

No language requires recursive feet

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Ternary stress is rare but real. I show that the ternary stress does not require ternary or recursive feet, only an alternation between stressed and stressless feet, as with rhythmic alternations elsewhere. I model this as avoidance of stress clash across feet and argue for a generalized model of clash and lapse avoidance across the prosodic hierarchy. No ternary or recursive feet of any kind are needed, internally layered (Martinez-Paricio & Kager 2015, ‘MPK’) or otherwise, avoiding the massive overgeneration of MPK’s system of ILT feet.

I focus on stress in Chugach Alutiiq Yupik (Leer 1985abc), Tripura Bangla (Das 2001), and Cayuvava (Key 1961, 1967), ‘the clearest examples of ternary rhythm that have been uncovered to this point... [and] the empirical basis for the claim that ternary rhythm is a real phenomenon’ (Rice 2010). The same languages motivate recursive feet in MPK, whose feet are as follows:

1. Chugach ((akú)tar)((tunír)taq) ‘he stopped eating akutaq’ (recursive iamb)
2. Tripura ((ó.no)nu)((kò.ro)ni)(jò.ta) ‘inimitability’ (recursive trochee)
3. Cayuvava (i.ki)((tà.pa)re)((ré.pe)ha) ‘the water is clean’ (recursive trochee)

Analyses of such languages are split between those with ternary feet and those without. The former skip a syllable between feet (Weak Local Parsing, Hayes 1995: parse a foot, skip a syllable, repeat); Das 2001 uses WLP for Tripura. Analyses with ternary feet use simple feet ($\sigma\sigma$), or recursively layered feet ($(\sigma\sigma)\sigma$), as argued in MPK. I argue here neither kind of approach works for languages where we have phonotactic evidence for footing, e.g., Tripura.

Chugach actually ‘has three degrees of stress - zero stress, weak stress, and strong stress’ but *no ternary stress* (Leer 1985c:163); this is acknowledged in Kager 1993 (p. 416ff) but forgotten in MPK. *Actual surface forms* have no ternary stress in Chugach:

- 1'. Chugach Alutiiq (akú)(tàr)(tunír)(tàq) ‘he stopped eating akutaq’

Chugach has no ternary stress, no ternary feet, no recursive feet. It does not support MPK.

Tripura does have ternary stress, but Das gives phonotactic evidence that it has only binary feet. [b] lenites to [β] within a foot (and [k] lenites to [h]):

- (báβa) ‘father’ (bíβi) ‘wife’ (zóβa)bi ‘in reply’ (híβa)bi ‘calculating’

That [b] fails to lenite in the final syllable of $\sigma\sigma\sigma$ words shows that it is not foot-medial there, arguing against the recursive feet that MPK advocate; MPK do not discuss Das’s lenition facts. Das himself argues for weak local parsing but this leaves the lack of lenition in the final syllables of (zóβa)bi and (híβa)bi unaccounted for. A simpler analysis has degenerate stressless feet of the type found initially in English (t^h ə)(méɪrə) ‘tomato’. This footing allows a straightforward account of lenition: lenition targets foot-medial stops but spares foot-initial stops, giving (báβa) and (zóβa)(bi). Tripura lenition speaks against ternary feet, recursive or flat, is as follows:

- 2'. Tripura Bangla (ó.no)(nu)(kò.ro)(ni)(jò.ta) ‘inimitability’

Cayuvava has no phonotactic evidence to decide the footing, but the binary footing above gets the ternary pattern as well as ternary or recursive feet do, so I assume the simpler case already attested for Tripura:

- 3'. Cayuvava (i.ki)(tà.pa)(re)(ré.pe)(ha) ‘the water is clean’

In sum, ternary stress comes from persistent footing plus avoiding adjacent stressed feet.

I argue that this is due to clash–avoidance across feet, just as we have clash-avoidance across moras (Kager 1993), syllables (Selkirk 1984), stems (Fudge 1984), and prosodic words (Lieberman & Prince 1977). A full typology is provided in the talk.

Results: Chugach has no ternary stress and isn't relevant to the discussion. Tripura does have ternary stress but it comes from binary feet, with no recursion or layering, just an alternation of stressed/stressless feet. Cayuvava has no phonotactics to decide the issue, but is readily modelled like Tripura. There is no evidence for recursion in any of these languages.

A final case involves Gilbertese (Blevins & Harrison 1999), said to have $\mu\mu\mu$ feet. If we assume FtBin=[$\mu\mu$] (following B&H) and WdBin=[Ft Ft], we get alternating stressed and stressless binary feet, as in Tripura, without ternary feet, and thus without recursive feet.

References

- Blevins, Juliette & Sheldon P. Harrison. 1999. Trimoraic feet in Gilbertese. *Oceanic Linguistics*, 38.2, 203-230.
- Das, Shyamal. 2001. *Some aspects of the phonology of Tripura Bangla and Tripura Bangla English*. Doctoral dissertation, CIEFL Hyderabad. Available as ROA-493 from the Rutgers Optimality Archive.
- Fudge, Eric. 1984. *English word-stress*. Routledge.
- Hayes, Bruce. 1995. *Metrical stress theory: Principles and case studies*. University of Chicago Press.
- Kager, René. 1993. Alternatives to the iambic-trochaic law. *NLLT* 11, 381-432.
- Key, Harold H. 1961. Phonotactics of Cayuvava. *IJAL* 27, 143–150
- Key, Harold H. 1967. *Morphology of Cayuvava*. The Hague: Mouton
- Krauss, Michael (ed.). 1985. *Yupik Eskimo prosodic systems: descriptive and comparative studies*. Alaska Native Language Center Research Papers Number 7.
- Leer, Jeff. 1985a. Prosody in Alutiiq. Krauss (ed.), 77-134.
- Leer, Jeff. 1985b. Evolution of prosody in the Yupik languages. Krauss (ed.), 135-158.
- Leer, Jeff. 1985c. Toward a metrical interpretation of Yupik prosody. Krauss (ed.), 159-173.
- Lieberman, Mark & Alan Prince. 1977. On stress and linguistic rhythm. *LI* 8.2, 249-336.
- Lobina, David. 2014. When linguists talk mathematical logic. *Frontiers in Psychology* 5, 1-3.
- Lobina, David. 2017. *Recursion: a computational investigation into the representation and processing of language*. Oxford.
- Martinez-Paricio, Violeta & René Kager. 2015. The binary-to-ternary rhythmic continuum in stress typology: layered feet and non-intervention constraints. *Phonology* 32, 459–504.
- Rice, Curt. 2010. Ternary rhythm. *The Blackwell Companion to Phonology*.
- Selkirk, E. O. 1984. *Phonology and syntax: the relation between sound and structure*. Cambridge, Mass. & London: MIT Press.