This paper has not yet been submitted for publication, so I would be grateful for any comments which might make it more useful. Send email to `j.frampton@neu.edu`.

Late Extrametricality in Indonesian and Selayarese*

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The Indonesian stress system was analyzed in an important paper by Cohn (1989). Whereas Cohn then concluded that ə-syllables (syllables with a schwa nucleus) were metrically invisible in Indonesian, McCarthy and Cohn (1998) shows that this is not quite right and that an ə-syllable in some words, *bə.ri* 'give' for example, must count for satisfying the 2 beat minimum word weight. The puzzle is to explain why ə-syllables are sometimes visible to the prosodic system, but most often are not.

Broselow (2008) proposed an OT solution to a puzzle in the metrics of Selayarese loanwords from Bahasa Indonesian (BI). BI loanwords introduce a complication, described in Mithun and Basri (1986) in a transformational framework. Various adaptations to Selayarese phonotactics are made by splitting the coda from a CVC syllable to CV + C and reduplicating the vowel to support the C, forming a CV.CV syllable sequence. The second syllable is epenthetic. Here I will call these syllables MB syllables (Mithun-Basri syllables). The puzzle is to explain why MB syllables are sometimes visible to the prosodic system, but sometimes are not.

In this note, I argue that a careful account of the departure from metric invisibility on the part of ə-syllables in Indonesian and MB syllables in Selayarese gives evidence for how stress systems implement extrametricality. It is a transformation that deletes the beats projected from certain syllables. Because it is a transformation, there is a timing question. That is, a rule ordering question. It can apply after rules that ensure that a word meets minimal prosodic requirements.

Since the prosody of multi-morphemic words in Indonesian supports the view of the Indonesian minimal word condition that is needed in the explanation of the puzzling behavior of ə-syllables in short words, a final section analyzes the prosody of multi-morphemic words. The conclusion is interesting in its own right. Metrically, suffixation neither ignores the metrical structure of the stem nor respects it in the sense of Halle and Kenstowicz's (1991) "Respecting Metrical Structure". Instead, the minimal change in the

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metrical structure of the stem is made which allows the final syllable to be footed, which is what is required for the suffixed word to satisfy the minimal-word condition.

Section 1. Basics of Indonesian word prosody

First, some data which do not include ə-syllables. The foot groups and the choice of trochaic stress are of course conjectural at this point, but a good starting point is to assume a syllable-counting system with no heaviness effect, bisyllabic feet, and trochaic foot stress.

(1)	a.	*(cá.ri)*	'search for'
	b.	*bi(cá.ra)*	'speak'
	c.	*(bì.jak)(sá.na)*	'wise'
	d.	*(kòn.ti)nu(á.si)*	'continuation'
	e.	*(è.ro)(dì.na)(mí.ka)*	'aerodynamics'
	f.	*(à.me)ri(kà.ni)(sá.si)*	'Americanization'

(1d) and (1f) suggest that although iterative footing is RL binary footing, it is disrupted at the left edge in some way.

The analysis which will be developed derives from the analysis of Indonesian word prosody presented in Halle and Idsardi (1994). Most significantly, it takes footing to be the result of a sequence of operations which insert one-sided foot delimiters, each of which marks either the beginning or end of a foot. The derivation of (1d) below should clarify some of what this means. This anticipates the analysis which will be developed and should be viewed only as a 'preview of coming attractions', intended to orient the reader to what is to come, not to convince the reader of the analysis. The metrical persona of syllables are separated from the syllables qua phonemic objects. That is important in Indonesian because ə-syllables generally have no metrical persona although they obviously have phonemic content. The rules on the left are the rules which apply to get to the next step in the derivation.

(2)	applicable rule	*kon ti nu a si*
		$\times\ \times\ \times\ \times\ \times$
	$\times \rightarrow \times\rangle \;/\; \_\_\#$	$\times\ \times\ \times\ \times\ \times\rangle$
	$\times \rightarrow \times\rangle \;/\; \#\times\_\_$	$\times\ \times\rangle\times\ \times\ \times\rangle$
	$\times \rightarrow \langle\times \;/\; \_\_\times$	$\times\ \times\rangle\times\langle\times\ \times\rangle$
	$\times \rightarrow \langle\times \;/\; \_\_\times$	$\langle\times\ \times\rangle\times\langle\times\ \times\rangle$
	trochaic foot stress	$\langle\acute{\times}\ \times\rangle\times\langle\acute{\times}\ \times\rangle$
	main stress	$\langle\grave{\times}\ \times\rangle\times\langle\acute{\times}\ \times\rangle$
		kòn.ti.nu.á.si

The first two applicable rules are what are called *edge-marking rules*. The next two are instances of the *iterative rule*, which applies from right to left. The iterative rule does not apply to

$$\times\ \underset{\blacktriangle}{\times}\rangle\times\langle\times\ \ \times\rangle$$

because foot delimiters are actual objects on the *beat line*. The target of the rule (indicated by the cursor) is not in the environment $/\ \_\_\times$.

1.1 The theory

The beat line consists of a string of beats (which may have properties) and foot delimiters, $\rangle$ and $\langle$. A beat is called *locally footed* if it is in the context $\_\_\rangle$ or the context $\langle\_\_$. A substring F of the beat line is called a *foot* if it consists solely of beats, contains at least one locally footed beat, and contains every beat which is adjacent to a beat in F.

A *delimiter insertion rule* (DIR) is a rule of the form

(3) $R = \rho\ /\ \mathrm{SC}\ ;\ \mathrm{DC}$

where ρ is one of the rules $\times \rightarrow \times\rangle$, $\times \rightarrow \times\langle$, $\times \rightarrow \langle\times$, or $\times \rightarrow \rangle\times$, and SC (the structural condition) and DC (the derivational constraint) are conditions on beats. R is applicable at a beat if the beat satisfies SC and, if ρ were to apply, beats adjacent to the inserted delimiter would satisfy DC. If R does apply, the result is whatever the result of applying ρ is. I call rules of this form *focused* and the modification of the Halle-Idsardi framework the *focused DIR framework*. Halle and Idsardi use 'unfocused' rules of the form $\times\times \rightarrow \times\times\rangle$.

The only DC which is used in the analysis of Indonesian which will be developed is *Unary. Unary is the condition which is satisfied by beats which are not adjacent to another beat but are directly footed. *Unary is the condition on beats which is satisfied by beats that do not satisfy Unary. That is, they are either *adjacent* to another beat or are not directly footed.

The Indonesian word prosody system is specified below (tentatively) as a list of DIRs, the last of which is iterative. The non-iterative rules are edge-marking rules. It assumes that beats are projected from syllables (not moras), that stress is trochaic, and that main stress is rightmost.

(4) Indonesian delimiter insertion (version 1)

$$\left.\begin{array}{l} \times \rightarrow \times\rangle\ /\ \_\_\# \\ \times \rightarrow \times\rangle\ /\ \#\times\_\_ \\ \big[\times \rightarrow \langle\times\big]_{\mathrm{RL}} \end{array}\right\}\ ;\ {}^{*}\textsc{Unary} \qquad \begin{array}{l} (\mathrm{GF_R}) \\ (\textsc{Bin}_\mathrm{L}) \\ (\mathrm{GB}) \end{array}$$

GF$_R$ groups beats forward (away from the starting edge) and applies at the right edge. Bin$_L$ applies at the left edge. The effect of Bin$_L$, if it applies, is to create a binary foot at the left edge. Edge marking in most languages is restricted to the ‘near edge’, the edge at which iterative footing is initiated, but ‘far-edge’ marking does occur in a number of languages. Well-known cases are Lenakel and Garawa. GB groups beats back towards the starting edge

Below are the step-by-step derivations of all of the (1) examples. In the interest of readability, foot delimiters inserted by marking rules are doubled. The grammar is not sensitive to this information.

(5)

a.	*ca.ra*
	× ×
GF$_R$	× ×⟫
GB	⟨× ×⟫
	cá.ra

b.	*bi.ca.ra*
	× × ×
GF$_R$	× × ×⟫
GB	×⟨× ×⟫
	bi.cá.ra

c.	*bi.jak.sa.na*
	× × × ×
GF$_R$	× × × ×⟫
Bin$_L$	× ×⟫× ×⟫
GB	× ×⟫⟨× ×⟫
GB	⟨× ×⟫⟨× ×⟫
	bì.jak.sá.na

d.	*kon.ti.nu.a.si*
	× × × × ×
GF$_R$	× × × × ×⟫
Bin$_L$	× ×⟫× × ×⟫
GB	× ×⟫×⟨× ×⟫
GB	⟨× ×⟫×⟨× ×⟫
	kòn.ti.nu.á.si

e.	*e.ro.di.na.mi.ka*
	× × × × × ×
GF$_R$	× × × × × ×⟫
Bin$_L$	× ×⟫× × × ×⟫
GB	× ×⟫× ×⟨× ×⟫
GB	× ×⟫⟨× ×⟨× ×⟫
GB	⟨× ×⟫⟨× ×⟨× ×⟫
	è.ro.dì.na.mí.ka

f.	*a.me.ri.ka.ni.sa.si*
	× × × × × × ×
GF$_R$	× × × × × × ×⟫
Bin$_L$	× ×⟫× × × × ×⟫
GB	× ×⟫× × ×⟨× ×⟫
GB	× ×⟫×⟨× ×⟨× ×⟫
GB	⟨× ×⟫×⟨× ×⟨× ×⟫
	à.me.ri.kà.ni.sá.si

1.2 Monosyllabic roots

Cohn (1993:376) noted that

> Indonesian shows a strong avoidance of monosyllabic content words consisting of a single syllable, words the size of a degenerate foot. A few such words occur (all of the form CVC), but they are all borrowings and are often reanalyzed as disyllabic, for example, *tik—kətik* ‘type’. In a basic word list of approximately 1,300 words (Wolff, Octomo, and Fietkiewicz 1986), only 16 monosyllabic content words occur and all are clear borrowings (however, the monosyllabic content words that do occur behave like fully nativized forms of the language).

The rules (4) must be modified to account for the small class Ω of exceptional monosyllabic content words. The simplest way to account for this is to introduce a special rule for footing the Ω-words. Say that a beat is an Ω-beat if it is projected from a Ω-word.

(6) $\mathrm{GB}_\Omega = \times \;\rightarrow\; \langle \times \;/\; \_\_\#$ if $\times$ is an Ω-beat

The footing rules (4) are updated to (7).

(7) Indonesian delimiter insertion (version 2)

$$
\begin{array}{lll}
\times \;\rightarrow\; \times\rangle \;/\; \_\_\# & ;\ ^*\textsc{Unary} & (\mathrm{GF_R}) \\
\times \;\rightarrow\; \times\rangle \;/\; \#\times\_\_ & ;\ ^*\textsc{Unary} & (\mathrm{Bin_L}) \\
\times \;\rightarrow\; \langle\times \;/\; \_\_\# \text{ if } \times \text{ is an } \Omega\text{-beat} & & (\mathrm{GB}_\Omega) \\
\big[\; \times \;\rightarrow\; \langle\times \;\big]_{\mathrm{RL}} & ;\ ^*\textsc{Unary} & (\mathrm{GB})
\end{array}
$$

Say that *a syllable is footed if it projects a footed beat*. If (7) is coupled with (8), McCarthy and Prince (1986), there is an account of why there are no monosyllabic content words other than those in Ω.

(8) Minimal Word Condition (MWC): Content words must have a footed syllable.

This condition will later be sharpened. See (18).

Section 2. Weak syllables in Indonesian

The primary refinement of (7) that is needed concerns the special status of syllables with a ə-nucleus, which will be called *weak syllables* in what follows. Syllables which are not weak will be called *strong syllables*. It was realized by Cohn (1989) that weak syllables behave as if they are metrically invisible. (This will be slightly amended in the next section.) In the examples below, from Cohn (p. 174), it is clear that stresses are distributed on the strong syllables as if the weak syllables were invisible. Weak syllables are indicated in (9) by a grey crossout, *~~mə~~* for example.

(9) 2 strong syllables, stress on the penultimate strong syllable

cá.ra	see (5a)
gá.~~mə~~.lan	‘Indonesian orchestra’
~~cə~~.rí.~~tə~~.ra	‘story’
~~pə~~.~~rəm~~.pú.an	‘woman’

3 strong syllables, stress on the penultimate strong syllable

bi.cá.ra	see (5b)
a.pár.~~tə~~.men	‘apartment’
ko.~~pə~~.rá.si	‘cooperation’

5 strong syllables, stress on the penultimate and initial strong syllables

kòn.ti.nu.á.si	see (5d)
dì.~~vər~~.si.fi.ká.si	‘diversification’
dì.fə.~~ren~~.si.á.si	‘differentiation’

Logically, there are two ways in which a mismatch between syllables and beats can be established.

(10) a. Certain syllables have an inherent property which prevents them from projecting a beat.

b. Initially, beats are automatically projected from every syllable but there is an operation which deletes the beats projected from syllables which have some inherent property.

I will pursue the second possibility, (10b). Concretely, I realize (10b) by assuming the prosodic system (11) and supposing that word minimality in Indonesian requires that content words have a stressed syllable. Beats projected from weak syllables are denoted by $\hat{ə}$. $XM_ə$ deletes $\hat{ə}$-beats.

(11) Indonesian delimiter insertion (version 3)

$$\begin{array}{lll}
\hat{ə} \rightarrow \emptyset & & (XM_ə) \\
\times \rightarrow \times\rangle \;/\; __\# & ;\ {*}\textsc{Unary} & (GF_R) \\
\times \rightarrow \times\rangle \;/\; \#\times__ & ;\ {*}\textsc{Unary} & (\textsc{Bin}_L) \\
\times \rightarrow \langle\times \;/\; __\# \text{ if } \times \text{ is an } \Omega\text{-beat} & & (GB_\Omega) \\
\left[\times \rightarrow \langle\times\right]_{RL} & ;\ {*}\textsc{Unary} & (GB)
\end{array}$$

All of the examples in (9) are predicted. Some derivations are given below.

(12) a.

	cə	*ri*	*tə*	*ra*
	×	×	×	×
$XM_ə$		×		×
GF_R		×		×⟫
GB		⟨×		×⟫
	cə	*rí*	*tə*	*ra*

b.

	ko	*pə*	*ra*	*si*
	×	×	×	×
$XM_ə$	×		×	×
GF_R	×		×	×⟫
GB	×		⟨×	×⟫
	ko	*pə*	*rá*	*si*

c.

	di	*fə*	*ren*	*si*	*a*	*si*
	×	×	×	×	×	×
$XM_ə$	×		×	×	×	×
GF_R	×		×	×	×	×⟫
$\textsc{Bin}_L$	×		×⟫	×	×	×⟫
GB	×		×⟫	×	⟨×	×⟫
GB	⟨×		×⟫	×	⟨×	×⟫
	dì	*fə*	*ren*	*si*	*á*	*si*

2.1 Weak syllables and the minimal word condition

McCarthy and Cohn (1998, p. 21) point out that there is a problem in concluding that weak syllables are completely invisible to the metrical computation. There are many multi-syllabic words with a single strong syllable which are not in the class of exceptional monosyllabic words discussed above. Many are not borrowings.

(13) a. *bə.rí* 'give' b. *sə.tə.láh* 'after' c. *ə.nám* 'six'

This is not predicted by (11). But it is predicted if the order of $XM_ə$ and GF_R in (11) is reversed. The rules are then (14).

(14) Indonesian word prosody (version 4)

× → ×⟩ / __# ; *UNARY	(GF_R)
ə̂ → ∅	($XM_ə$)
× → ×⟩ / #×__ ; *UNARY	(BIN_L)
× → ⟨× / __# if × is an Ω-beat	($GB_Ω$)
[× → ⟨× $]_{RL}$; *UNARY	(GB)

The derivations (12) are virtually unchanged if the footing system is (14).

(15) a. *cə.rí.tə.ra*

	×	×	×	×
GF_R	×	×	×	×⟫
$XM_ə$		×		×⟫
GB		⟨×		×⟫

b. *ko.pə.rá.si*

	×	×	×	×
GF_R	×	×	×	×⟫
$XM_ə$	×		×	×⟫
GB	×		⟨×	×⟫

c. *dì.fə.ren.si.á.si*

	×	×	×	×	×	×
$GF_\#$	×	×	×	×	×	×⟫
$XM_ə$	×		×	×	×	×⟫
BIN_L	×		×⟫	×	×	×⟫
GB	×		×⟫	×	⟨×	×⟫
GB	⟨×		×⟫	×	⟨×	×⟫

But the stress patterns of *bə.rí*, *sə.tə.láh*, and *ə.nám* are correctly predicted.

(16) a. *bə.ri*

	ə̂	×
GF_R	ə̂	×⟫
$XM_ə$		×⟫
	bə.rí	

b. *sə.tə.la*

	ə̂	ə̂	×
GF_R	ə̂	ə̂	×⟫
$XM_ə$			×⟫
	sə.tə.lá		

c. *ə.nam*

	ə̂	×
GF_R	ə̂	×⟫
$XM_ə$		×⟫
	ə.nám	

Except for the small group of monosyllabic words, monosyllabic words will not be footed because the only delimiter insertion rule in (14) which could apply to a single beat is $GB_Ω$.

The phenomenon of underlying binarity feet which are distorted later in the derivation and appear at the surface as unary (or ternary) feet is well known in cases in which vowel syncope applies after footing. In Bani-Hassan Arabic, vowel elision (*sa.ha*→ *s~~á~~ha*) before footing gives the incorrect derivation (17a), not the correct (17b), Irshied and Kenstowicz (1984). In Indonesian, extrametricality (*bə*→ *~~bə~~*) before footing gives the incorrect derivation (17c), not the correct (17d). A grey crossout (~~bə~~) is used to indicate beat deletion which leaves the syllable untouched. ~~á~~ is vowel deletion, which automatically deletes the associated beat.

(17) a. **sa.ha.ba.tak → s~~á~~ha.ba.tak → (sha.ba)tak → (shá.ba)tak*
b. *sa.ha.ba.tak → (sa.ha)(ba.tak) → (s~~á~~ha)(ba.tak) → (shà)(bá.tak)*
c. **bə.ri → ~~bə~~.ri* (unfootable)
d. *bə.ri → (bə.ri) → (~~bə~~.ri) → (~~bə~~.rí)*

2.1.1. The absence of words with a word-final weak syllable

Cohn and McCarthy (henceforth C&M) point out that although there are bisyllabic words with an initial weak syllable, there are no words of any length with a final weak syllable. The most straightforward way to account for this is to suppose that the minimal word condition (8) is sharpened to (18). A syllable is footed if it projects a footed beat.

(18) Minimal Word Condition revised (MWC): The final syllable of words is footed.

The MWC is a filter on outputs. Like all output filters, it is evaluated after the metrical rules have applied.

A word like *rí.bə* is impossible although at one point in its derivation the final syllable is footed. But after the metrical rules have applied, the final syllable does not project a beat. All of the examples in (12) and (16) satisfy (18).

There is support in Section 3.1 (p. 8) for the MWC (18). If a monosyllabic suffix is appended to a metrified root, the final syllable cannot be footed without some reorganization of the metrical structure of the stem. It turns out that the reorganization which occurs is the most straightforward way to bring the affixed stem in line with the MWC, while preserving the foot structure of the root as much as possible.

Section 3. Suffixation

Data in this and the next will include various prefixes and suffixes. A skeletal description of the morphology relevant to the data in this paper is given in Cohn (1989, p. 175). It is reproduced below.

> In standard Indonesian, it is possible for a word to have up to two layers of suffixes which fall within the stress domain of the word. The affixes which cause stress a stress shift are as follows: (a) The derivational affixes, **-an** and **kə-an**, form nominals. The latter is a circumfix, but for the moment it is only the suffix part that is of interest; since the prefix has a schwa, it does not affect the stress pattern. (b) The verbal suffixes, **-i** and **-kan**, change the valence of verbs. They co-occur with the verbal prefixes **məŋ-** ‘active’ and **di-** ‘passive’. In these examples, I cite forms with **məŋ-**; since this prefix contains schwa, it does not affect the stress pattern. The suffixes **-ku** 1s., **-mu** 2s., and **-ña** 3s. are possessive markers. They mark possession when added to a nominal construction, and in active verbal constructions, they mark the direct object. Additionally, **ña** functions as a definite marker in nominal constructions and as the agent in passive verbal constructions. These morphemes are actually enclitics, but they clearly fall within the stress domain of the word. The person markers **-ku**, **-mu**, and **ña**, appear to the right of the other suffixes.

3.1 Suffixation of a single suffix

Some examples of suffixation by a single monosyllabic suffix follow in (19), taken from McCarthy and Cohn (1998), examples (24) and (25).

(19) Suffixation of a single suffix

	stem	suffixed	
a.	*cá.ri*	*mən.ca.rí.kan*	‘search for’
b.	*bi.cá.ra*	*məm.bi.ca.rá.kan*	‘speak about something’
c.	*mà.ša.rá.kat*	*mà.ša.ra.kát.ña*	‘the society’
d.	*kòn.ti.nu.á.si*	*kòn.ti.nu.a.sí.ña*	‘the continuation’
e.	*ò.to.bì.o.grá.fi*	*ò.to.bì.o.gra.fí.ña*	‘the autobiography’
f.	*à.me.ri.kà.ni.sá.si*	*mən.à.me.ri.kà.ni.sa.sí.kan*	‘Americanize’

Under suffixation the rightmost stress shifts from the penultimate root syllable to the final root syllable. But the other stressed syllables in the root remain stressed in the suffixed root and the unstressed syllables in the unsuffixed root remain unstressed under suffixation.

Metrically, suffixation neither ignores the metrical structure of the stem nor respects it in the sense of Halle and Kenstowicz's (1991) “Respecting Metrical Structure”. Instead, the minimal change in the metrical structure of the stem is made which allows the final syllable to be footed so that the suffixed word satisfies the Minimal Word Condition (MWC), (18). Suffixation respects the metrical structure of the stem only as much as it can while also respecting the more important MWC.

Earlier, I credited Halle and Idsardi (1994) with the idea of analyzing the foot structure of Indonesian as the result of a sequence of one-sided delimiter insertion operations. The analysis of suffixation takes two more ideas from that paper. First, the idea that the secondary stresses are preserved because there is a block of rules applying to the root (the cyclic block), followed after suffixation to the footed root by a block of rules applying to the suffixed word (the post-cyclic block). Second, that the post-cyclic rules can include rules that erase foot delimiters inserted in the cyclic block.

We can understand (19) in the following way. The Minimal Word Condition (18) requires footing the final syllable. Otherwise the suffixed word would not satisfy the MWC. The minimal way to achieve this, maintaining binary feet and the locations of the secondary stresses, is to build the suffixed word from the metrified stem by shifting the final foot one beat to the right. What must be accomplished by the post-cyclic rules is

$$\cdots(\sigma_1\sigma_2)\sigma_3\,\# \;\rightarrow\; \cdots\sigma_1(\sigma_2\sigma_3)\,\#$$

This is illustrated in (20).

(20) a. *(kon.tin)u(a.si)ña* → *(kon.tin)u.a(si.ña)*

b. *(o.to)(bi.o)(gra.fi)ña* → *(o.to)(bi.o)gra(fi.ña)*

The language learner must innovate rules; delimiter insertion rules and delimiter erasure rules to accomplish $\cdots\langle\times\times\rangle\times \;\rightarrow\; \cdots\times\langle\times\times\rangle$. (21) is a plausible sketch of the post-cyclic derivation.

(21) $\cdots\langle\times\ \times\rangle\times$

1. $\times \;\rightarrow\; \times\rangle \;/\; \_\_\#$ $\quad\cdots\langle\times\ \times\rangle\times\rangle$
2. $\rangle \;\rightarrow\; \emptyset \;/\; \_\_\times\rangle$ $\quad\cdots\langle\times\ \times\ \times\rangle$
3. $\times \;\rightarrow\; \langle\times \;/\; \_\_\times\#$ $\quad\cdots\langle\times\langle\times\ \times\rangle$
4. $\langle \;\rightarrow\; \emptyset \;/\; \_\_\times\langle$ $\quad\cdots\ \times\langle\times\ \times\rangle$

Unlike the DIRs in the root cycle, neither delimiter insertion rule is constrained by *Unary. Note that rule 2 must apply before the structural condition for applying rule 3 is satisfied. Recall also that the structural condition for rule 3 is local. # is a diacritic, not a beat line item. It is a way to indicate that the beat to its left is terminal; that it has the 'right edge property'.

The two delimiter erasure rules can be combined into one persistent repair rule, (22). D is a foot delimiter, either ⟩ or ⟨.

(22) Repair (persistent): D $\rightarrow\; \emptyset \;/\; \_\_\times$ if × violates *Unary.

The post-cyclic rule system (23) is what is needed.

(23) Post-cyclic rules

persistent post-cyclic repair	(Repair)
$\times \;\rightarrow\; \times\rangle \;/\; \_\_\#$	(GF'_R)
$\times \;\rightarrow\; \langle\times \;/\; \_\_\times\#$	(Bin_R)

GF'_R is same as GF_R in the root cycle except that it not constrained by *Unary. Bin_R is similar to Bin_L in the root cycle, but constructs a binary foot at the right edge instead of at the left edge.

(23), coupled with the root-cycle rules (14), predicts the stress patterns in (19). In the derivations in (24), the top line is the root footing, the next line concatenates the affixes, and the doubled horizontal line separates the root-cycle computation (with suffixal concatenation) from the post-cyclic computation. Neither ə-beat deletion nor iterative footing apply post-cyclically.

(24) a. *mən+(cá.ri)+kan*

	⟨× ×⟫
	×⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	×⟨× ×⟫×⟫
Repair	×⟨× × ×⟫
Bin$_{\mathrm{R}}$	×⟨×⟪× ×⟫
Repair	× ×⟪× ×⟫
	mən.ca(rí.kan)

b. *məm+bi(cá.ra)+kan*

	×⟨× ×⟫
	× ×⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	× ×⟨× ×⟫×⟫
Repair	× ×⟨× × ×⟫
Bin$_{\mathrm{R}}$	× ×⟨×⟪× ×⟫
Repair	× × ×⟪× ×⟫
	məm.bi.ca(rá.kan)

c. *(mà.ša)(rá.kat)+ña*

	⟨× ×⟫⟨× ×⟫
	⟨× ×⟫⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	⟨× ×⟫⟨× ×⟫×⟫
Repair	⟨× ×⟫⟨× × ×⟫
Bin$_{\mathrm{R}}$	⟨× ×⟫⟨×⟪× ×⟫
Repair	⟨× ×⟫×⟪× ×⟫
	(mà.ša)ra(kát.ña)

d. *(kòn.ti)nu(á.si) + ña*

	⟨× ×⟫×⟨× ×⟫
	⟨× ×⟫×⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	⟨× ×⟫×⟨× ×⟫×⟫
Repair	⟨× ×⟫×⟨× × ×⟫
Bin$_{\mathrm{R}}$	⟨× ×⟫×⟨×⟪× ×⟫
Repair	⟨× ×⟫× ×⟪× ×⟫
	(kòn.ti)nu.a(sí.ña)

e. *(ò.to)(bì.o)(grá.fi)+ña*

	⟨× ×⟫⟨× ×⟨× ×⟫
	⟨× ×⟫⟨× ×⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	⟨× ×⟫⟨× ×⟨× ×⟫×⟫
Repair	⟨× ×⟫⟨× ×⟨× × ×⟫
Bin$_{\mathrm{R}}$	⟨× ×⟫⟨× ×⟨×⟪× ×⟫
Repair	⟨× ×⟫⟨× × ×⟪× ×⟫
	(ò.to)(bì.o.gra)(fí.ña)

f. *mən+(à.me)ri(kà.ni)(sá.si)+kan*

	⟨× ×⟫×⟨× ×⟨× ×⟫
	×⟨× ×⟫×⟨× ×⟨× ×⟫×
$\mathrm{GF}'_{\mathrm{R}}$	×⟨× ×⟫×⟨× ×⟨× ×⟫×⟫
Repair	×⟨× ×⟫×⟨× ×⟨× × ×⟩
Bin$_{\mathrm{R}}$	×⟨× ×⟫×⟨× ×⟨×⟪× ×⟫
Repair	×⟨× ×⟫×⟨× × ×⟪× ×⟫
	mən.(à.me)ri(kà.ni.sa)(sí.kan)

Note that the penultimate foot is trisyllabic in (24e,f).

3.2 Multiple suffixes

Some examples are given in the last column of (25), from Cohn (1989, p. 176). For comparison, root forms are given in the first column, forms with a single suffix in the second column, and forms with 2 suffixes in the last column.

(25)

a.	$\boxed{\textit{cá.ri}}$ ‘search for’	*mən*$\boxed{\textit{ca.rí}}$*kan* ‘search for’	*mən*$\boxed{\textit{cà.ri}}$*kán.ña* ‘search for it’
b.	$\boxed{\textit{bi.cá.ra}}$ ‘speak’	*məm*$\boxed{\textit{bi.ca.rá}}$*kan* ‘speak about something’	*məm*$\boxed{\textit{bi.cà.ra}}$*kán.ña* ‘speak about it’
c.	$\boxed{\textit{bì.jak.sá.na}}$ ‘wise’	*kə*$\boxed{\textit{bì.jak.sa.ná}}$*an* ‘regulations’	*kə*$\boxed{\textit{bì.jak.sà.na}}$*án.ña* ‘the regulations’
d.	$\boxed{\textit{kòn.ti.nu.á.si}}$ ‘continuation’	$\boxed{\textit{kòn.ti.nu.a.sí}}$*ña* ‘the continuation’	$\boxed{\textit{à.so.si.à.si}}$*kán.ña* ‘associate it’

The root-cycle rules (14) coupled with the post-cyclic rules (23) make the correct predictions. Derivations of the 3 forms in (25b) are given in (26).

(26)

root cycle	
	× × ×
GF_R	× × ×》
GB	×〈× ×》
	bi.cá.ra

post-cyclic computation	
	× + ×〈× ×》+ ×
	× ×〈× ×》×
GF'_R	× ×〈× ×》×》
Repair	× ×〈× × ×》
Bin_R	× ×〈×《× ×》
Repair	× × ×《× ×》
	məm.bi.ca.rá.kan

post-cyclic computation	
	× + ×〈× ×》+ × ×
	× ×〈× ×》× ×
GF'_R	× ×〈× ×》× ×》
Bin_R	× ×〈× ×》《× ×》
	məm.bi.cà.ra.kán.ña

If there are multiple suffixes, Repair is not needed because GF'_R does not produce a *Unary violation. The footing of the root is unchanged. The only change is that the main stress on the penultimate syllable of the root shifts to the penultimate syllable of the suffixed form.

3.3 Suffixed monosyllabic roots

The metrical behavior of monosyllabic roots with and without suffixes must be explained. (27) is (58) from McCarthy and Cohn (1998, p. 28).

(27)

a.	*cát*	‘print’
b.	*cát.kan*	‘print (something)’
c.	*cat.kán.ña*	‘print it’

Note the absence of secondary stress in (27c).

In the derivations below, note that (28a) is not subject to the post-cyclic block of rules, only the root-cycle block. In (28), the doubled horizontal line separates the root-cycle computation (with suffixal concatenation) from the post-cyclic computation.

(28) a.

$$\begin{array}{ll} & \textit{(cat)} \\ & \times \\ \mathrm{GB}_{\Omega} & \langle\!\langle \times \\ & \textit{cát} \end{array}$$

b.

$$\begin{array}{ll} & \textit{(cat)+kan} \\ & \langle\!\langle \times \\ & \langle\!\langle \times \ \ \times \\ \hline\hline \mathrm{GF}'_{\mathrm{R}} & \langle\!\langle \times \ \ \times \rangle\!\rangle \\ & \textit{cát.kan} \end{array}$$

c.

$$\begin{array}{ll} & \textit{(cat)+kan+ña} \\ & \langle\!\langle \times \\ & \langle\!\langle \times \ \ \times \ \ \times \\ \hline\hline \mathrm{GF}'_{\mathrm{R}} & \langle\!\langle \times \ \ \times \ \ \times \rangle\!\rangle \\ \textsc{Bin}_{\mathrm{R}} & \langle\!\langle \times \langle\!\langle \times \ \ \times \rangle\!\rangle \\ \textsc{Repair} & \times \langle\!\langle \times \ \ \times \rangle\!\rangle \\ & \textit{cat.kán.ña} \end{array}$$

3.3.1. Delimiter readjustment rules

Halle and Kenstowicz (1991) consider the ways in which the metrical structure of a stem can influence the metrical structure the word formed by concatenating affixes with the stem. They conclude that there are only two possibilities; either the metrical structure of the stem can be erased entirely, so that there no effect, or the metrical structure can be preserved in toto and appear as a substructure of the affixed stem. The point of view adopted above holds that there can be partial preservation of the metrical structure of the stem. In Indonesian, there is partial preservation in the case of a monosyllabic suffix attached to a root. The final foot is readjusted. Necessarily there must be readjustment of the delimiters which establish the boundaries of the final foot.

What are the limits of the possible readjustments? Indonesian by itself does not provide sufficient evidence for a general proposal. But we can note that the only delimiter erasure rules that were required are the same general type as the delimiter insertion rules which are allowed. (29a) is an alternate way to write $\times \ \rightarrow \ \rangle\times \ / \ \underline{\quad}\#$.

(29) a. If × satisfies $\underline{\quad}\#$ then insert ⟩ in environment $\underline{\quad}\times$.

b. If × violates *Unary then erase ⟩ in environment $\underline{\quad}\times$.

Section 4. Compounding and total reduplication

4.1 Compounding

McCarthy and Cohn [1998, p. 95] give the following examples. The hyphens have no phonological significance; they are intended only to indicate to the reader how the word is built from a root, the suffixes *-an* and *-ña*, and the prefixes *kə-* and *pəm-*. The ||-juncture is phonologically significant; feet do not straddle it. With respect to footing it is effectively a #-juncture.[1]

(30) Stress in Compound Forms (cf. McCarthy and Cohn 1989:95)

a1.	(tù.kan)||(cát)	'printer'
b1.	po(lù.si)||u(dá.ra)]	'air pollution'
c1.	a(nè.ka||(rá.gam)	'varied'
c2.	kə-||a(nèka||ra(gá.m-an)	'variety'
c3.	kə-||a(nèka)||(rà.ga)(m-án.-ña)	'the variety'
d1.	(bòm)||(á.tom)	'atom bomb'
d2.	pəm-||(bòm)||a(tó.m-an)	'bombing'
d3.	pəm-||(bòm)||(à.to)(m-án.-ña)	'the bombing'

I assume that compound roots are built by the morphology and then subject to the rules of the root cycle. The result is (31).

(31)

			output of morphology		output of root cycle	
a.	*tukan + cat*	→	*tokan||cat*	→	*(tò.kan)||(cát)*	*'printer'*
b.	*polusi + udara*	→	*polusi||udara*	→	*po(lù.si)||u(dá.ra)*	*'air pollution'*
c.	*aneka + ragam*	→	*aneka||ragam*	→	*a(nè.ka)||(rá.gam)*	*'varied'*
d.	*bom + atom*	→	*bom||atom*	→	*(bòm)||(á.tom)*	*'atom bomb'*

1. I will not rewrite the delimiter insertion rules to make this explicit. This should cause no confusion.

The derivations of (30.c2) and (30.c3) are sketched below, beginning with the output of the root cycle, (31c). The post-cyclic computation is below the horizontal line. It begins with the 'edge tampering' rules (ET) which builds a foot at the right edge and is followed by the rule assigning foot stress (FSR) and the rule promoting the rightmost foot stress to main stress (MSR). The morphological input is given on the top line, with the morphemes given in the order in which they combine, not the linear order in which they appear in the result.

(32) a. ⟦*aneka-ragam*⟧ + ⟦-*an*⟧ + ⟦*kə*-⟧

```
                          ×
               ×          ×
root           ×(×  ×) || ×(×  ×)
                          ×
               ×          ×
+⟦-an⟧         ×(×  ×) || ×(×  ×)×
                          ×
               ×          ×
+⟦kə-⟧         ×(×  ×) || ×(×  ×)×
------------------------------------
               ×
ET             ×(×  ×) || × ×(×  ×)
               ×             ×
FSR            ×(×  ×) || × ×(×  ×)
                             ×
               ×             ×
MSR            ×(×  ×) || × ×(×  ×)
```

kə.an.né.ka.ra.gá.man

b. ⟦*aneka-ragam*⟧ + ⟦-*an*⟧ + ⟦*kə*-⟧ + ⟦-*ña*⟧

```
                          ×
               ×          ×
root           ×(×  ×) || ×(×  ×)
                          ×
               ×          ×
+⟦-an⟧         ×(×  ×) || ×(×  ×)×
                          ×
               ×          ×
+⟦kə-⟧         ×(×  ×) || ×(×  ×)×
                          ×
               ×          ×
+⟦-ña⟧         ×(×  ×) || ×(×  ×)×  ×
--------------------------------------
                ×          ×
ET              (×  ×) || ×(×  ×)(×  ×)
                ×          ×      ×
FSR             (×  ×) || ×(×  ×)(×  ×)
                                  ×
                ×          ×      ×
MSR             (×  ×) || ×(×  ×)(×  ×)
```

kə.a.nè.ka.ra.ga.mán.ña

4.2 Total stem reduplication

The examples in (33) are taken from McCarthy and Cohn 1989, p. 52. The hyphens that appear have no phonological significance; they are intended only to help the reader identify the affixes which are involved.

(33)	a1.	*(bú.ku)||(bú.ku)*	'books'
	a2.	*(bù.ku)||bu(kú.-ña)*	'the books'
	b1.	*wa(ní.ta)||wa(ní.ta)*	'women'
	b2.	*wa(nì.ta)||wa.ni(tá.-an)*	'womanly' adj.
	c1.	*(mà.sa)(rá.kat)||(mà.sa)(rá.kat)*	'societies'
	c2.	*(mà.sa)(rà.kat)||(mà.sa)ra(kát.-ña)*	'the societies'
	d1.	*mi(nú.m-an)||mi(nú.m-an)*	'drinks' n.
	d2.	*mi(nù.m-an)||(mì.nu)(m-án.-ña)*	'the drinks'
	e1.	*di-(pàs)(pás.-kan)*	'tried on, repeatedly'

We need the following assumptions.

1. RED duplicates the stem, inserting a ||-juncture.
2. If RED is outermost, the Main Stress Rule (MSR) is annulled in the post-cyclic computation.

(34)

```
[[wanita]] +RED            [33.b1]
               x
root        x( x  x)
               x             x
+ RED       x( x  x) || x( x  x)
--------------------------------
         wa.ní.ta.wa.ní.ta
```

```
[[wanita]] +RED +[[-an]]     [33.b2]
               x
root        x( x  x)
               x             x
+ RED       x( x  x) || x( x  x)
               x             x
+ [[-an]]   x( x  x) || x( x  x)x
----------------------------------
               x
ET          x( x  x) || x  x( x  x)
               x             x
FSR         x( x  x) || x  x( x  x)
                             x
               x             x
MSR         x( x  x) || x  x( x  x)
         wa.nì.ta.wa.ni.tá.an
```

(35)

```
[[masarakat]] +RED                      [33.c1]
                   x
             x     x
root        (x  x)(x  x)
                   x            x
             x     x      x     x
+ RED       (x  x)(x  x)||(x  x)(x  x)
--------------------------------------
      mà.sa.rá.kat.mà.sa.rá.kat
```

```
[[masarakat]] +RED +[[-ña]]               [33.c2]
                   x
             x     x
root        (x  x)(x  x)
                   x            x
             x     x      x     x
+ RED       (x  x)(x  x)||(x  x)(x  x)
                   x            x
             x     x      x     x
+ [[-ña]]   (x  x)(x  x)||(x  x)(x  x)x
----------------------------------------
             x     x      x
ET          (x  x)(x  x)||(x  x)x(x  x)
             x     x      x       x
FSR         (x  x)(x  x)||(x  x)x(x  x)
                                  x
             x     x      x       x
MSR         (x  x)(x  x)||(x  x)x(x  x)
      mà.sa.rà.kat.mà.sa.ra.kát.ña
```

(36)

```
[[minum]] +[[-an]] +RED     [33.d1]
              x
root         (x  x)
              x
+ [[-an]]    (x  x)x
              x          x
+ RED        (x  x)x || (x  x)x
-------------------------------
ET          x(x  x) || x(x  x)
              x          x
FSR         x(x  x) || x(x  x)
        mi.nú.man.mi.nú.man
```

```
[[minum]] +[[-an]] +RED +[[-ña]]      [33.d2]
              x
root         (x  x)
              x
+ [[-an]]    (x  x)x
              x          x
+ RED        (x  x)x || (x  x)x
              x          x
+ [[ña]]     (x  x)x || (x  x)x  x
----------------------------------
                         x
ET          x(x  x) || (x  x)(x  x)
              x          x     x
FSR         x(x  x) || (x  x)(x  x)
                               x
              x          x     x
MSR         x(x  x) || (x  x)(x  x)
        mi.nù.man.mì.nu.mán.ña
```

(37) ⟦*pas*⟧ + RED + ⟦*-kan*⟧ + ⟦*di-*⟧ [33.e1]

$$
\begin{array}{ll}
\text{root} & \overset{\times}{\times}\rangle \\
+\ \text{RED} & \overset{\times}{\times}\rangle \,\|\, \overset{\times}{\times}\rangle \\
+\ [\![\textit{-kan}]\!] & \overset{\times}{\times}\rangle \,\|\, \overset{\times}{\times}\rangle \times \\
+\ [\![\textit{di-}]\!] & \times \,\|\, \overset{\times}{\times}\rangle \,\|\, \overset{\times}{\times}\rangle \times \\
\hline
\text{ET} & \times \,\|\, \overset{\times}{\times}\rangle \,\|\, \langle \times \ \ \times \rangle \\
\text{FSR} & \times \,\|\, \overset{\times}{\times}\rangle \,\|\, \langle \overset{\times}{\times} \ \ \times \rangle \\
\text{MSR} & \times \,\|\, \overset{\times}{\times}\rangle \,\|\, \langle \overset{\times}{\overset{\times}{\times}} \ \ \times \rangle \\
 & \textit{di.pàs.pás.kan}
\end{array}
$$

Section 5. Loanwords from Bahasa Indonesian into Selayarese

Broselow (2008) proposed an OT solution to a puzzle in the metrics of Selayarese loanwords from Bahasa Indonesian (BI). She said (p. 122) that “only the strictly parallel approach can account successfully for the stress in borrowed words.” The main point of this note is to show that she was wrong; there is a simple transformational account. Like the account of Indonesian word prosody, it relies on late extrametricality.

In general, Seyalarese has basic RL binary footing and trochaic stress. There is no secondary stress and main stress is in the rightmost foot, so stress is generally penultimate. I assume (38) as a starting point for working out the delimiter insertion rules.

(38)
$$
\left.\begin{array}{l}
\times \ \rightarrow \ \times\rangle \ / \ \_\_\# \\
\big[\ \times \ \rightarrow \ \langle \times \ \big]_{\mathrm{RL}}
\end{array}\right\} ;\ {}^{*}\textsc{Unary}
\qquad
\begin{array}{l}
(\mathrm{GF_R}) \\
(\mathrm{GB})
\end{array}
$$

BI loanwords introduce a complication, described in Mithun and Basri (1986) in a transformational framework. Various adaptations to Selayarese phonotactics are made by splitting the coda from a CVC syllable to CV+C and reduplicating the vowel to support the C, forming a CV.CV syllable sequence. Call these CV.CV sequences Mithun-Basri sequences in analogy to the CR.CV sequences in Winnebago, called Dorsey sequences, which are formed by splitting the complex onset from CRV syllables to C+CV and reduplicating the vowel to support the C which was split off.

(39)	BI		Selayarese	
a.	b o . t o l	→ b o . t o . l o	*bó.to.**lo***	‘bottle’
b.	s e n . t e r	→ s e n . t e . r e	*sén.te.**re***	‘flashlight’
c.	k ə . l a s	→ k ə . l a . s a	*ká.la.**sa***	‘class’

The antepenultimate stress on the loanwords (39), coupled with regular Selayarese penultimate stress, suggest that the epenthetic syllables (boldfaced) are extrametrical.

But (40) shows that not all epenthetic syllables are extrametrical.

(40)	BI	Selayarese	
a.	*kartú*	*ka.**rá**.tu*	‘card’
b.	*sur.ga*	*su.**rú**.ga*	‘heaven’

Suppose only final epenthetic syllables are extrametrical. The puzzle, which is the focus of Broselow’s analysis, is penultimate stress in the data (41).

(41)	BI	Selayarese	
a.	*sólder*	*so.**lo**.dé.**re***	‘weld’
b.	*térpal*	*te.**re**.pá.**la***	‘tarpaulin’

If the antepenultimate syllable were simply a non-epenthetic syllable, we would expect antepenultimate stress as in the (39) examples. It cannot be that the antepenultimate syllable is not extrametrical, but cannot be stressed, somehow shifting the stress to the penultimate syllable. (40a) shows that the epenthetic antepenult must have some property other than extrametricality.

The solution to the puzzle requires two ingredients. One is late extrametricality, ordering the extrametricality rule, call it $\mathrm{XM_E}$, after $\mathrm{GF_R}$, but before the iterative rule applies. This is what solved the problem of the puzzling behavior of ə-syllables in Indonesian. The second is to suppose that epenthetic syllables restart the footing computation. The computation starts with $\mathrm{GF_R}$, $\times \rightarrow \times\rangle$ / __#, so we assume there is a rule $\mathrm{E} \rightarrow \mathrm{E}\rangle$. Call it $\mathrm{GF_E}$.

Before I discuss the epenthetic syllable marking rule $\mathrm{GF_E}$, ordered after $\mathrm{GF_R}$, I will first show that it predicts the desired result if $\mathrm{XM_E}$ follows both $\mathrm{GF_R}$ and $\mathrm{GF_E}$. The proposed delimiter insertion rules are (42).

(42) Selayarese footing

$\times \rightarrow \times\rangle \,/\, \_\_\#$	; *Unary	(GF_R)
$E \rightarrow E\rangle$	; *Unary	(GF_E)
$E \rightarrow \emptyset \,/\, \_\_\#$		(XM_E)
$[\times \rightarrow \langle\times]_{RL}$	; *Unary	(GB)

The examples below show how this system works. The crucial step is the failure of GF_E to apply in (43b) because application of the delimiter insertion rules is constrained by *Unary. The extrametricality operation is not. Recall that the same was true of Indonesian.

(43)

a. *bó.to.**lo***

	$\times\ \times\ E$
GF_R	$\times\ \times\ E\rangle\rangle$
XM_E	$\times\ \times\ \ \rangle\rangle$
GB	$\langle\times\ \times\ \ \rangle\rangle$

b. *ka.**rá**.tu*

	$\times\ E\ \times$
GF_R	$\times\ E\ \times\rangle\rangle$
GB	$\times\langle E\ \times\rangle\rangle$ [1]

c. *so.**lo**.dé.**re***

	$\times\ E\ \times\ E$
GF_R	$\times\ E\ \times\ E\rangle\rangle$
GF_E	$\times\ E\rangle\rangle\times\ E\rangle\rangle$
XM_E	$\times\ E\rangle\rangle\times\ \ \rangle\rangle$ [2]
GB	$\langle\times\ E\rangle\times\ \ \rangle\rangle$

1. GF_E does not apply because it would produce $\times E\rangle\rangle\times\rangle\rangle$, which violates *Unary.
2. XM_E is not constrained by *Unary. It creates a unary foot here.

The idea that an epenthetic syllable can result from breaking up a more complex syllable into a sequence of two simpler syllables and providing the vowel of the epenthetic syllable by reduplication will be familiar to some readers from work on Winnebago. In Winnebago, the sequence is called a Dorsey sequence and the epenthetic syllable a Dorsey syllable.

In Selayarese, the epenthetic syllable results from breaking up a CVC syllable. In Winnebago, it results from breaking up a complex onset.

(44)

Selayarese:	*t o l* → *t o . l o*
Winnebago:	*pra* → *p a . r a*

The disruption of the stress pattern by Dorsey epenthesis has been the subject of many research papers. Halle and Idsardi (1995) has what I think is the best analysis of the effect of Dorsey epenthesis. Their analysis is the result of a long evolution from the original proposal of Hale and White Eagle (1980), who proposed what they called the Domino Condition. Winnebago footing is LR. The idea was that the insertion of an epenthetic syllable caused the stress structure to the right to collapse (like a row of dominoes) and a new metrical calculation to commence. The evolution of this line of thinking was Halle and Idsardi's proposal that Dorsey syllables induce delimiter insertion $\delta \rightarrow \delta\langle$, δ the Dorsey syllable. Call this rule GF_δ. The initial edge marking in Winnebago is $\times \rightarrow \times\langle$, with the initial syllable skipped over. So *Winnebago, in effect, treats Dorsey syllables which are marked by* GF_δ *as the initial syllable of a new (internal) word.* This is what creates the domino-like effect of Dorsey epenthesis. Recall that Selayarese, in effect, treats epenthetic syllables which are marked by GF_E as the initial syllable of a new (internal) word.

Section 6. Conclusions

In this paper I have offered rule-based accounts of phenomena in Indonesian and Selayarese that have been analyzed in an Optimality Theory framework and been claimed to be beyond the analytic reach of rule-based accounts. The theoretical assumptions that are needed for the rule-based account are 1) that metrical beats are distinct from the phonological objects they are associated with and 2) that extrametricality is implemented by a rule which deletes beats, without deleting the phonological objects they were originally associated with. Once extrametricality is understood to be a rule, rule-ordering comes into play and some otherwise puzzling features of the relation between extrametricality and footing are clarified.

Afterword: Optimality Theory (OT) versus Rule-based Grammar (RBG)

In this paper I relied heavily on the data in McCarthy and Cohn (1998), the way they organized the data, and the generalizations they drew about the data. But I did not compare their analysis with the analysis developed in this paper. I need to explain why not. The issue is between two theoretical frameworks.

(45) OT versus RBG

a. Rules systems are a way to generate the set of input-output relations defined by systems of well-formedness conditions.

b. Systems of well-formedness conditions are a way to describe the set of input-output relations generated by rule systems.

A side by side comparison of the analysis in this paper and the McCarthy and Cohn analysis would do nothing to decide between (45a) and (45b). If (45a) is correct, then (45b) is misguided and criticism of the McCarthy and Cohn OT analysis from the standpoint of RBG would be a waste of time, which should have been devoted to making a better OT analysis. If (45b) is correct, then (45a) is misguided and criticism of the RBG analysis from the standpoint of OT would be waste of time, which should be devoted to making a better RBG analysis. I hope to write directly about the (45) question in the near future.

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