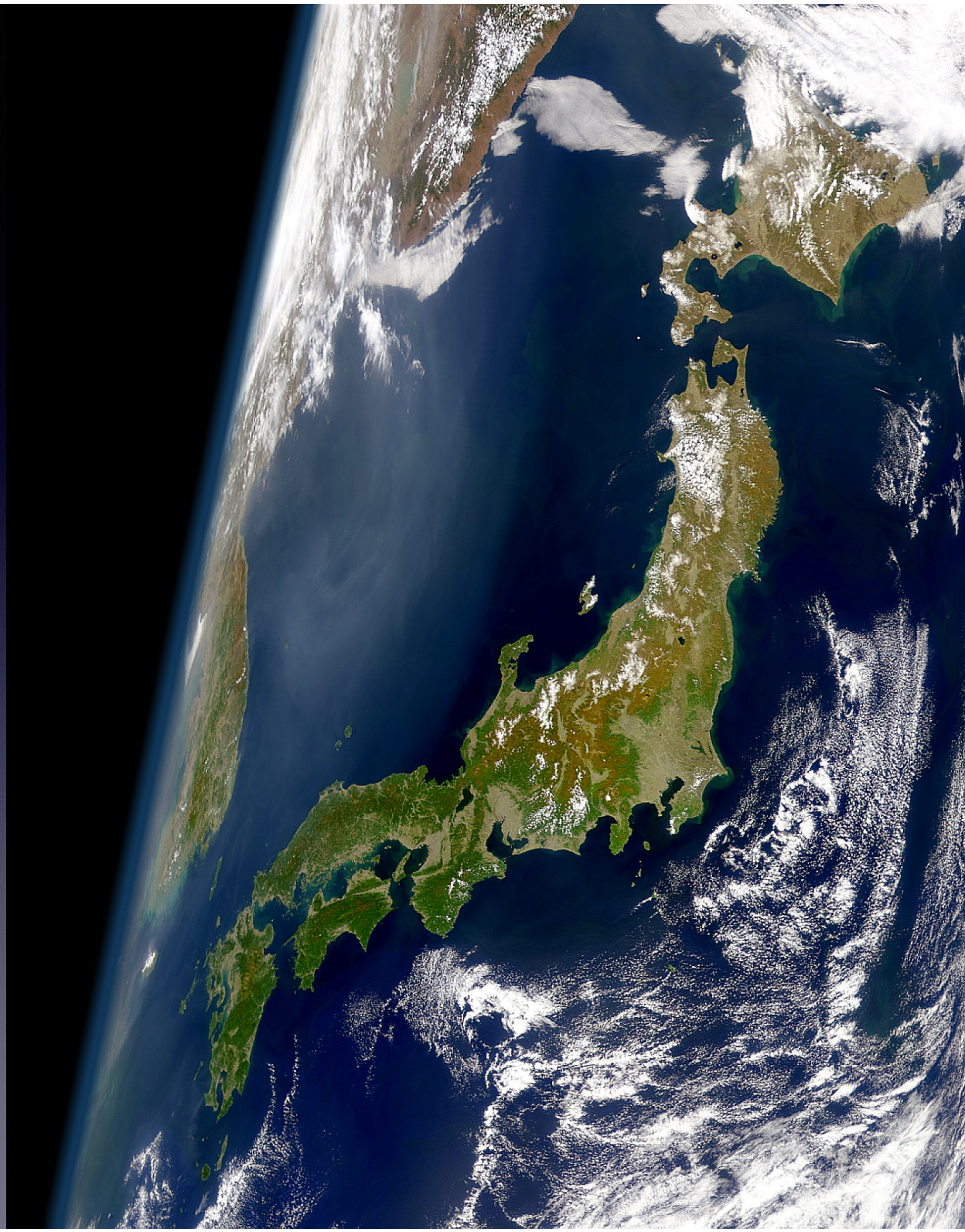
Stressless and Ternary Feet

JAPANESE

Poser 1990



kenkon no
soto jori kore o
utʃi mireba
hiutʃibako ni mo
taranu ametsutʃi

Seen from
outside creation
earth and sky
aren’t worth
a box of matches.

Matsuo Bashō

($\bar{\sigma}$)	($\bar{\sigma}$)	(σ .)	(. .)	
(σσ)	(σσ)	(σσ)	(σ .)	
(σσ)	(σσ)	(σ .)	(. .)	. = silence
(σσ)	(σσ)	(σσ)	(σ .)	
(σσ)	(σσ)	(σσ)	(σ .)	

(σ̄)	(σ̄)	(σ .)	(. .)	5 moras spoken, 3 silent
(σσ)	(σσ)	(σσ)	(σ .)	7 moras spoken, 1 silent
(σσ)	(σσ)	(σ .)	(. .)	5 moras spoken, 3 silent
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(σ̄)	(σ̄)	(σ .)	(. .)
(σσ)	(σσ)	(σσ)	(σ .)
(σσ)	(σσ)	(σ .)	(. .)
(σσ)	(σσ)	(σσ)	(σ .)
(σσ)	(σσ)	(σσ)	(σ .)

No stress in Japanese.

Feet are purely quanitative.

≈ 120 msec per mora

≈ 240 msec per foot

(σ̄)	(σ̄)	(σ .)	(. .)
(σσ)	(σσ)	(σσ)	(σ .)
(σσ)	(σσ)	(σ .)	(. .)
(σσ)	(σσ)	(σσ)	(σ .)
(σσ)	(σσ)	(σσ)	(σ .)

Feet are binary and sttessless

(σ̄) = (σ σ)

aya-ʧan	<	aja-ko	(σ σ)–ʧan
aki-ʧan	<	akira	
taro-ʧan	<	taroo	
kuri-ʧan	<	Chris	
tiː-ʧan	<	tisato	(σ̄)–ʧan
hiː-ʧan	<	hiroko	
at-ʧan	<	atsuko	
jai-ʧan	<	jajoi	

mido-ʧan	<	midori	(σ σ)–ʧan
miː-ʧan	<	midori	
mit-ʧan	<	midori	(σ̄)–ʧan

naki-naki	<	nak	‘cry’	(σ σ)–ʧan
tabe-tabe	<	tabe	‘eat’	
ʃiː-ʃiː	<	ʃi	‘do’	(σ̄)–ʧan
miː-miː	<	mi	‘see’	

a.ma.ʧu.a	‘amateur’
pu.ɹo.fe.ʃo.na.ɹu	‘professional’
he.ɹi.ko.pu.taa	‘helicopter’
ɹu.po.ɹu.taa.ju	‘reportage’ (Fr)
ʧo.ko.ɹee.to	‘chocolate’
te.ɹo.ɹi.zu.mu	‘terrorism’
bi.ɹu.diŋ.gu	‘building’
o.pe.ɹee.ʃoŋ	‘operation’
a.su.pa.ɹa.ga.su	‘asparagus’
fu.ɹa.su.to.ɹee.ʃoŋ	‘frustration’
i.ɹa.su.to.ɹee.ʃoŋ	‘illustration’
su.ka.to.ɹo.ʤii	‘scatology’
a.ku.se.ɹu.ɹee.taa	‘accelerator’
haŋ.ka.ʧii.fu	‘handkerchief’
kon.saa.ba.ti.bu	‘conservative (in attire)’
in.to.ɹo.da.ku.ʃon	‘introduction’

Loanwords into Japanese (Itô 1990)

loanwords are usually shortened
to (μμ) or (μμ)(μμ)

ama	‘amateur’	
puɺo	‘professional’	
heɺi	‘helicopter’	
ɺupo	‘reportage’ (Fr)	(σ σ)
ʧoko	‘chocolate’	μ μ
teɺo	‘terrorism’	
biɺu	‘building’	
ope	‘operation’	
asupara	‘asparagus’	
fuɺasuto	‘frustration’	(σ σ)(σ σ)
iɺasuto	‘illustration’	μ μ μ μ
sukatoɺo	‘scatology’	
akuseɺu	‘accelerator’	
haŋkachi	‘handkerchief’	(σ̄) (σ σ)
konsaba	‘conservative (in attire)’	μμ μ μ
intoɺo	‘introduction’	

Japanese poetry and language

Feet are binary and sttessless

$(\bar{\sigma}) = (\sigma\ \sigma)$

‘While Japanese has no stress in the phonetic sense (Beckman 1986),
it does have foot structure.’ (Gussenhoven 2004:15)

Traditional treatment of feet as headed

Trochee: Every foot begins with a stress.

Iamb: Every foot ends with a stress.

Japanese would require headless feet

Golston 2017: feet are pure structure

Trochee:	Every stress is foot-initial.	(σ́ σ)
Iamb:	Every stress is foot-final.	(σ σ́)

Japanese feet respect Trochee and Iamb (σ σ)
since there are no stresses

Japanese stressless feet

	FtBin	Trochee	Iamb	NoLapse
☞ (σ σ)				*
(ό σ)			*!	
(σ ό)		*!		
(ὸ ό)		*!	*	
(ό ὸ		*!	*	
(σ)	*!			

Having stress isn't a parameter (Spanish +, Japanese –)

it comes when Trochee, Iamb both dominate NoLapse

Trochee:	Every stress is foot-initial.	(√ if there is no stress)
Iamb:	Every stress is foot-final.	(√ if there is no stress)

Cairo Arabic

McCarthy 1979

(ká.ta)ba	‘he wrote (Classical)’	
(qat)(tá.la)	‘he killed (Classical)’	Stress on the rightmost foot.
(ka.ta)(bí.tu)	‘she wrote it’	= Fijian
(ha:)(ðá:)ni	‘these (m. dual)’	No stress on other feet.
(ʔin)(ká.sa)ra	‘their (dual) drugs’	= Japanese
mu(dar)(rí.si)t	‘teacher’	

katabitu	RIGHTMOST	TROCHEE	IAMB	NOLAPSE
☞ (kata)(bítu)			*	*
(kàta)(bítu)			*!*	
(kata)(bitú)		*!		**
(kata)(bitu)	*!			***

Najdi Arabic

Majed Alzhrani, pc

(ʔál)(baħa)r	‘the sea’
(ʔal)(ħár)f	‘the letter’
(ʔal)ħa(rúu)f	‘the letters’
(ʔar)ra(sáa)lah	‘the letter’
(ʔal)(kum)(bjúu)tar	‘the computer’

Stress on the rightmost heavy.

= Negev Bedouin Arabic

No stress on other feet.

= Japanese

Quantity Sensitivity	NoClash > WSP WSP > NoClash	Alber 1997

not a parameter;
Estonian, Spanish have both

Stressed/stressless feet	Iamb > Trochee… Trochee > Iamb… Iamb, Trochee …	Golston 2017

not a parameter;
Cairene, Najdi Arabic have both

Ternary Stress

Martínez-Paricio & Kager (2015) argue for

‘recursive’ trochees: ((σ́σ)σ), (σ(σ́σ))

‘recursive’ iambs: ((σσ́)σ), (σ(σσ́))

based primarily on ternary stress in

Chugach Alutiiq Yupik

Tripura Bangla

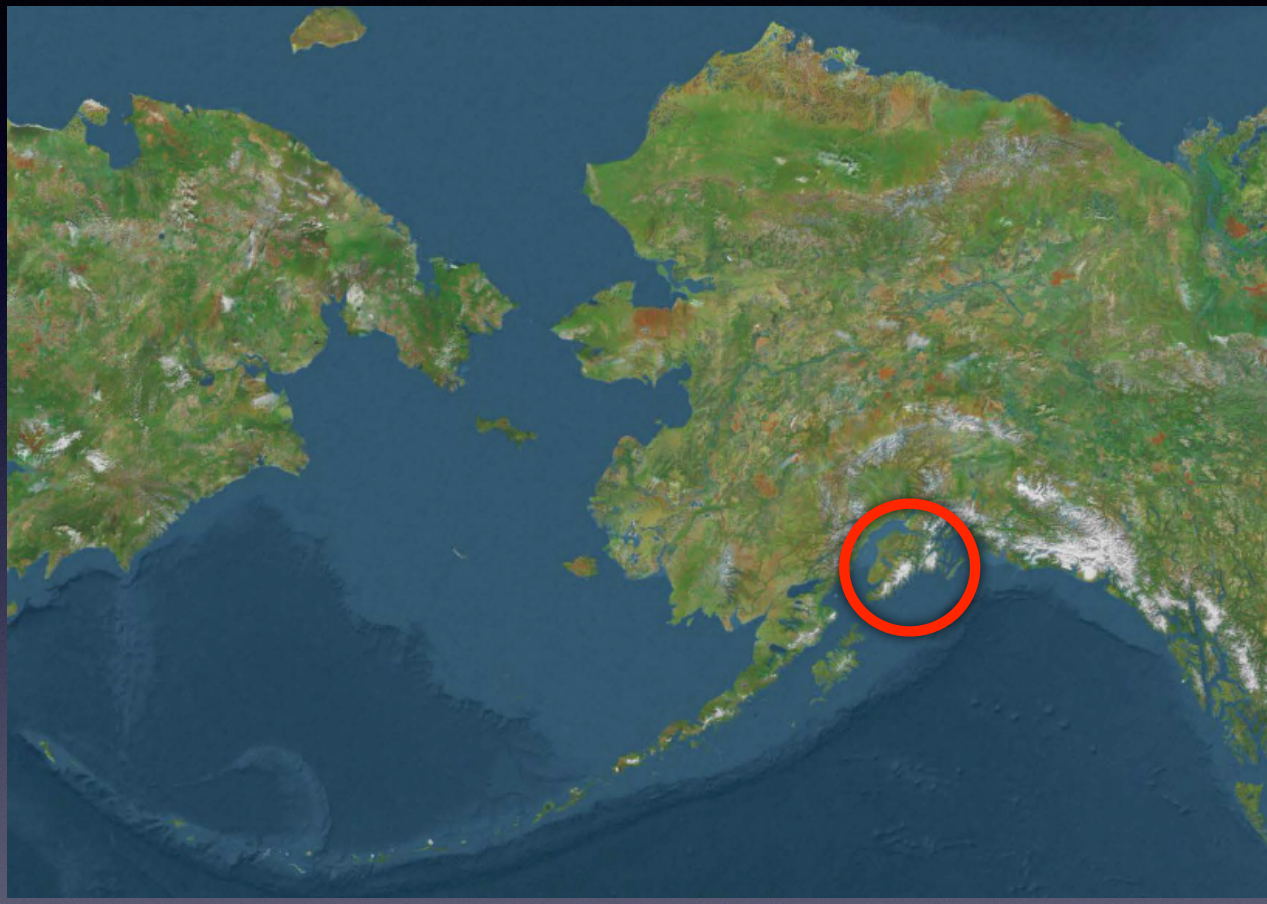
Cayuvava

= the clearest cases for ternary stress (Rice 2010)

MPK (2015)

Chugach Alutiiq	((naá)qu)((malú)ku)	’apparantly reading it’
	((akú)tar)((tunír)tuq)	‘he stopped eating akutaq’
Tripura Bangla	((ɔ́no)nu)((dàβo)ni)(jɔ)	‘unintelligible’
	((ɔ́no)nu)((kɔ̀ro)ni)(jɔ̀ta)	‘inimitability’
Cayuvava	ma((ràha)ha)((é.i)ki)	‘their blankets’
	iki((tàpa)re)((répe)ha)	‘the water is clean’

Chugach
Alutiiq
Leer 1993



Leer 1985 (the Yupik expert) argued for “superfeet”

(σ σ́) σ) an iamb with a stray σ adjoined to the right

to explain ternary stress in words with no heavy syllables
consonant fortition

Leer **1993** (which nobody discusses):

> [M]y earlier treatment of Alutiiq involved a level intermediate between foot and pitchgroup. Stray syllables were joined with the foot to their left to form a ‘superfoot’. This was a superficial mop-up procedure whose only purpose was to ensure that all syllables in the word were part of some prosodic structure, since metrical theory as I understood it disapproved of word-internal stray feet. I have since concluded that the ‘superfoot’ level is unnecessary; it just clutters up the structural representation without imparting new information. (1993:103-104)

Tripura
Bangla
(Das 2001)

(ráza)	‘king’
(góra)li	‘ankle’
(bíβɛ)sɔna	‘consideration’
(ʃɔ́ma)lə(sɔ̀na)	‘criticism’
(ónu)kɔ(ròni)jɔ	‘imitable’
(ɔ́no)nu(dàβo)nijɔ	‘unintelligible’
(ɔ́no)nu(kɔ̀ro)ni(jɔ̀ta)	‘inimitability’

Based on consonant lenition, Das argues forcefully (for 30 pages) that

a) feet are disyllabic trochees;
b) feet are never ternary; and
c) a (heavy) monosyllabic foot is always terminal.

Subsequent scholars ignore his arguments and just look at his stress data.

b→β, k→h *foot-medially*

(b̲áβ̲a) ‘father’ (zɔ́β̲a)b̲i ‘in reply’
(b̲íβ̲i) ‘wife’ (híβ̲a)b̲i ‘calculating’

(k̲áh̲a) ‘uncle’ (ɛ́h̲a)k̲i ‘alone’
(k̲áh̲i) ‘aunt (ɸɔ́ta)k̲a ‘flag’

Lenition clearly argues against ternary feet: *(zɔ́β̲aβ̲i) ‘in reply’
* (zɔ́β̲a)β̲i))

Subsequent scholars ignore Das’s work
and argues for ternary feet anyway.

Dactyls (σσσ)
(Beasley & Crosswhite 2003, Idsardi 2008; Buckley 2009)

framework of Idsardi (1992); see also Idsardi (2008)

(ráza)	‘king’
(górali)	‘ankle’
(bíβɛsɔ)na	‘consideration’
(ʃɔ́malɔ)(sɔ̀na)	‘criticism’
(ónukɔ)(rònijɔ)	‘imitable’
(ɔ́nonu)(dàβoni)jɔ	‘unintelligible’
(ɔ́nonu)(kɔ̀roni)(jɔ̀ta)	‘inimitability’

Recursive trochees ((σσ)σ)
(Martínez-Paricio & Kager 2015)

framework of Idsardi (1992); see also Idsardi (2008)

(ráza)	‘king’
((góra)li)	‘ankle’
((bíβɛ)sɔ)na	‘consideration’
((ʃɔ́ma)lɔ)(sɔ̀na)	‘criticism’
((ónu)kɔ)((ròni)jɔ)	‘imitable’
((ɔ́no)nu)((dàβo)ni)jɔ	‘unintelligible’
((ɔ́no)nu)((kɔ̀ro)ni)(jɔ̀ta)	‘inimitability’

S

‘Stress in Cayuvava falls on every third mora counting from the end of the word’ based on the following’ (Halle & Vergnaud 1987:25)

4σ	kihíbere	‘I ran’
5σ	bariékimi	‘seed of squash’
6σ	ráibirínapu	‘dampened manioc flour’
7σ	maráhahaéiki	‘their blankets’
8σ	ikitàparerépeha	‘the water is clean’
9σ	čáadiróboβurúruče	‘ninety-nine’

These aren’t WORDS, as becomes clear if you actually read the dissertation.

4σ	ki–hí–bere	= subordinate clause (‘that I run’, p. 38)
5σ	βarié–kimi seed squash	=compound (p. 46) ‘squash seed’
6σ	ráibirínapu	=compound, no initial stress /raibiˈrinapu/ (Key 1963) /raibiˈrimapu/ (Key 1975)

7σ maráhahaéiki ‘blankets’
= a relative clause

[m a rá–haha é] iki
PL which to–cover it] their
‘their thing to cover it with’

cf. ‘hats’

[mei ra–hebe e
[PL to–cover it]
‘things to cover it’

8σ ikitàparerépeha ‘the water is clean’
= ‘sentence (that) contains more than one word’
(p. 149)

i–kita pa–rerepe–ha
the–water is–clean–adj

9σ cáad–iróbo–βurúruče ‘ninety-nine’

= three words

cáad	iróbo	βurúruče	
four	five.more	ten	
4	· 5 ·	10	= 90 (not 99)

Key *does* say that there's a three syllable stress pattern in words

But he also says

the pattern is phrasal

the pattern is phonemic (!)

His transcriptions are unreliable and don't match his claims:

/kitibɔˀečoꜛkanaˀpẽpẽꜛiˀbeiki+isomo/ ˀwhen she sells her bread, drink and boiled cornˀ

σ σ σ σ́ σ σ σ σ́ σ σ σ́ σ σ σ σ σ σ

(……..(4……..(3…….(6……..)

ma.βe.e.sa.če
or ma.βe.sa.če

He claims that every vowel
is its own syllable

ma.βe.e.sa.če
or ma.βe.sa.če

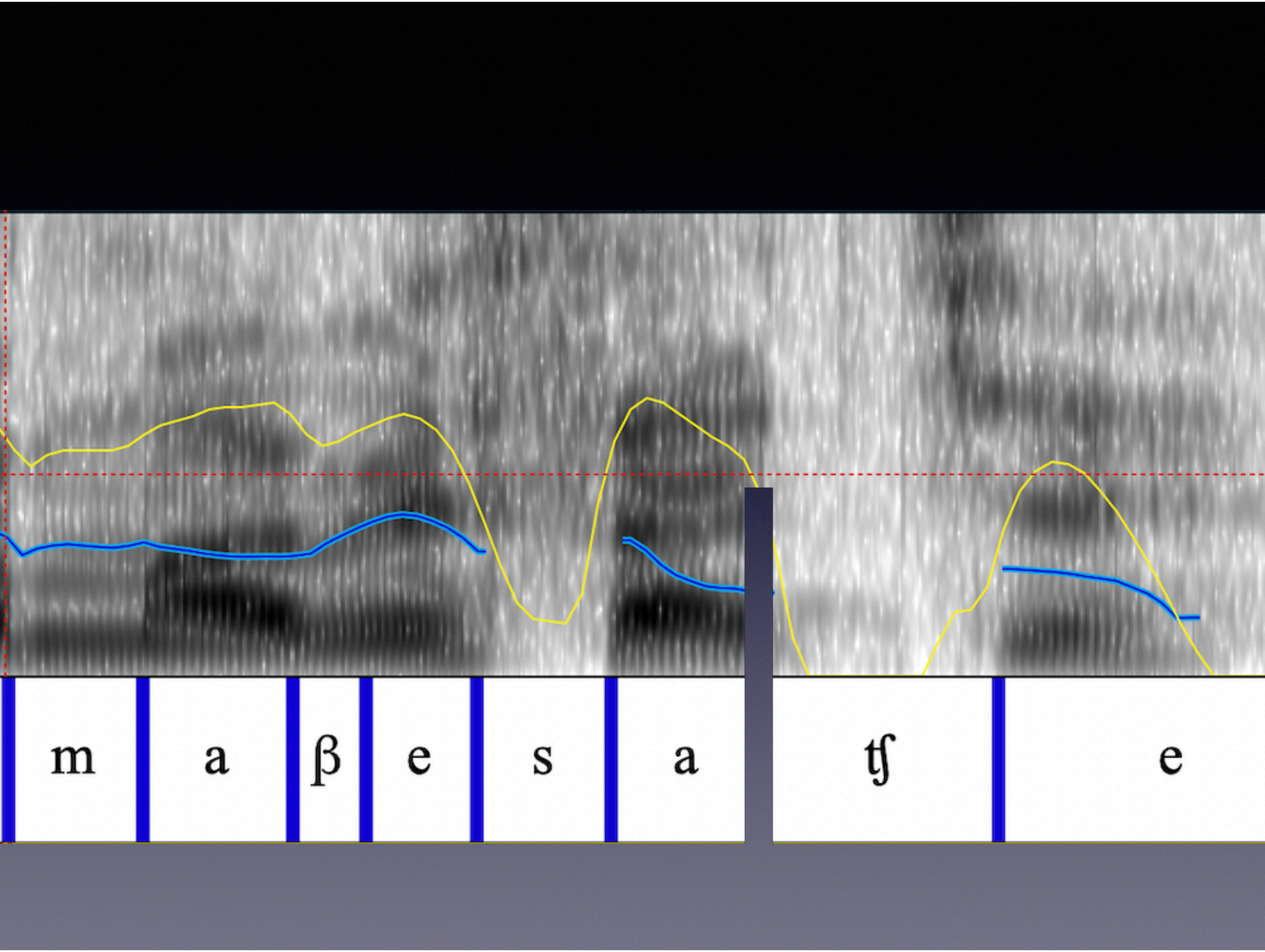
We found recordings of this extinct language
and now you can decide.

ka.ma.βe.e.sa.če
or ka.ma.βe.e.sa.če

You're the first linguists to hear this.

ka.ma.βe.e.sa.če
or ka.ma.βe.e.sa.če

caada ‘four’


m
a
β
e
s
a
ʧ
e

Without Cayuvava,
No language has stress on every third syllable.

Chugach Alutiiq and Tripura Bangla
are better analyzed with ternary feet.

Problems with the whole idea

Too many feet

Binary	
(σ́σ)	trochee
(σσ́)	iamb

Binary + Ternary	
(σ́σ)	trochee
(σσ́)	iamb
((σ́σ)σ)	recursive trochee
(σ(σ́σ))	recursive trochee
((σσ́)σ)	recursive iamb
(σ(σσ́))	recursive iamb

‘Recursion’ stops at one level

*(((σ́σ)σ)σ)

(((((σ́σ)σ)σ)σ) etc.

not enough languages

Binary		Binary + Ternary		
(σ́σ)	trochee	(σ́σ)	trochee	√√√
(σσ́)	iamb	(σσ́)	iamb	√√√
		((σ́σ)σ)	recursive trochee	~~Cayuvava, Tripura Bangla~~
		(σ(σ́σ))	recursive trochee	
		((σσ́)σ)	recursive iamb	~~Chugach Alutiiq~~
		(σ(σσ́))	recursive iamb	

‘Recursion’ stops at one level

*(((σ́σ)σ)σ)

(((((σ́σ)σ)σ)σ) etc.

not enough languages

Binary		Binary + ~~Ternary~~		
(ός)	trochee	(ός)	trochee	√√√
(σό)	iamb	(σό)	iamb	√√√
		~~((όσ)σ)~~	~~recursive trochee~~	
		~~(σ(όσ))~~	~~recursive trochee~~	
		~~((σό)σ)~~	~~recursive iamb~~	
		~~(σ(σό))~~	~~recursive iamb~~	

What is meant by ‘recursion’?

‘Recursion’ that stops at one level *(qu'est-ce que c’est?)*

Inner and outer feet have *different* properties

so it’s (x (y)), not (x (x))
= embedding, not recursion

Review

Meter is an artform based on feet and rhythm

Feet (iambs, trochees) and Rhythm (no clash, no lapse)
are basic properties of human language

We find ‘meter’ in the stress systems of natural languages

A metrical theory of stress

Trochaic

σ(σ́σ)(σ́σ)(σ́σ)	NoClash, NoLapse > AllFtL > WSP
(σ́σ)(σ́σ)(σ́σ)σ	NoClash, AllFtL > NoLapse > WSP

Quantitiy-Sensitive Trochaic

σ(σ̄́)(σ́σ)(σ́σ)	NoLapse > AllFtL, WSP > NoClash
(σ́σ)(σ̄́)(σ́σ)σ	AllFtL > WSP > NoLapse, NoClash

Iambic

σ(σ́)(σ́)(σ́)	doesn't exist; no ranking predicts it
(σ́)(σ́)(σ́)σ	NoClash, AllFtL, NoLapse > WSP

Quantitiy-Sensitive Iambic

σ(σ́)(σ̋)(σ́)	doesn't exist; no ranking predicts it
(σ́)(σ̋)(σ́)σ	AllFtL, WSP, NoLapse > NoClash

Stressless

σ(σσ)(σσ)(σσ)	doesn't exist; no ranking predicts it
(σσ)(σσ)(σσ)σ	IAMB, TROCHEE, ALLFTL > NOLAPSE, WSP

Mixed QI/QS

(σ̄)(σσ)(σσ)	Finnish, German Loans
(σσ)(σσ)(σ̄)	Estonian, Spanish


FIN