Unary Stress as a Result of Coupled Oscillators

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Begin here:

Binarity is cross-linguistically pervasive…

- Feet are binary (Prince 1980)
  Ft-Bin: Feet are binary at some level of analysis (μ, σ).
- Binarity as a minimality restriction (Ussishkin 2005)
  Prosodic Branching: A prosodic category *i* must not be coextensive with a single member of prosodic category *i*-1.
- Binarity as an effect of edge alignment (Ito et al. 1996)
  In prosodic structures with no more than binary branching, every constituent lies at an edge of some larger constituent, i.e., is prominent within some larger constituent.

… because of **Rhythmic Alternation**

- Necessary for the cognitive organization of sounds (Zec 2006)
- Stress: Iambic/Trochaic Law (Hayes 1995)
- Also necessary for discriminating syllable weight (Poser 1990) and phrasal accent (Liberman and Prince 1977)

But!

PrWds in many languages are maximally **monopodal**…

- Monosyllabic languages

Vietnamese	(kəm)	‘rice’	Thompson (1965)

- Canonical “sesquisyllabic” languages

Bunong	rə.'(bɨŋ)	‘gourd’	Butler (in progress)
Khmer	kə.'(bal)	‘head’	Huffman (1972)

- Non-canonical “sesquisyllabic” languages

Burmese	t^{h}ə.mə.(yə̰:)	‘rice water’	Green (1995)
SMI Trique	$ra^{4}.ru^{4}.(βa:^{43})$	‘breakfast’	DiCanio (2008)
Maori	ta.(mái).ti	‘tie’	de Lacy (2002)

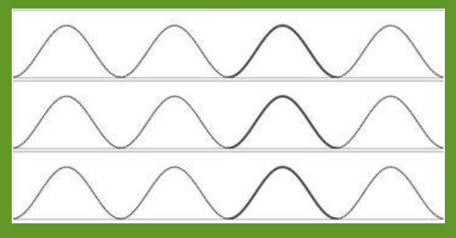
Unarity

- Rhythm is manifested as the temporal binding of events to specific and predictable phases of a cycle (Cummins and Port 1998).
- Prosodic constituents can be modeled as abstract dynamical oscillators, whose relative timing is known as a phasing relation. (Goldstein et al 2007, O’Dell and Nieminen 2009, *inter alia*).
- The most stable phasing relation between two oscillators is 1:1. This motivates a unary relationship between prosodic constituents, which can be formalized as a constraint limiting a prosodic constituent *n* to dominate only one constituent *n*-1.

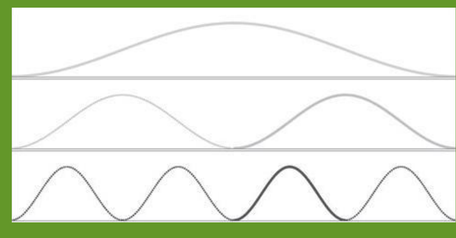
If 1:1 phasing relations are so stable, why are unary footing and stress so rare?

Because the 1:2 phasing relation is the second most stable, and it allows for…

Unary phasing relation



Binary phasing relation



(Adapted from Tilsen 2009)

References on back.