

**Summary.** Many languages impose a binary minimum on words, of at least two syllables or two moras. In McCarthy and Prince’s (1993) Prosodic Morphology, such minima follow from general constraints on metrical structure. However, a number of authors have noted mismatches between metrical constraints and minimality in specific systems (Garrett 1999; Gordon 1999; Downing 2005, 2006). Downing (2005, 2006) argues that binary minima may arise because of a pressure to ensure that morphological prominence, such as of roots, correlates with phonological complexity (Dresher and van der Hulst 1998).

This talk presents novel data from the Polynesian outlier Atara Imere (Vanuatu), which supports a metrical approach to minimality in at least two ways. First, Atara Imere imposes a trimoraic minimum due to strict antepenultimate stress (Clark 1998, 2002). At first glance, the trimoraic minimum holds only of roots, supporting Downing’s observation. But we show that apparently subminimal functional items trigger obligatory prosodic integration into the preceding prosodic word, diagnosed by stress shift (see also Gordon and Applebaum 2010 on Kabardian). In fact then, all morphemes are subject to the trimoraic minimum. The apparent lexical-functional divide derives from the distribution of affixation.

**1. Background.** Atara Imere (Polynesian, Austronesian) is spoken on Efate in Vanuatu by at least 3,934 speakers (VNSO 2020:181). This talk presents the first phonetic investigation of the prosodic structure of Atara Imere, based on recordings of 4 speakers (1 man, 3 women) in Mele, Vanuatu in June 2023. Atara Imere is also known as Mele-Fila or Ifira-Mele (a second variety is spoken on Ifira island).

**2. A trimoraic minimum.** Atara Imere provides evidence that word minimality may derive from constraints on metrical structure (McCarthy and Prince 1993). Nouns, verbs, and adjectives are subject to a trimoraic minimality requirement, reportedly linked to strict antepenultimate stress (Clark 1998, 2002). Antepenultimate stress is visible, for example, in the distribution of vowel-initial prefixes such as non-future *ee-* and plural *a-*, which only surface on bimoraic roots when they carry stress (1).

(1)	<b>Root</b>	<b>Meaning</b>	<b>Non-future</b>	<b>Root</b>	<b>Meaning</b>	<b>Plural</b>
	kai	‘eat’	‘ee-kai	manu	‘bird’	‘a-manu
	torotoro	‘sweat’	tor‘ootoro	matuama	‘monster’	mat‘uama

Our recordings corroborate that the syllable hosting the antepenultimate mora has an LH pitch accent (see 4 and 5 below). We propose that Atara Imere builds bimoraic trochaic feet with final extrametricality. High-ranked constraints requiring antepenultimate stress result in a trimoraic minimum for prosodic words (McCarthy and Prince 1993). The constraints  $*\#V_{[-stress]}$  bans initial unstressed vowels, blocking the appearance of the prefix in roots that already satisfy minimality (e.g. *\*a-matúama*).

<b>Input:</b>	a-manu	NONFIN	RIGHTMOST	$*\#V_{[-stress]}$	ALIGNR
☞ a. [p <sub>wd</sub> (‘a.ma).nu]					*
b. [p <sub>wd</sub> a.(‘ma.nu)]		*!		*	

**3. Subminimal items.** The fact that only words headed by roots are subject to minimality seems initially to support a link between minimality and morphological prominence. Some functional syntactic categories appear exempt from word minimality, such as demonstratives, subject clitics, and adverbial particles. Adverbial particles can be prosodic words (2), but may be subminimal as well (3). These items are not affixes on the preceding verb, because the verb must independently still be trimoraic.

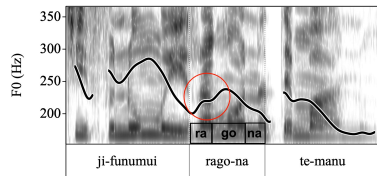
(2)	Ji-‘nuaane	‘ee-unu	‘soina	‘a-vai.	(3)	‘Aia	‘e-ggo‘ro	ana	‘a-goro.
	SG.DM-man	NFUT-drink	also	PL-water		3SG	NFUT-sing	still	PL-song
	‘The old man also drank water.’					‘S/he still sang a song.’			

**4. Prosodic integration of subminimal items.** We demonstrate that subminimal items are obligatorily integrated into a prosodic word, and so are nonetheless subject to the effects of word minimality. A similar kind of prosodic fusion occurs in Kabardian (Gordon and Applebaum 2010), in which subminimal roots undergo prosodic fusion with a preceding modifier to satisfy minimality. It has been previously noted that subminimal items may affect stress in the preceding word (Capell 1942). Investigation of this effect in our recordings reveals a novel generalization: free-standing bimoraic items reliably shift primary stress to the final mora of the preceding word, demoting the primary stress to secondary stress.

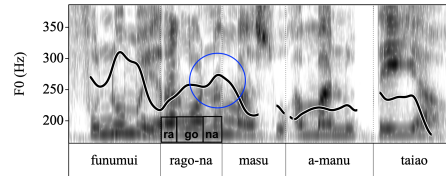
In (3), the adverbial particle *ana* ‘still’ shifts primary stress on the verb to the final syllable. Similar patterns obtain with demonstrative *raa*, *kee* ‘not’, *masu* ‘only’, and directional particles *atu/age/mai*.

The pitch tracks in (4) and (5) demonstrate. The verb *rago-na* ‘hear-TR’ carries an LH pitch accent on the initial syllable (red circle), reaching its peak in the onset C of the following syllable (4). But the addition of *masu* ‘only’ introduces a more prominent LH on the final syllable *na* (blue circle) (5).

- (4) Ji-funumui 'rago-na te-manu.  
SG.DIM-girl hear-TR SG-bird  
‘The girl heard the bird.’



- (5) Funumui ,rago- 'na masu a-manu taiao.  
girl hear-TR only PL-bird morning  
‘The girl only heard birds in the morning.’



We propose that adverbial particles like *masu* ‘only’ cannot surface as a stray foot or syllable, because EXHAUSTIVITY requires feet and syllables to be anchored to a prosodic word (Selkirk 1996). However, these forms do not take affixes. As a result, the only way to satisfy minimality is by integrating the particle into a preceding prosodic word, such as the verb (tableau below). As a result, a subminimal item such as *masu* ‘only’ ends up within the domain of stress assignment. The final mora of the root is now antepenultimate within this domain and so is promoted to primary stress.

Input:	rago-na masu	EXH	NONFIN	RIGHTMOST	OO-FOOT	ALIGNR
☞	a. [p <sub>Wd</sub> ( ra.go)( 'na.ma).su]					*
	b. [p <sub>Wd</sub> ( 'ra.go).na] (ma.su)	*!				*
	c. [p <sub>Wd</sub> ( 'ra.go)( ,na.ma).su]			*!		*

**5. No stress shift with monomoraic items.** Atara Imere allows monomoraic items too, such as complementizer *pa* and possessive *na*. But, with these, no stress shift occurs (cf. Capell 1942):

- (6) 'A-tama na 'te-ffine 'rago-na 'te-manu.  
PL-child POSS SG-woman hear-TR SG-bird  
‘The woman’s children heard the bird.’

We propose that these items undergo prosodic integration to satisfy EXHAUSTIVITY, like other subminimal items. But shifting primary stress to the derived antepenultimate position in *\*a-tama-na* does not allow faithfulness to the metrical structure of the isolation form of the root *á-tama*, i.e. the base (see tableau below). A bimoraic item like *masu* can make use of the extrametrical final syllable, allowing integration into the root by building an additional foot, while staying faithful to foot boundaries in the base (see tableau above). We implement this idea using an output-output faithfulness constraint requiring faithfulness to foot boundaries in the isolation form of the root, OO-FOOT (Benua 1997). We note that faithfulness to the independent form of the verb could also be implemented by appealing to cyclicity, for example, by imposing an ordering on word-level phonology (footing of the root and its affixes) before phrase-level phonology (prosodic integration of the particle).

Input:	a-tama na {~ ('a.ta)ma}	EXH	NONFIN	RTMOST	OO-FOOT	*#V <sub>[-stress]</sub>	ALIGNR
☞	a. [p <sub>Wd</sub> ( 'a.ta).ma.na]						**
	b. [p <sub>Wd</sub> a.( 'ta.ma).na]				*!	*	*
	c. [p <sub>Wd</sub> ( 'ta.ma).na]				*!		*
	d. [p <sub>Wd</sub> ( 'a.ta).ma] na	*!					*

That the metrical structure of the isolated form of the root must be preserved across contexts also provides an explanation for why roots themselves are not augmented by prosodic integration. Prosodic integration only permits functional items to meet minimality requirements, while subminimal roots always require affixation (prosodic fusion is also asymmetrical in Kabardian, Gordon and Applebaum 2010). OO-FOOT, which requires correspondence to the metrical structure in the base, rules out candidates like (c) in the tableau above, so that the availability of affixation means that roots are always trimoraic independently.