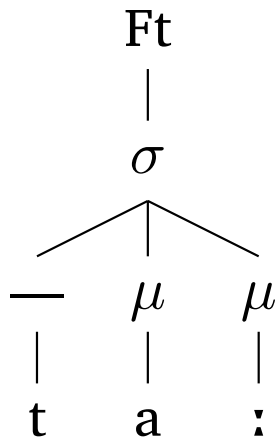
b. CULMINATIVITY: every lexical word has at most one syllable marked for the highest degree of metrical prominence."

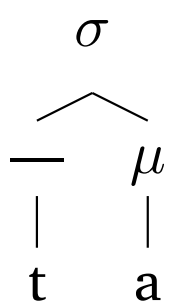
What is stress?

- Another property typical of stress systems is **binary footing**.



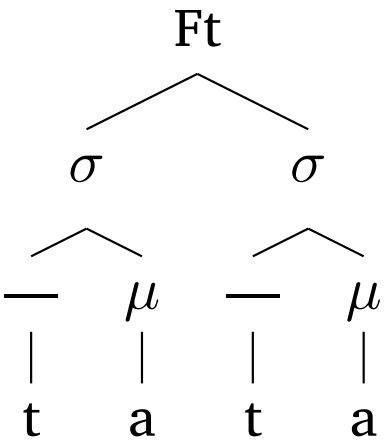


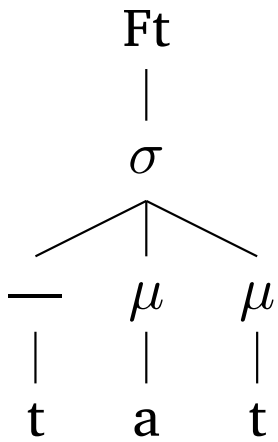


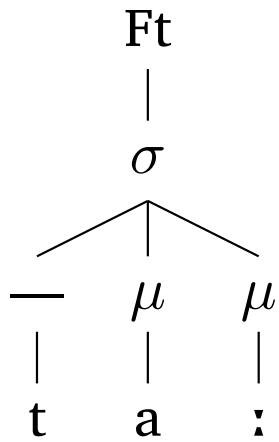


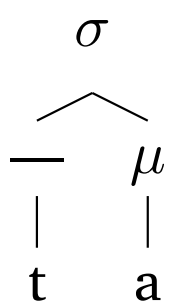
What is stress?

- Another property typical of stress systems is **binary footing**.
- A binary foot is made up of either two syllables (σ) or, if the stress system is **weight sensitive**, two mora (μ), a unit of prosodic weight.



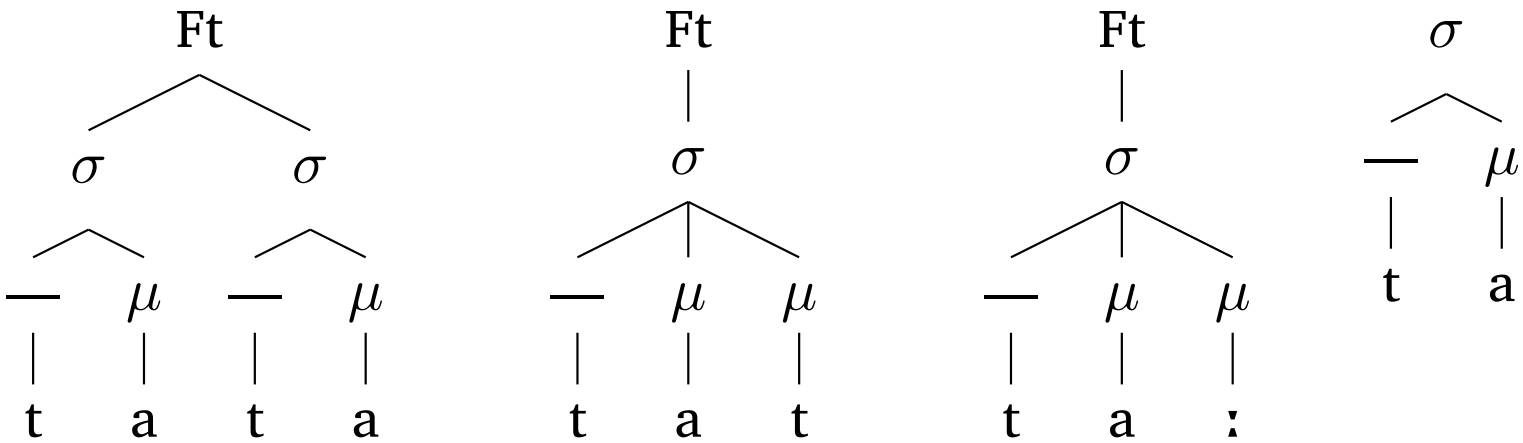






What is stress?

- Another property typical of stress systems is **binary footing**.
- A binary foot is made up of either two syllables (σ) or, if the stress system is **weight sensitive**, two mora (μ), a unit of prosodic weight.
- In weight-sensitive stress systems, closed syllables and those with long vowels may be heavy (*bimoraic*) while short open syllables will be light (*monomoraic*).



Metrical stress

- There are three basic parameters required to account for the diversity of weight-insensitive stress patterns: (i) iterative/non-iterative, (ii) trochaic/iambic, (iii) left-aligned/right-aligned.

	ITERATIVE	NON-ITERATIVE
TROCHAIC	σ(σ́σ)(σ́σ)	σσσ(σ́σ)
IAMBIC	σ(σσ́)(σσ́)	σσσ(σσ́)

Table: right-aligned metrical stress patterns

	ITERATIVE	NON-ITERATIVE
TROCHAIC	(σ́σ)(σ́σ)σ	(σ́σ)σσσ
IAMBIC	(σσ́)(σσ́)σ	(σσ́)σσσ

Table: left-aligned metrical stress patterns

Metrical stress

- Another parameter must account for which stress is primary in iterative patterns, e.g. the rightmost stress, as in English (mìsɪ)(sípi).
- Finally, languages may treat peripheral syllables as "extrametrical", i.e. invisible for purposes of creating stress feet.

The deceptive nature of Tagalog “stress”

- Tagalog has been described as having contrastive stress in which some roots have penultimate stress, e.g. *sábi*, and others have final stress, e.g. *bilí* ‘buy’.

The deceptive nature of Tagalog “stress”

- Tagalog has been described as having contrastive stress in which some roots have penultimate stress, e.g. *sábi*, and others have final stress, e.g. *bilí* ‘buy’.
- “Stress” even has a morphological function in Tagalog, e.g. *báyad* ‘payment’ *bayád* ‘paid’.

The deceptive nature of Tagalog “stress”

- Tagalog has been described as having contrastive stress in which some roots have penultimate stress, e.g. *sábi*, and others have final stress, e.g. *bilí* ‘buy’.
- “Stress” even has a morphological function in Tagalog, e.g. *báyad* ‘payment’ *bayád* ‘paid’.
- As noted by several authors (Zorc 1972; Schachter and Otanes 1982; Wolff et al. 1991), penultimate and final stress are not phonetically symmetrical.

The deceptive nature of Tagalog “stress”

- Tagalog has been described as having contrastive stress in which some roots have penultimate stress, e.g. *sábi*, and others have final stress, e.g. *bilí* ‘buy’.
- “Stress” even has a morphological function in Tagalog, e.g. *báyad* ‘payment’ *bayád* ‘paid’.
- As noted by several authors (Zorc 1972; Schachter and Otanes 1982; Wolff et al. 1991), penultimate and final stress are not phonetically symmetrical.
- **Penultimate stress but not final stress correlates with vowel length in Tagalog.**

The deceptive nature of Tagalog “stress”

- The difference between *bayad* [ˈbaːjad] and *bayád* [baˈjad] should be represented:
  /baːjad/ → [ˈbaːjad]
  /bajad/ → [baˈjad]

The deceptive nature of Tagalog “stress”

- The difference between *bayad* [ˈba:jad] and *bayád* [baˈjad] should be represented:
  /ba:jad/ → [ˈba:jad]
  /bajad/ → [baˈjad]
- This is strongly supported by the fact that penultimate stress cannot occur in native words when the penultimate syllable is closed!

	TROCHAIC	IAMBIC
OPEN PENULT	ˈCV.CV(C)	CV.ˈCV(C)
CLOSED PENULT	*ˈCVC.CV(C)	CVC.ˈCV(C)

Table: Tagalog syllable structure with word-level stress analysis

Bloomfield's misanalysis: stress to length

- "In a word of more than one syllable at least one syllable is normally spoken with a greater degree of stress than the others."
- "On a non-final open syllable the primary word-accent involves an increase of stress (less than in English), a pitch-rise of two notes, lengthening of the vowel to about one and one-half times the duration of an unstressed vowel, and open syllable-stress."
- "The primary word-accent on a final syllable or on a closed non-final syllable, consists merely in greater stress than that of an unaccented syllable, accompanied by a pitch-rise of about half a note."
- "Especially a final syllable often loses its accent before another word in the phrase:"

(2) **aŋ malakíŋ báhay → aŋ malakiŋ báhay**
NOM big house
'the big house' (Bloomfield 1917:141-2)

Bloomfield's misanalysis: stress to length

- A crucial part of Bloomfield's concept of Tagalog stress could be written as:
- (3) V́ → V́:/_CV
- He failed to fully appreciate the fact that not all long vowels attract pitch prominence
- and that pitch prominence attaches to the final long vowel in a particular domain.

The deceptive nature of Tagalog “stress”

- We can now explain why stress seems to avoid closed penultimate syllables: closed syllables cannot contain long vowels. (There can be no “super-heavy” syllables.)

The deceptive nature of Tagalog “stress”

- We can now explain why stress seems to avoid closed penultimate syllables: closed syllables cannot contain long vowels. (There can be no “super-heavy” syllables.)
- This also explains the assimilation of Spanish loans:

[ˈbala] ‘bullet’ > [ˈbaːla]
[ˈlibɾo] ‘book’ > [libˈɾo]

The deceptive nature of Tagalog “stress”

- We can now explain why stress seems to avoid closed penultimate syllables: closed syllables cannot contain long vowels. (There can be no “super-heavy” syllables.)
- This also explains the assimilation of Spanish loans:

  [ˈbala] ‘bullet’ > [ˈbaːla]
  [ˈlibɾo] ‘book’ > [libˈɾo]

- Broselow (2007) discusses a very similar case in Fijian where stress in loanwords on non-default syllables is reinterpreted as length.

The deceptive nature of Tagalog “stress”

- There is another crucial difference between penultimate and final stress in Tagalog:

The deceptive nature of Tagalog “stress”

- There is another crucial difference between penultimate and final stress in Tagalog:
  - Penultimate prominence can shift one syllable to the right under suffixation, but final prominence is not bounded by the word at all (already hinted at by Bloomfield).

The deceptive nature of Tagalog “stress”

- There is another crucial difference between penultimate and final stress in Tagalog:
  - Penultimate prominence can shift one syllable to the right under suffixation, but final prominence is not bounded by the word at all (already hinted at by Bloomfield).

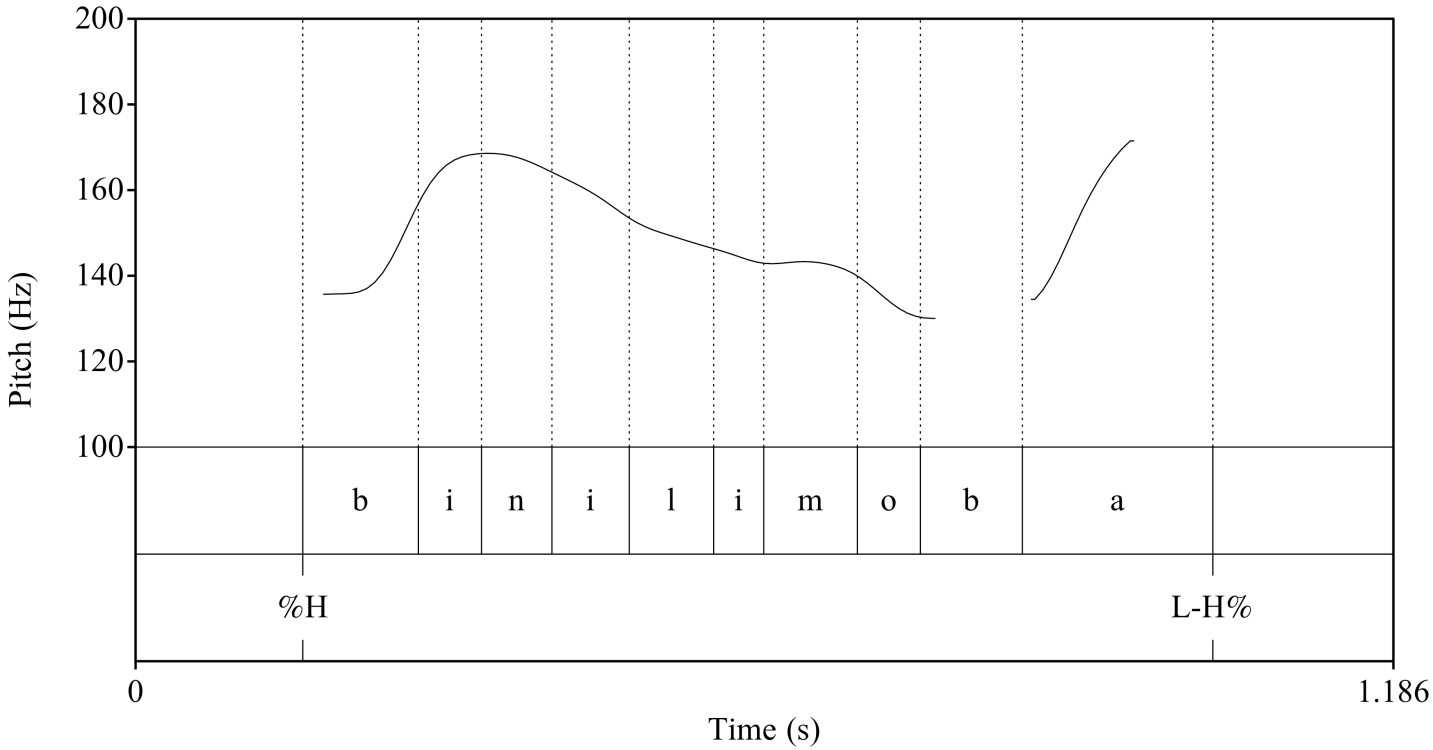
(4) a. **[taˈŋa]**
stupid
‘stupid’

b. **[aŋ ta∼taŋa niˈla]**
DET PL∼stupid 3P.GEN
‘How stupid they are!’

(5) a. **[ˈboːbo]**
stupid
‘stupid’

b. **[aŋ bo∼ˈboːbo niˈla]**
DET PL∼stupid 3P.GEN
‘How stupid they are!’

Phrasal iambicity



Prosodic prominence, not “stress”

- Tagalog is thus a very atypical stress system. It is not even clear what corresponds to perceived “stress” on the phrase level.

Prosodic prominence, not “stress”

- Tagalog is thus a very atypical stress system. It is not even clear what corresponds to perceived “stress” on the phrase level.
- It is most likely a combination of pitch accents and vowel length, but the principles for determining the location of each are completely different.

Prosodic prominence, not “stress”

- Tagalog is thus a very atypical stress system. It is not even clear what corresponds to perceived “stress” on the phrase level.
- It is most likely a combination of pitch accents and vowel length, but the principles for determining the location of each are completely different.
- We return to the phonetics of perceived stress later...

Stresslessness in the Java region

- Davies' (2010:51) description of Madurese "stress" seems to hold equally for other languages of Java:

  "Word stress is not a salient feature of Madurese, and receives little mention in the literature, e.g. Stevens (1968) mentions it only in passing. As pointed out by Ogloblin (1986), it is likely that the intonation group is the lowest relevant phonological unit in Madurese (which roughly coincides with what Uhlenbeck (1975) refers to as the 'sentence segment' in Javanese). Words uttered in isolation exhibit stress on almost any syllable in the root; in consecutive repetitions of single words stress may fall on the first syllable in the first instantiation and on the second in the next and vice versa."

Evidence for stresslessness

- Van Heuven & van Zanten (2007) sum up some of the relevant literature for Indonesian:

Evidence for stresslessness

- Van Heuven & van Zanten (2007) sum up some of the relevant literature for Indonesian:
  - Strong L1 effects exist in production and perception of stress-related parameters: L1 Javanese speakers have the least clear evidence for stress.

Evidence for stresslessness

- Van Heuven & van Zanten (2007) sum up some of the relevant literature for Indonesian:
  - Strong L1 effects exist in production and perception of stress-related parameters: L1 Javanese speakers have the least clear evidence for stress.
  - Speakers rate examples where one of final three syllables is made acoustically prominent by manipulating pitch, duration or overall intensity as roughly equivalent.

Evidence for stresslessness

- Van Heuven & van Zanten (2007) sum up some of the relevant literature for Indonesian:
  - Strong L1 effects exist in production and perception of stress-related parameters: L1 Javanese speakers have the least clear evidence for stress.
  - Speakers rate examples where one of final three syllables is made acoustically prominent by manipulating pitch, duration or overall intensity as roughly equivalent.
  - Riesberg et al. (2018) find that speakers of Papuan Malay are unable to agree on which syllables are prominent in short excerpts of spontaneous narrative Papuan Malay speech.

Evidence for stresslessness

- Van Heuven & van Zanten (2007) sum up some of the relevant literature for Indonesian:
  - Strong L1 effects exist in production and perception of stress-related parameters: L1 Javanese speakers have the least clear evidence for stress.
  - Speakers rate examples where one of final three syllables is made acoustically prominent by manipulating pitch, duration or overall intensity as roughly equivalent.
  - Riesberg et al. (2018) find that speakers of Papuan Malay are unable to agree on which syllables are prominent in short excerpts of spontaneous narrative Papuan Malay speech.
  - Indonesian speakers unable to understand contrastive stress on the subword level (as in English, “cof[FER] not cof[FIN]”) as shown by their inability to judge the pragmatic appropriateness of examples involving such contrasts (van Heuven & Faust 2009).

Evidence for stresslessness

- Indonesian/Javanese “stress” is purely phrasal, not word-based. “Stress” as perceived by English/Dutch ears is wherever a phrasal tone T% happens to dock.

Evidence for stresslessness

- Indonesian/Javanese “stress” is purely phrasal, not word-based. “Stress” as perceived by English/Dutch ears is wherever a phrasal tone T% happens to dock.
- Does this imply that such languages have no prosodic words? In other words, does phonology completely ignore word boundaries?

Evidence for stresslessness

- Indonesian/Javanese “stress” is purely phrasal, not word-based. “Stress” as perceived by English/Dutch ears is wherever a phrasal tone T% happens to dock.
- Does this imply that such languages have no prosodic words? In other words, does phonology completely ignore word boundaries?
- This has not yet been argued for and would be a striking finding, if true.

Previous research

- Hiphop/rap has been studied scientifically with regard to meter, rhyme and other prosodic features (Adams 2009; Edwards 2009) although almost all this work has been on English.
- Some basic findings from English hiphop include a strong tendency for alignment between stressed syllables and strong beats.
- Predictably, this varies by artist but the significance is consistent (Tait et al. 2014).

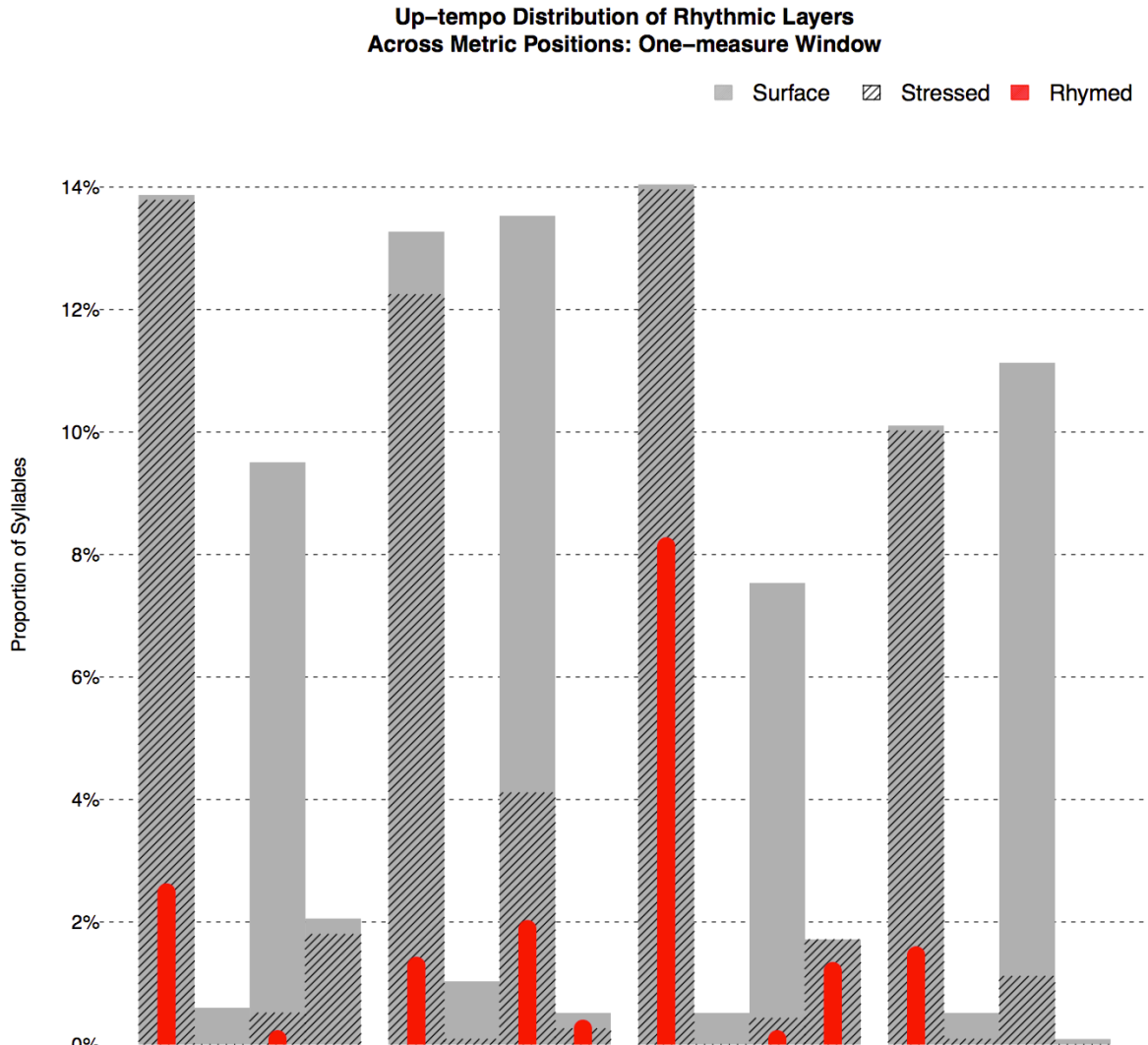
Previous research

Artist	Stressable AMS	Unstressable AMS	Stress-Meter Alignment Value (SMAV)
Missy Elliott	2.15	3.48	1.33
Flo Rida	2.10	3.29	1.19
Nicki Minaj	2.20	3.37	1.17
Macklemore	2.24	3.26	1.02
Jay-Z	2.51	3.42	0.91
Eminem	2.58	3.37	0.79

Table 2: *A ranking of SMAVs across the six artists examined from highest to lowest. These numbers indicate the rate of stress-meter alignment.*

Previous research

- Condit-Schultz (2016:135) compares stressed, unstressed and rhymed syllables over a large corpus of up-tempo songs:



Hiphop as a prosody experiment

- Hiphop represents a “natural experiment” that is being carried out by hundreds of performers for vast numbers of languages across the Austronesian family.

Hiphop as a prosody experiment

- Hiphop represents a “natural experiment” that is being carried out by hundreds of performers for vast numbers of languages across the Austronesian family.
- Are there significant differences in the alignment of syllables to strong beats?

Hiphop as a prosody experiment

- Hiphop represents a “natural experiment” that is being carried out by hundreds of performers for vast numbers of languages across the Austronesian family.
- Are there significant differences in the alignment of syllables to strong beats?
- Which syllables are aligned to strong beats in stressless languages?

Javanese

Jogja Hiphop Foundation “Sabdatama”

Javanese
Jogja Hiphop Foundation “Sabdatama”

(1) **midʒil tuwuh saka kono dumunuŋ-ku**
born grow from there exist-1S.GEN
‘Born and raised from there, my place’ PLAY

(2) **jo ŋajogdʒókarto hadí-niŋrat negrí-ku**
yeah Jogjakarta Hadiningrat country-1S.GEN
‘Yeah, royal Jogja Hadiningrat is my country.’

(3) **nagari gemah_rípah kaŋ merd^{h}íko**
country fertile RELT free
‘a fertile country that is free’

(4) **kojo kaŋ kaserat íŋ sabdotómo**
like RELT written in sabdatama
‘like it is written in *sabdatama*’

Javanese
Jogja Hiphop Foundation “Sabdatama”

(5) **merápi ŋéliŋake maraŋ iŋ gústi**
merapi remind towards in God
‘Mt. Merapi reminds us of God.’ PLAY

(6) **segoro ŋéliŋake kúdhu ŋidʰak búmi**
ocean remind must place_foot earth
‘the ocean reminds us we must keep our feet on earth.’

(7) **merapi horég, laút kidul gədég**
merapi shaking ocean kidul swaying
‘Mt. Merapi is shaking, the south sea is swaying’ PLAY

(8) **aŋin ribút udan blədék**
wind loud rain pouring
‘the wind is loud, the rain is pouring’

Javanese
Jogja Hiphop Foundation “Sabdatama”

(9) **tandó bumí re-resík nand^{h}aŋ ŋgawé**
sign earth DIST-clean work work
‘a sign that the earth (nature) is working to clean’ PLAY

(10) **maráŋ ndoɲó lan manúŋsa-né**
with world and human-3S.GEN
‘the world and its people’

(11) **maráŋ sadulur sikáp kud^{h}u ŋadʒen-í lan**
with family manner must AV.respect-APPL and
ŋopen-í
AV.care-APPL
‘one must respect and care for their family’

(12) **bumi pərtiwí sodará kamí**
earth native_land family 1P.EX
‘mother earth is our family’

Javanese
Jogja Hiphop Foundation “Sabdatama”

(13) **jaŋ hárus di-dʒagá di-hórmat-í**
RELT must PV-guard PV-respect-APPL
‘which must be guarded and respected’ PLAY

(14) **mə-nərimá səkalígus məm-bərí**
AV-receive while AV-give
‘receiving while giving’

(15) **búdajá adaláh səndʒatá**
culture COP weapon
‘culture is a weapon’

(16) **me-mánusiá-kan manúsiá**
AV-human-APPL human
‘(it) humanizes humans’

Javanese
Jogja Hiphop Foundation “Sabdatama”

(17) **baŋún dʒiwa-ɲá baŋún raga-ɲá**
rise spirit-3S.GEN rise body-3S.GEN
‘raising the spirit, raising the body’ PLAY

(18) **séntosá dalám puspa-warná**
tranquil in kind-flower
‘tranquil within *puspawarna* (gamelan composition)’

(19) **wʌ́t dʒogdʒa wan ɪz haɪmɔni ɪn dajvəɹsɪti**
what Jogja want is harmony in diversity
‘What Jogja wants is “Harmony in Diversity”’ PLAY

Javanese

Marzuki Mohamad “Ora Minggir Tabrak”

Javanese
Marzuki Mohamad “Ora Minggir Tabrak”

(1) **urip urup mukso pati**
live life gone die
‘living a life, gone dying’ PLAY

(2) **esuk awan**
morning noon
‘morning, noon’

(3) **surup sirep rino weŋi**
sunset disappear arrive night
‘the sun sets and disappears, enter the night’

(4) **saiki neŋ kene ŋene di-lakon-i**
now in here like.this PV-do-APPL
‘now here, it’s done like this’

Javanese
Marzuki Mohamad “Ora Minggir Tabrak”

(5) **semeleh kudu gelem lan ŋ-gelem-i ja**
sincere must want and AV-want-APPL yeah
‘sincerely (you) must want and really want it’ PLAY

(6) **ya ŋgir ora m-iŋgir ora m-iŋgir tabrak**
yeah AV-side NEG AV-side NEG AV-side crash
‘if you don’t move, if you don’t move, you’ll get hit!’

(7) **wiji wutuh wutah pecah**
seed whole fall break
‘the seed is whole, it falls and breaks’

(8) **pecah tuwoh wiji maneh**
break grow seed again
‘it breaks and grows to become a seed again’

Javanese
Marzuki Mohamad “Ora Minggir Tabrak”

(9) **laku lakon di-lakon-i**
deed journey PV-journey-APPL
‘deeds, journeys undertaken’ PLAY

(10) **kant^{h}i semeleh obah mamah**
with sincerity move chew
‘with sincerity, we move we chew’

(11) **m-ingset ŋ-geget ɲ-ikut ŋ-rawut**
AV-chew AV-bite AV-elbow AV-scratch
‘chewing, biting, elbowing, scratching’

(12) **ŋgletak penak woŋ urip kudu tumindak**
lay comfortably person live must act
‘lying comfortably, a living person must act’

Rhythmic alignment in Javanese

- Good candidates for beat alignment:

Rhythmic alignment in Javanese

- Good candidates for beat alignment:
  - final and penultimate syllable of the word

Rhythmic alignment in Javanese

- Good candidates for beat alignment:
  - final and penultimate syllable of the word
- Bad candidates:

Rhythmic alignment in Javanese

- Good candidates for beat alignment:
  - final and penultimate syllable of the word
- Bad candidates:
  - Only one unattested candidate: syllables with /ə/ nucleus

Rhythmic alignment in Javanese

- Good candidates for beat alignment:
  - final and penultimate syllable of the word
- Bad candidates:
  - Only one unattested candidate: syllables with /ə/ nucleus
- It seems though that each rapper sets their own alignment "policy" and tends to stick with it, at least for a song.

Rhythmic alignment in Javanese

- Good candidates for beat alignment:
  - final and penultimate syllable of the word
- Bad candidates:
  - Only one unattested candidate: syllables with /ə/ nucleus
- It seems though that each rapper sets their own alignment “policy” and tends to stick with it, at least for a song.
- Beat alignment in Javanese is aesthetically determined (e.g. by syllable count?) rather than linguistically determined.

(13) **jo ŋajogdʒókarto hadí-niŋrat negrí-ku** (beats: 4 on dʒó, 4 on dí, 4 on rí)
yeah Jogjakarta Hadiningrat country-1S.GEN
‘Yeah, royal Jogja Hadiningrat is my country.’

(14) **segoro ŋéliŋake kúd^{h}u ŋid^{h}ak búmi** (beats: 4 on ŋé, 4 on kú, 4 on bú)
ocean remind must place_foot earth
‘the ocean reminds us we must keep our feet on earth.’

Rhythmic alignment in Javanese

- But can a strict policy of word final alignment as in *Ora Minggir Tabrak* be implemented in the absence of prosodic words?

Rhythmic alignment in Javanese

- But can a strict policy of word final alignment as in *Ora Minggir Tabrak* be implemented in the absence of prosodic words?
- It seems to suggest the existence of prosodic words without dictating which syllable of the prosodic word is the “head”.

Rhythmic alignment in Javanese

- But can a strict policy of word final alignment as in *Ora Minggir Tabrak* be implemented in the absence of prosodic words?
- It seems to suggest the existence of prosodic words without dictating which syllable of the prosodic word is the “head”.
- Another possible approach: deaccenting is equally important as accenting in foot-based stress systems.

Rhythmic alignment in Javanese

- But can a strict policy of word final alignment as in *Ora Minggir Tabrak* be implemented in the absence of prosodic words?
- It seems to suggest the existence of prosodic words without dictating which syllable of the prosodic word is the “head”.
- Another possible approach: deaccenting is equally important as accenting in foot-based stress systems.
- On this inverted approach, stressless languages don’t lack strong syllables but rather lack weak syllables.

Rhythmic alignment in Javanese

- But can a strict policy of word final alignment as in *Ora Minggir Tabrak* be implemented in the absence of prosodic words?
- It seems to suggest the existence of prosodic words without dictating which syllable of the prosodic word is the “head”.
- Another possible approach: deaccenting is equally important as accenting in foot-based stress systems.
- On this inverted approach, stressless languages don’t lack strong syllables but rather lack weak syllables.
- Weakness is not determined metrically but rather by the nucleus: full vowel vs. schwa. The weakness of schwa is clearly an old pattern in Austronesian which rears its head in various ways across languages.

Tagalog
Aristotle Pollisco “Hari ng Tondo”

Tagalog
Gloc-9 (Aristotle Pollisco) “Hari ng Tondo”

(1) **[diː = mo peːdeŋ pi giː lin] [aŋ = alamat] [na umus boŋ]**
6/8 9
NEG=2S.GEN can suppress NOM=legend LNK flourish
‘you can’t stop the legend from flourishing’ PLAY

(2) **[kaːhit = na madaːmi] [aŋ = ulupoŋ]**
5/6 5/6
even=COMP many NOM=viper
‘even though there are many vipers’

(3) **at [haːlos hindiː i ba] [aŋ = laːjaʔ] [sa = pagkakuloŋ]**
7/9 8/9
and almost NEG different NOM=freedom OBL=imprisonment
‘and there is nearly no difference between freedom and imprisonment’

(4) **[sa = kamaj] [naŋ = iʔilaŋ] [umaːʔabuːsoŋ kiki lan]**
7 8/10
OBL=hand GEN=few abusing extort
‘in the hands of the few who abuse and extort’

Tagalog
Gloc-9 (Aristotle Pollisco) “Hari ng Tondo”

(5) **[aŋ = lahat naŋ = pumalag]** **[walaŋ tanoŋ]** **[aj kitilan]**
7 8
NOM=all GEN=move NEG.EXT question TOP cut
‘all those who move, without question are cut off’ PLAY

(6) **[naŋ = buːhaj]** **[huːkaj]** **[luːha = j]** **[magpaːpa tuː naj]**
4|5 7|10
GEN=life hole tear=TOP prove
‘from life, the pit, tears will prove’

(7) **[na = kaːhit hindiː makuːlaj]** **[kailaːŋaŋ magbigaj puːgaj]**
7|9 9|11
COMP=even NEG colorful must give salute
‘that even if it’s not colorful, one must salute’

(8) **[sa = kuŋ = sino]** **[aŋ = lamaŋ]** **[maŋa = bituːkaŋ halaŋ]**
7 7|8
OBL=COMP=who NOM=advantage PL=intestine blocked
‘to whoever has the advantage, evil people’

Tagalog
Gloc-9 (Aristotle Pollisco) “Hari ng Tondo”

(9) **at [kuŋ = wala: = kaŋ alam] [aj jumuku: = ka = na = laŋ]** (7|8) (7|8)
and if=NEG.EXT=2S.NOM know TOP bow.head=2S.NOM=CPL=ONLY
‘and if you don’t know anything, just bow your head’ PLAY

(10) **[haŋgaŋ sa = maj nagpasja] [na = sumaluŋat sa = ʔa:gos]** (7) (7)
until OBL=EXT decided COMP=go.against OBL=current
‘until there’s someone who decides to go against the current’

(11) **[wasa:kin] [aŋ = maŋa = kade:na] [na = sjaŋ guma: ga: pos]** (6|7) (8|10)
destroy NOM=PL=chain COMP=3S.NOM restrain
‘and destroy the chains that restrain’

Tagalog
Gloc-9 (Aristotle Pollisco) “Hari ng Tondo”

(12) **[sa=kweːnto] [na=mas astig=pa] [sa=baːgoŋ tahiʔ na**
7|8
OBL=story COMP=more tough=YET OBL=new sewn LNK
8|9
lonta]
pants
‘in the story that’s tougher than newly sewn pants’ PLAY

Tagalog
Badang “Prinsesa”

Tagalog
Badang “Prinsesa”

(13) **[naŋ ako=j] [maʔinlab muliʔ], [gra:be=tala ga]**
GEN 1S.NOM=TOP fall.in.love again serious=EMPH
‘when I fell in love again it was truly terrible’ PLAY

(14) **[pu:so=ko=j] [nabigha:ni] [sa=isaŋ dala:ga]**
heart=1S.GEN=TOP captive OBL=one girl
‘my heart was captivated by a girl’

(15) **[na puno?] [naŋ=kataŋi:ʔan] at [ma la porsila:na]**
LNK full GEN=qualities and porcelain-like
‘who was full of good qualities and porcelain-like’

(16) **[aŋ=ku:laj] [naŋ=balat] [ha:los dinaʔig=ŋa] [si=rosa:na]**
NOM=color GEN=skin almost surpass=3S.GEN NOM=Rosanna
‘was her skin almost even surpassing Rosanna’

Tagalog
Badang “Prinsesa”

(1) **[ma^{2}ʔaːŋas] [kuŋ = pumo$^{4|5}$ːrma] at [astig$^{4|5}$ magsalitaʔ^{4}]**
haughty COMP=act and tough speak
‘she acts haughty and speaks tough’ PLAY

(2) **[kumpar^{3}a] [sa = mahinhin^{4} = sja] [ay me^{3}ːdyo saliwaʔ$^{4|5}$]**
compare OBL=soft=3S.NOM TOP somewhat inelegant
‘compared to someone delicate, she’s somewhat inelegant’

(3) **[aŋ = kanjaŋ^{3} maŋa = dat^{4}iːŋan] [aj paːraŋ$^{4|6}$ si = aisa sigeːra^{5}]**
NOM=3S.OBL PL=appearance TOP like NOM=Aisa Siguerra
‘her looks are like Aisa Siguerra.’

(4) **[pag mali^{3}ʔ] [aŋ = biːroʔ = mo$^{4|5}$] [ay handaŋ^{3} makipaggeːra^{4}]**
if wrong NOM=joke=2S.GEN TOP ready war
‘if you make a bad joke, she’s ready to go to war’

Tagalog

Badang “Prinsesa”

(5)

	3|4	3		3	4|5
[pe:ro	**maba?it**	**=sja]**	**at**	**[mahu:saj**	**makisa:ma]**
but	good.hearted	=3S.NOM	and	good	socialize

‘but she’s good-hearted and good to be with’ PLAY

(6)

	3|4		4	3|4		4
[la:lu	**=na]**	**[kapag**	**baba:?e=na]**	**[aŋ**	**=kanyaŋ**	**kasa:ma]**
more	=CMPL	if	woman=CMPL	NOM	=3S.GEN	companion

‘even more so in the company of a woman’

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;
  - 2nd best: word-final (phrase-internal) short syllables;

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;
  - 2nd best: word-final (phrase-internal) short syllables;
- Bad candidates:

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;
  - 2nd best: word-final (phrase-internal) short syllables;
- Bad candidates:
  - short syllables adjacent to long syllables;

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;
  - 2nd best: word-final (phrase-internal) short syllables;
- Bad candidates:
  - short syllables adjacent to long syllables;
  - word-internal internal short syllables

Rhythmic alignment in Tagalog

- Good candidates for beat alignment:
  - penultimate long syllables
  - phrase-final short syllables;
  - 2nd best: word-final (phrase-internal) short syllables;
- Bad candidates:
  - short syllables adjacent to long syllables;
  - word-internal internal short syllables
- A harmonic scale:

penultimate $\bar{\sigma}$	$\succ$ phrase-fin. word-fin. σ	$\succ$ phrase-int. word-fin. σ	$\succ$ phrase-int. word-int. σ

Rhythmic alignment in Tagalog

- A canonical example showing purely phrasal and length-based alignment:

(7) **[daʔig = mo = pa]** **[aŋ = babaʔeːro]**
surpass=2S.GEN=YET NOM=womanizer
'you even surpass a womanizer'

Rhythmic alignment in Tagalog

- A canonical example showing purely phrasal and length-based alignment:

(7) **[daʔig = mo = pa] [aŋ = babaʔeːro]**
surpass=2S.GEN=YET NOM=womanizer
'you even surpass a womanizer'

- Exceptional alignment on **hin**.

(8) **[kumpara]** **[sa = mahinhin = sja]** **[ay meːdyo** **saliwaʔ]**
3 4 3 4|5
compare OBL=soft=3S.NOM TOP somewhat inelegant
'compared to someone delicate, she's somewhat inelegant'

Rhythmic alignment in Tagalog

- How can we account for these exceptions?

(9) **[kumpa**^{3}**ra] [sa=mahin**^{4}**hin=sja] [ay me:**^{3}**dyo saliwa?**$^{4|5}$**]**
compare OBL=soft=3S.NOM TOP somewhat inelegant
'compared to someone delicate, she's somewhat inelegant'

Rhythmic alignment in Tagalog

- How can we account for these exceptions?

(9) **[kumpa^{3}ra] [sa=mahin^{4}hin=sja] [ay me^{3}ːdyo saliwa$^{4|5}$ʔ]**
compare OBL=soft=3S.NOM TOP somewhat inelegant
'compared to someone delicate, she's somewhat inelegant'

- If the ideal beat interval is 3σ here then the optimal 2nd beat would be as in (10). But according to our alignment principles, the best candidate would be (11).

(10) **[kumpa^{3}ra] [sa=ma^{3}hinhin=sja] [ay me^{4}ːdyo saliwa$^{4|5}$ʔ]**
compare OBL=soft=3S.NOM TOP somewhat inelegant
'compared to someone delicate, she's somewhat inelegant'

(11) **[kumpa^{3}ra] [sa=mahinhin=sja^{5}] [ay me^{2}ːdyo saliwa$^{4|5}$ʔ]**
compare OBL=soft=3S.NOM TOP somewhat inelegant
'compared to someone delicate, she's somewhat inelegant'

Rhythmic alignment in Tagalog

- In addition to the alignment principles, there are also constraints against squeezing too many syllables into an interval or stretching out too few.

Rhythmic alignment in Tagalog

- In addition to the alignment principles, there are also constraints against squeezing too many syllables into an interval or stretching out too few.
- Rhymes must satisfy the prosodic alignment constraints as well as satisfying *SQUEEZE/*STRETCH constraints.

Rhythmic alignment in Tagalog

- In addition to the alignment principles, there are also constraints against squeezing too many syllables into an interval or stretching out too few.
- Rhymes must satisfy the prosodic alignment constraints as well as satisfying *SQUEEZE/*STRETCH constraints.
- Examples of “misaligned” beats are cases where minor stretching or squeezing does not improve the alignment.

Placement of pitch accents in Tagalog

- Let's return to the phonetic correlates of prominence in Tagalog

Placement of pitch accents in Tagalog

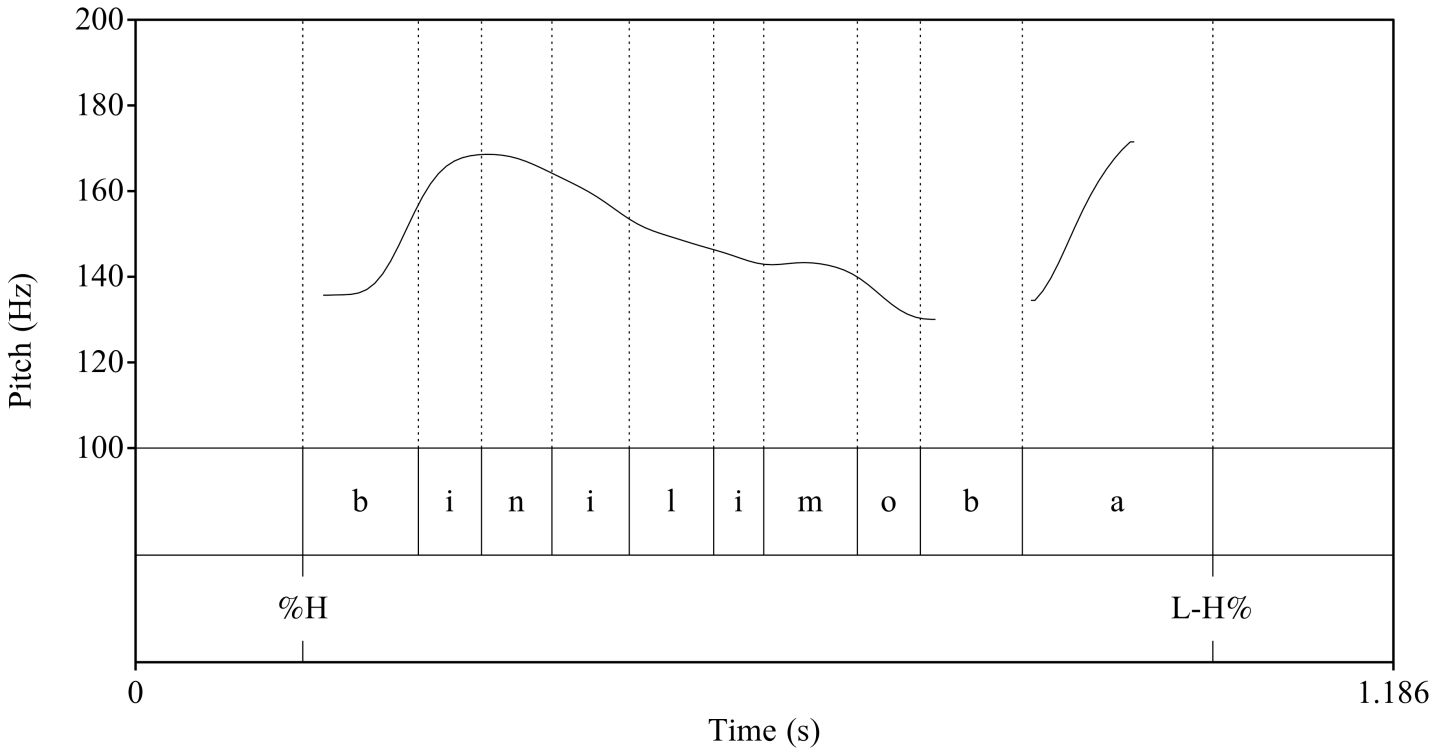
- Let's return to the phonetic correlates of prominence in Tagalog
- Asides from (universal) final lengthening effects, long vowels are lexically determined.

Placement of pitch accents in Tagalog

- Let's return to the phonetic correlates of prominence in Tagalog
- Asides from (universal) final lengthening effects, long vowels are lexically determined.
- Pitch accents are anchored to phrase edges and long vowels.

Placement of pitch accents in Tagalog

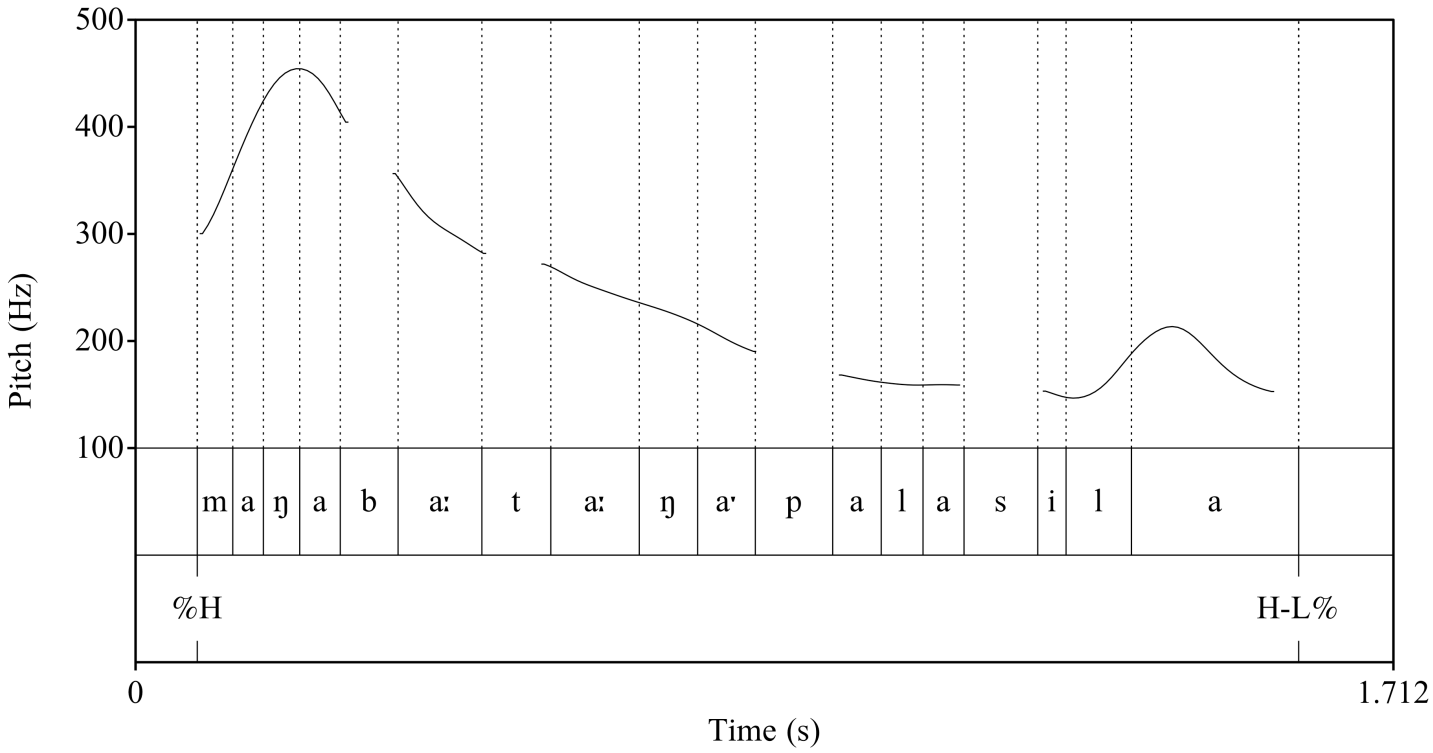
- Let's return to the phonetic correlates of prominence in Tagalog
- Asides from (universal) final lengthening effects, long vowels are lexically determined.
- Pitch accents are anchored to phrase edges and long vowels.
- This coincides very with the alignment of strong beats earlier (with 1 exception).



(12) **[b<in>ili=mo=ba]**

<PERF>buy.PV=2S.GEN=QM

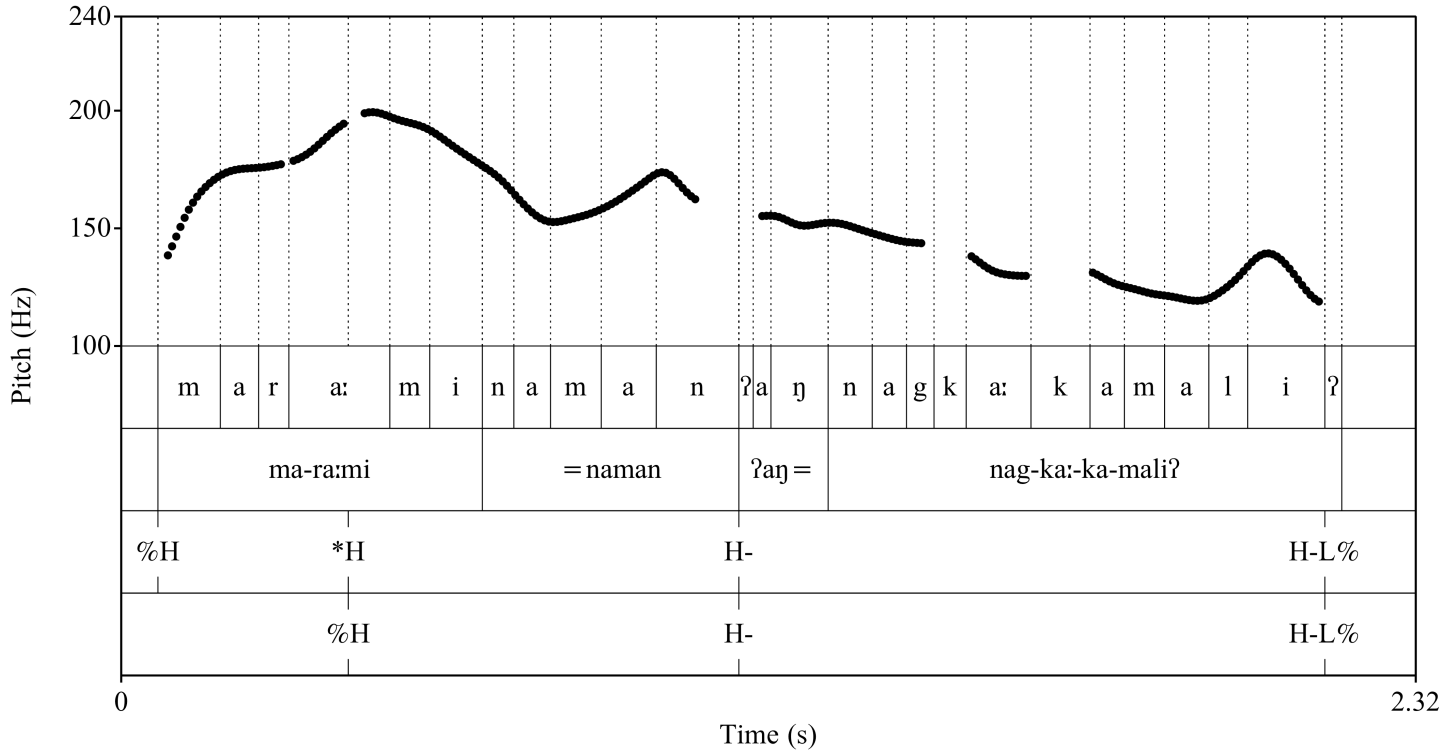
'Did you buy (it)?'



(13) **[maŋa = baːtaː = ŋaː = pala = sila]**

PL=child=EMPH=MIRA=3P.NOM

'They're really children!'

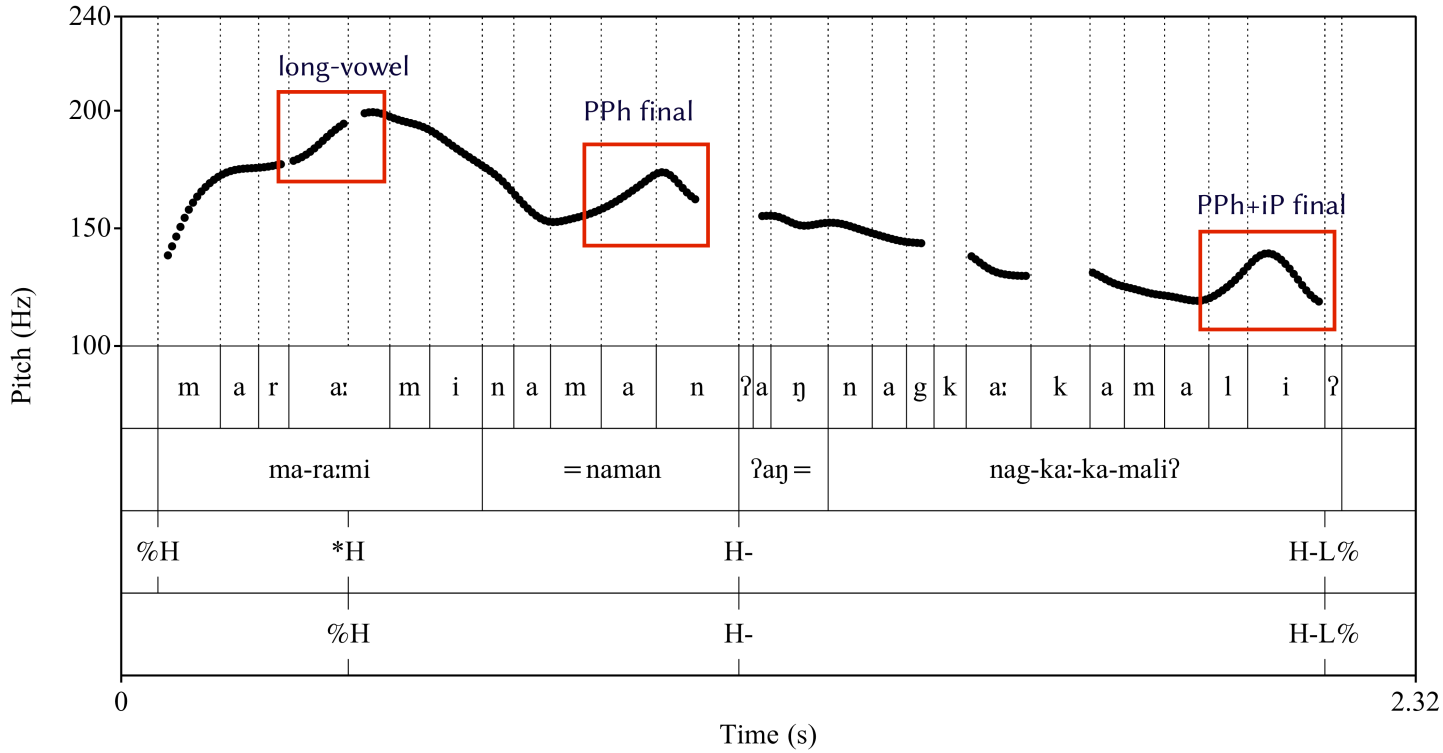


(14) **[ma-ra:mi=naman] [aŋ=nag-ka:-kamali?]**

ADJ-many=SWITCH NOM=AV-PROG-mistake

'It is many who make mistakes.' PLAY

- Recall that strong beats were preferably aligned with long vowels as well as phrase-final short syllables (where phrase includes enclitics).



(15) **[ma-ra:mi=naman] [aŋ=nag-ka:-kamali?]**

ADJ-many=SWITCH NOM=AV-PROG-mistake

'It is many who make mistakes.'

- Recall that strong beats were preferably aligned with long vowels as well as phrase-final short syllables (where phrase includes enclitics).

Placement of pitch accents in Tagalog

- The pitch movements on long vowels and phrase final short vowels are the best candidates for the alignment of strong beats.

Placement of pitch accents in Tagalog

- The pitch movements on long vowels and phrase final short vowels are the best candidates for the alignment of strong beats.
- Pitch movements at the end of words preceding clitics less frequent

Placement of pitch accents in Tagalog

- The pitch movements on long vowels and phrase final short vowels are the best candidates for the alignment of strong beats.
- Pitch movements at the end of words preceding clitics less frequent
- However, the regular pitch movement at the beginning of the iP appears invisible for beat placement.

Placement of pitch accents in Tagalog

- The pitch movements on long vowels and phrase final short vowels are the best candidates for the alignment of strong beats.
- Pitch movements at the end of words preceding clitics less frequent
- However, the regular pitch movement at the beginning of the iP appears invisible for beat placement.
- As if phrase-initial accents are phonetic while final accents are phonemic.

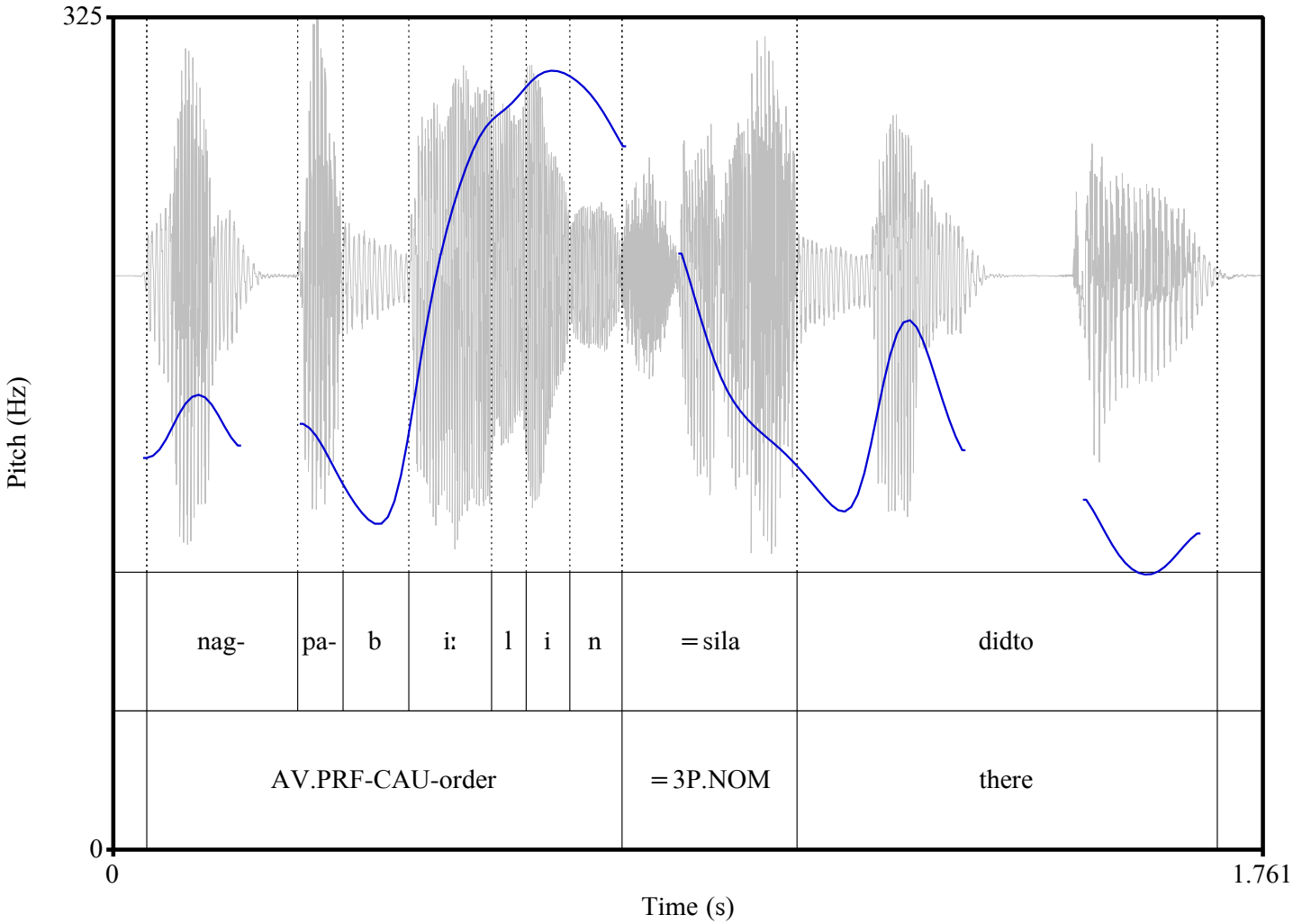
Placement of pitch accents in Tagalog

- The pitch movements on long vowels and phrase final short vowels are the best candidates for the alignment of strong beats.
- Pitch movements at the end of words preceding clitics less frequent
- However, the regular pitch movement at the beginning of the iP appears invisible for beat placement.
- As if phrase-initial accents are phonetic while final accents are phonemic.
- Another difference between initial and final accents is that final accents are precisely timed whereas initial accents vary over a 2-3 syllable window.

Variation in Philippine languages

- Cebuano (and Bisayan more generally), differ minimally with Tagalog in treating penultimate closed syllables as heavy, in addition to syllables with a long vowel.
- Only penultimate syllables with a long vowel attract a pitch accent in Tagalog. But both long and closed syllables attract a pitch accent in Bisayan.
- (But note that Tagalog codas have to be moraic (or semi-moraic) to disallow long vowels in the same syllable.)

Variation in Philippine languages



PLAY

A third type

- In parts of Sulawesi and the eastern Austronesian area, regular word-based trochaic stress becomes the norm.

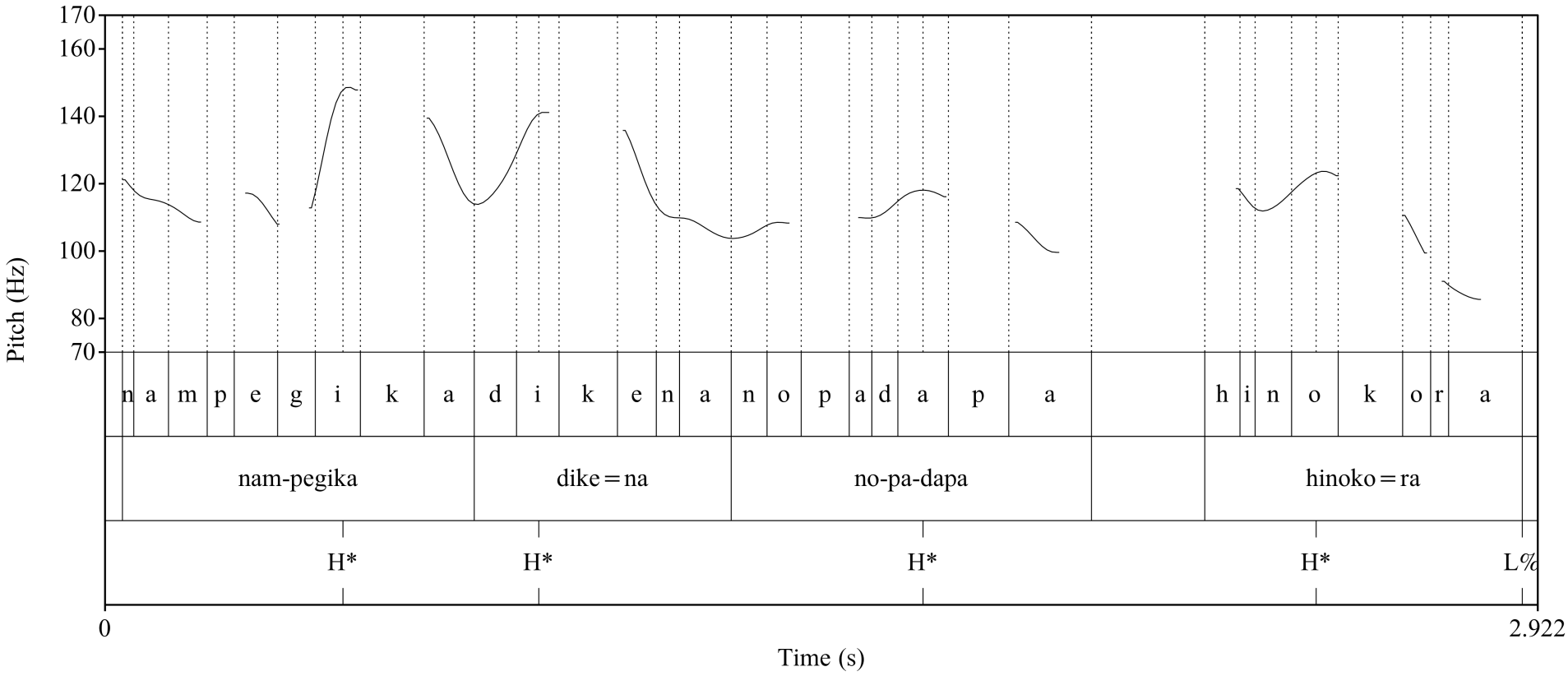
A third type

- In parts of Sulawesi and the eastern Austronesian area, regular word-based trochaic stress becomes the norm.
- This can be seen in Kulawi, a language of Central Sulawesi belonging to the Pamona-Kaili subgroup

A third type

- In parts of Sulawesi and the eastern Austronesian area, regular word-based trochaic stress becomes the norm.
- This can be seen in Kulawi, a language of Central Sulawesi belonging to the Pamona-Kaili subgroup
- Here, every lexical word receives stress on the penultimate syllable, as in more familiar systems.

Trochaic stress in Kulawi

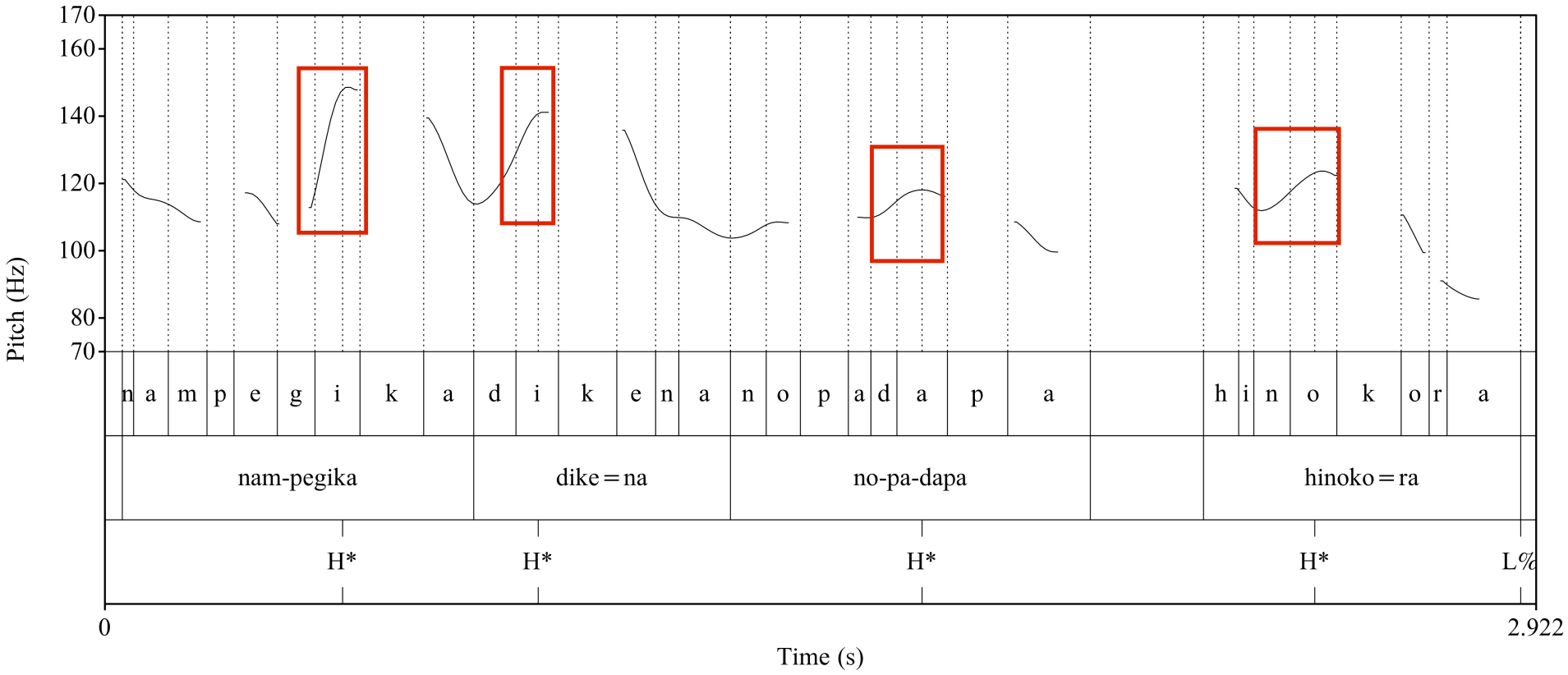


(16) **nam-pegíka díke = na no-pa-dápa hinóko = ra**

RL.TR-wait dog=3SG.GEN RL.INTR-CAU-hunt prey=3PL.GEN

'his dog was waiting while he was hunting their prey.' PLAY

Trochaic stress in Kulawi

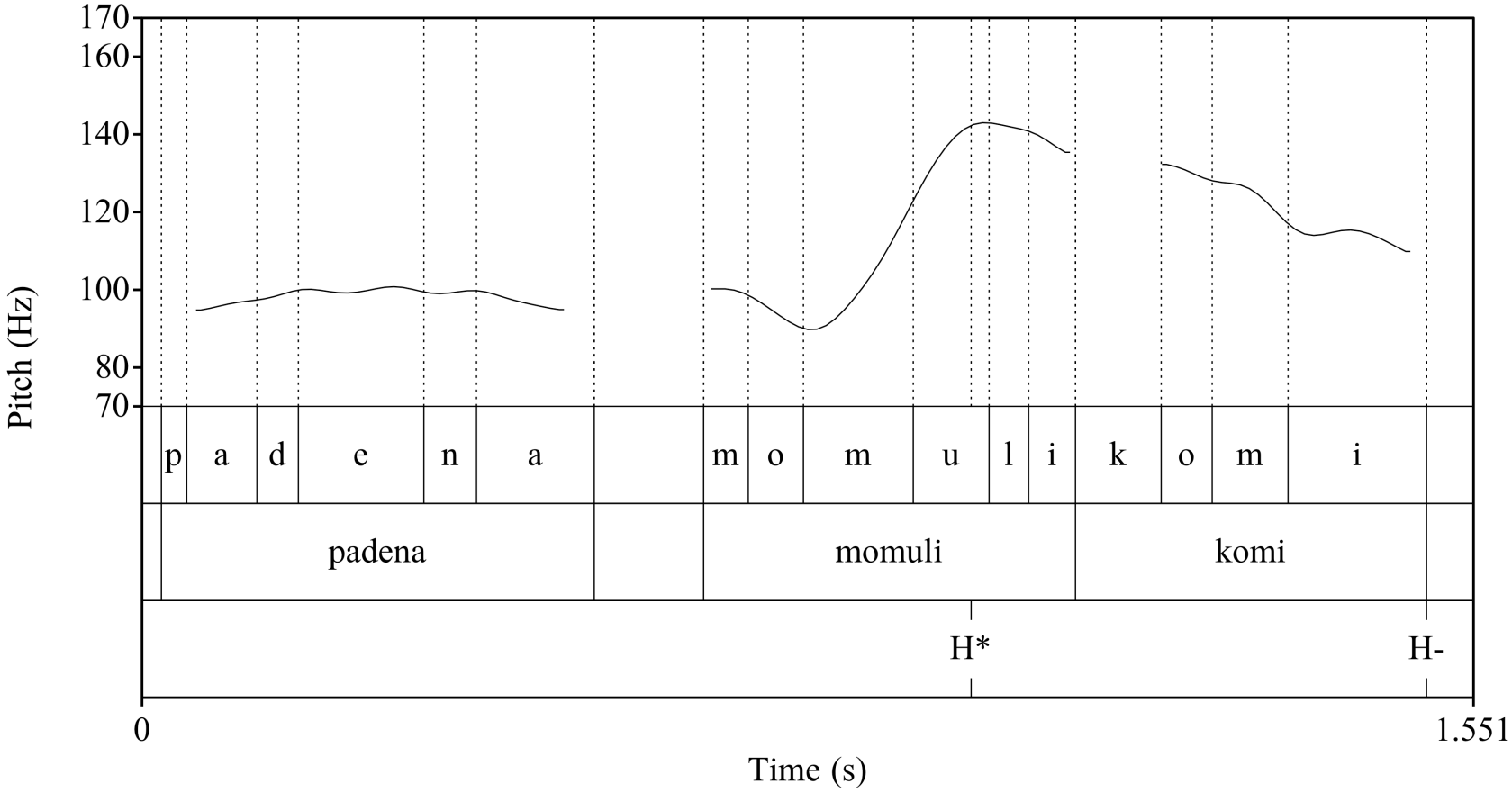


(17) **nam-pegíka díke = na no-pa-dápa hinóko = ra**

RL.TR-wait dog=3SG.GEN RL.INTR-CAU-hunt prey=3PL.GEN

'his dog was waiting while he was hunting their prey.' PLAY

Trochaic stress in Kulawi



(18) **padena mo-múli=komi**
and IRR.AV-create=2PL.NOM
'then you create…'

Deriving the typology

- The eastern pattern and the Javanese pattern can be derived from a Philippine system.

Deriving the typology

- The eastern pattern and the Javanese pattern can be derived from a Philippine system.
- Recall that Philippine languages have two prosodic classes of roots: σːσ and σσ.

Deriving the typology

- The eastern pattern and the Javanese pattern can be derived from a Philippine system.
- Recall that Philippine languages have two prosodic classes of roots: σːσ and σσ.
- The eastern type has generalized the penultimate vowel length pattern while the Javanese type has generalized the short penult pattern.

Deriving the typology

- The eastern pattern and the Javanese pattern can be derived from a Philippine system.
- Recall that Philippine languages have two prosodic classes of roots: σːσ and σσ.
- The eastern type has generalized the penultimate vowel length pattern while the Javanese type has generalized the short penult pattern.
- Stress is word-based in the eastern type but phrasal in the Javanese type. Tagalog shows both patterns simultaneously.

Deriving the typology

Deriving the typology

Methodological conclusions

- Starting from the hypothesis that Philippine languages exhibit stress, an abstract category that can be manifested by pitch, duration and intensity, leads to total perdition.

Methodological conclusions

- Starting from the hypothesis that Philippine languages exhibit stress, an abstract category that can be manifested by pitch, duration and intensity, leads to total perdition.
- The system only makes sense when we separate duration (a lexical phenomenon bounded by the grammatical word) from pitch prominence (a phrasal phenomenon unrelated to the word).

Methodological conclusions

- Music, verbal art and hiphop, in particular, can serve as a prosodic experiment.

Methodological conclusions

- Music, verbal art and hiphop, in particular, can serve as a prosodic experiment.
- Unlike true experiments, there are issues of aesthetics and other potentially "interfering" factors, but let's let the data speak for itself.

Methodological conclusions

- Music, verbal art and hiphop, in particular, can serve as a prosodic experiment.
- Unlike true experiments, there are issues of aesthetics and other potentially "interfering" factors, but let's let the data speak for itself.
- In the Austronesian case, beat alignment appears to offer support for the most reasonable hypotheses about prosodic typology.

Methodological conclusions

- Music, verbal art and hiphop, in particular, can serve as a prosodic experiment.
- Unlike true experiments, there are issues of aesthetics and other potentially "interfering" factors, but let's let the data speak for itself.
- In the Austronesian case, beat alignment appears to offer support for the most reasonable hypotheses about prosodic typology.
- The next frontier: gesture and facial expressions.

Theoretical conclusions

- It may be possible to derive the eastern and stressless patterns from the Philippine type.

Theoretical conclusions

- It may be possible to derive the eastern and stressless patterns from the Philippine type.
- The crucial insight is that Philippine languages of the Tagalog type combine both patterns in a single system.

References

Adams, K. 2009. On the metrical techniques of flow in rap music. *Music Theory Online* 15.

Bloomfield, Leonard. 1917. *Tagalog Texts*. Urbana: University of Illinois Press.

Broselow, Ellen. 2007. Stress adaptation in loanword phonology: perception and learnability. In *Phonology in Perception*, ed. P. Boersma and S. Hamann. Mouton de Gruyter.

Condit-Schultz, Nathaniel. 2016. Mcflow: A digital corpus of rap flow. Doctoral Dissertation, Ohio State University.

Edwards, P. 2009. *How to Rap: the Art and Science of the Hip-Hop MC*. Chicago, IL: Chicago Review Press.

Hyman, Larry M. 2006. Word-prosodic typology. *Phonology* 23:225–257.

Schachter, Paul, and Fe T Otanes. 1982. *Tagalog Reference Grammar*. University of California Press.

Tait, Casey, Marija Tabain, and Ingrid Sykes. 2014. Stress-meter alignment in american hip hop. In *Proceedings of the 15th Australiasian International Conference on Speech Science and Technology*. Christchurch, New Zealand.

Wolff, John U., Maria Theresa C. Centeno, and Der-Hwa V. Rau. 1991. *Pilipino Through Self-Instruction*. Ithaca, NY: Cornell University Press.

Zorc, R. David. 1972. Current and proto tagalic stress. *Philippine Journal of Linguistics, 1972, 3, 1, Jun* 3:43–57. CD: PJLID6.