STRESS PLACEMENT IN COMPLEX WORDS IN MALAY

The Malay prosodic word proposed in Delilkan 1998 and discussed in Delilkan 1999, 2002, is right-headed, resting on left-headed feet, and comprises prefixes and roots, with suffixes each projecting their own prosodic words. Evidence for this structure derives from the vowel inventories of affixes, and from the affixation potential of roots of varying lengths (Delilkan 1999, 2002). The appropriateness of the proposed word structure is further corroborated by the fact that numerous segmental processes in the language occur asymmetrically with respect to head and dependent feet (Delilkan 2002). In this paper, I show that a ranking of the constraints on stress placement in the language gives a ready explanation for impossible stress patterns in complex words and provides independent support for the posited prosodic structure.

1.1 Stress Facts

I begin in (1) with the full range of stress facts related to complex words in Malay. For completeness, I include forms involving roots that begin with a light syllable (in (1m-p)), as well as trisyllabic ones (in (1q-r)). (Roots are underlined.)

1a. mlN + plr + buku +kan	[[(mlḿ.plr)(bu.ˈku)](kaÒ)]
b. mlN + buku + kan + ba	[[[(mlm)(búˑku)](kaÒ)](ba)]
c. plr + d,alan + an + ba	[[[(plr)(d,áˑlan)](naÒ)](ba)]
d. had + kan	[[(had)](kaÑ)]
e. had + kan + ba	[[[(had)](kaÑ)](ba)]
f. di + had + kan +ba	[[[(di)(hád)](kan)](baÒ)]
g. di + had + kan +ba + kah	[[[[(di.hád)](kan)](baÒ)](kah)]
h. mlN + waŸ + kan + ba	[[[(ml)(waŸ́)](kan)](baÒ)]
i. di + bandeŸ + kan + ba + kah	[[[[(di)(bań.deŸ)](kań)](ba)](kaÒ)]
j. di + atsu + an + i + ba	[[[[(di)(„áˑtsu)](wań)](ni)](baÒ)]
k. mlN + bulat + an + kan + ba	[[[[(mlm)(búˑlat)](tań)](kan)](baÒ)]
l. klnal	[(kl.naÑ)]
m. tlr + klnal	[(tlr)(klÑal)]
n. klnal + kan	[[(kl.naÑ)](kan)]
o. di + plr + klnal + kan + ba	[[[(díˑplr)(klˑ.nal)](kaÑ)](ba)]
p. di + plr + klnal + kan + ba + kah	[[[[(díˑplr)(klˑ.nal)](kań)](ba)](kaÑ)]
q. kl + sllamat + an	[[(klˑsl)(lámat)](taÑ)]
r. kl + sllamat + an + ba	[[[(klˑsl)(lámat)](taÑ)](ba)]
s. mlN + kl + muka + kan	[[(mlˑŸl)(múˑka)](kaÑ)]

The following generalizations about stress placement can be made. Adjacent syllables must contrast for stress. Primary stress falls as far to the right of the entire complex word as possible so that adjacent syllables contrast for stress, trochaic word stress is avoided and, except in the case of a bare root like *tepat* (/tIpatÑ/, 'precise', adj.), so is iambic foot stress. Exceptions to the last restriction relate to evidence that the language does not favor stressing light syllables. It is, however, only the head foot that may display iambic stress, in keeping with my claims that the head foot is quantity insensitive, whereas the dependent foot is not (Delilkan 1999, 2002). The fact that light syllables do get stressed (e.g. when such roots are prefixed or suffixed (1m, o, p), or when a prefix gets stressed (cf. (1q-s)), relates in turn to the requirement that adjacent syllables contrast for stress. Further, when these syllables take stress, the stress placement in question produces unmarked (trochaically stressed) feet (cf. (1m,o, q-s)).

I shall now determine which prosodic constraints can be assumed to be operative in the language. I consider disyllabic roots first.

1.2 The Prosodic Structure of Disyllabic Roots

1.2.1 Trochaically Stressed Roots

Since adjacent stressed or unstressed syllables do not occur in the language, I assume some constraint like Eisner's (1997:10) ANTILAPSE constraint is unviolated.[1] Further, the fact that stress falls as far to the right of a complex word as possible suggests it is undesirable in Malay to leave the last syllable of a complex word unstressed. In (2), I state the two relevant constraints.

2 a. **ANTILAPSE**: Adjacent syllables must contrast for stress. (Eisner 1997:10)

b. ***NONFINAL (or '*NONFIN')**: Nonfinal stress is disallowed.

The constraint in (2a) goes beyond a clash-avoidance constraint, like Kager's *CLASH (1993b, 1995:6), as it militates against both adjacent stressed and adjacent unstressed syllables. Note also that, in invoking the constraint in (2b), I have elected not to refer to an alignment constraint, e.g., 'Align Right (Stress, ∅)'. Such a constraint, which says stress should be aligned to the right edged of a prosodic phrase, is unsuitable for my current purposes, on two counts. I have not elected to call the entire complex word a prosodic *phrase*. Furthermore, violations of an alignment constraint like 'Align Right (Stress, ∅)' (i.e., 'align stress to the right edge of a prosodic phrase') are typically assessed gradiently. I

[1] In claiming this, I am excluding versions of words uttered with emphasis, e.g., with stress retraction induced by an intonational phrase boundary. It would be important to conduct a far more extensive investigation than is possible within the scope of this paper, on the effects of intonational boundaries on stress placement.

choose instead to refer to *NONFINAL, which will be violated simply by any stress pattern that leaves the last syllable of a complex word unstressed.

I assume that all disyllabic roots are parsed as trochaic feet. Thus, for instance, *taŇmat* (‘end’, n.), which displays trochaic stress, is readily seen as projecting a left-headed binary foot. Since I claim that non-final stress is dispreferred, though, the trochaic stress on most disyllabic roots indicates that the foot form requirement overrides the undesirability of non-final stress. A constraint on foot stress placement follows in (3a), the ranking responsible for stress placement in these roots in (3b), and the tableau showing the result of it in (4). (As before, underlining denotes a root. The symbol ➲ marks the optimal candidate. I shall employ this notation convention throughout this paper.)

3a. FTTROCH: Feet are trochaically stressed (violated by iambic stress).

3b. FTTROCH >> *NONFINAL

4. **Non-final stress in disyllabic roots**

Input: <u>tamat</u>	FTTROCH	*NONFINAL
a. [(taŇmat)]➲		*
b. [(ta.maŇt)]	*!	

The grammatically stressed form is selected as optimal. The suboptimal form, in (4b), involves final stress but is less desirable than (4a), which, by the footing posited for such roots, meets the more important foot form requirement.

1.2.2 Iambic Stress in Disyllabic Roots

I assume that foot form is fixed as trochaic, despite the existence of disyllabic roots with iambic stress (Delilkan 1999, 2002). The stress placement in roots like *kenal* ([kǝnaŇl]) suggests the activity of some constraint like that in (5).

5. WEIGHT-TO-STRESS PRINCIPLE (‘**WSP’**) (Prince 1983, Prince and Smolensky 1993): Heavy syllables are stressed.

WSP is violated only by stress falling on a light syllable, i.e., an open schwallable. The language permits iambic foot stress only in head foot positions, though (Delilkan 2002:45). I assume that WSP outranks a trochaic requirement on head feet only, but is itself outranked by a trochaic requirement on dependent feet. This relates to my claim that, unlike the dependent foot, the head foot in Malay is quantity insensitive. I shall thus parameterize the foot form constraint to refer to head and dependent feet, ‘ft-TROCH’ referring to the dependent foot, ‘FT-TROCH’ the head. The ranking responsible for footing and stress placement in disyllabic roots of the language follows in (6).[2] (There is no reason to rank ANTILAPSE with respect to ft-TROCH as they are not in competition. There is also no evidence at this point for any ranking between *WSP and ANTILAPSE. I shall

[2] I exclude candidates that contain unfooted syllables, since I claim Strict Layering is unviolable .

represent ANTILAPSE only once in the constraint ranking that I posit, though, and in the tableau that follows it. The ranking of ft-TROCH over WSP will show itself later, in consideration of doubly prefixed disyllabic forms.) The results of this ranking follow in (7).

6. ANTILAPSE, ft-TROCH >> WSP >> FT-TROCH >> *NONFINAL

7. Iambic vs. trochaic stress in disyllabic roots.

a. Input: tamat	ANTILAPSE	ft-TROCH	WSP	FT-TROCH	*NONFIN
i. [(taÑmat)]➲					*
ii. [(ta.mat]	*!				*
iii.[(ta.matÑ)]				*!	
b. Input: kInal					
i. [(kI.nal)]	*!				
ii. [(kIÑnal)]			*!		*
iii.[(kI.nalÑ)]➲				*	

In (7a), the optimal candidate violates only the low-ranked *NONFINAL constraint. (7aii), in which no stress appears, violates ANTILAPSE, while (7aiii) displays iambic stress and so violates FT-TROCH.[3] The selection made in (7a) contrasts with that in (7b). Like (7aii), the unstressed (7bi) violates ANTILAPSE. By contrast with (7ai), though, the trochaically stressed (7bii) violates WSP in its first syllable and is therefore suboptimal. The grammatical (7biii) is selected as optimal because it satisfies all the higher-ranked constraints, even though its iambic stress pattern violates the relatively low-ranked FT-TROCH. Notice that the low-ranked *NONFINAL has no deciding role to play in (7). I shall soon show that it is frequently violated in suffixed forms as well.

I shall now consider the prosodic structure of a prefixed disyllabic root.

1.3 The Prosodic Structure of Single Prefixes

Monosyllabic prefixes, which I claim are monomoraic, are parsed as degenerate (sub-binary) feet, in order to avoid violating the Strict Layering requirement (cf. Selkirk (1984)), by which unfooted syllables are undesirable, but combine to form a foot when they occur in sequence, as pairs.[4] I assume that this occurs to make the prefix foot more well-formed with respect to the generally assumed binarity

[3] The unstressed form would also be disfavored by a constraint on prosodic words that lack stress altogether. I refer here to the claim that words need stress (Garrett 1996:7). In the current case, the activity of ANTILAPSE alone makes the unstressed candidate undesirable, but Garrett's claim must be invoked to ensure a bare monosyllabic root is not unstressed.

[4] I follow Zaharani in assuming that prefix codas are nonmoraic, as is evinced by the lack of compensatory vowel lengthening accompanying their deletion (Zaharani (1998)).

requirement on such structures (cf. FTBIN (Prince and Smolensky (1993:47), and Hayes (1995:54))). Thus I assume that Strict Layering is unviolated but FTBIN is violable. Accordingly, I elect to split up FTBIN to refer to an upper and a lower limit on feet (cf. (8)), such that no ternary feet are permitted but the minimum binarity requirement may be violated, by a foot resting on a schwallable.[5] The constraint in (9) states the Strict Layering restriction, which I assume is unviolated in Malay.

8a **FTBINmax**: A foot is a maximum of two syllables.

b. **FTBINmin**: A foot is a minimum of two morae.

9. ***[s]** : All syllables must be footed. (Hayes 1980, Halle and Vergnaud 1987, Prince and Smolensky 1993).

The ranking of constraints responsible for the prosodic status of singly prefixed disyllabic roots follows in (10), the tableau testing it on a singly prefixed form in (11). (I consider only grammatical stress placement, and so omit reference to ANTILAPSE, WSP, and *NONFIN, and candidates that might violate any of them.)

10. ft-TROCH, FTBINmax,*[σ] >> FT-TROCH >> FTBINmin

11. **Single Prefix and Disyllabic Root: Footing**

Input: kI + <u>mana</u> | μ	ft-TROCH	FTBINmax	*[σ]	FT-TROCH	FTBINmin
a. [(kI.maÑna)]		*!			
b. [kI (maÑna)]			*!		
c. [(kI.maÑ)(na)]	*!				
d. [(kI)(maÑna)]➲					*

(11a) is undesirable because a ternary foot is impermissible and so is iambicity. (11b) is suboptimal because its first syllable is unfooted and so violates Strict Layering. (11c) is ruled out by its iambically stressed dependent foot. The optimal (11d) avoids all three high violations, but violates FTBINmin.

Note that (11c) is undesirable not only because it violates ft-TROCH but also because it involves footing across morphemes and so must violate some constraint like Crowhurst's (1994) TAUTOFOOT, by which footing must honor morphological boundaries. The constraint I shall employ, defined in (12), is violated by heteromorphemic feet and heterofoot morphemes, and will play a crucial role when I address double prefixation. There is no evidence for any ranking between FT≈MORPH and FTBINmin. As shown in (11), though, ft-TROCH

[5] Roots never violate this constraint, since there is no monosyllabic root that is a schwallable.

is ranked above FTBINmin. The subranking of constraints that includes (12) is stated in (13). (14) shows the result of it.

12. **FT»MORPH**: A foot is coterminous with a morpheme.

13. ft-TROCH >> FT≈MORPH, FTBINmin

14. **Single Prefix and Disyllabic Root**

kə + <u>mana</u> | μ	ft-TROCH	FT≈MORPH	FTBINmin
a. [(kə)(maÙa)]➲			*
b. [(kə.maØ)(na)]	*!	*	*

(14a) is preferred despite its FTBINmin violation, and (14b) is less desirable because its first foot violates ft-TROCH is stressed iambically. Thus far, the ranking in (15) can be said to be responsible for footing in the language.

15. ft-TROCH, FTBINmax,*[σ] >> FT-TROCH >> FT≈MORPH, FTBINmin

A further prosodic structure to consider would involve the prefix projecting its own word, and the root occupying one adjacent to it. Assuming the constraint NONHD(WD)-ə in (16b) (cf. (16a), Cohn and McCarthy (1995)) militates against such a form and is unviolated in the language, the subranking of constraints in (17) is responsible for the selection of the optimal candidate in (18).

16a. NONHEAD-ə: Schwa may not be a prosodic head. (Cohn and McCarthy (1995)

b. NONHD(WD)-ə: Schwa may not head a prosodic word[6]

17. NonHD(WD)-ə >> FtBINmin

18. **Prefixes are not Words**

kə + <u>mana</u> | μ	NONHD(WD)-ə	FTBINmin
a.[(kə)(maÑa)]➲		*
b. [(kə)][(maÑa)]	*!	

If the single foot in a monopodal word is a head foot, candidate (18b) is ruled out by NonHD(WD)-ə.[7] (18a), which violates only FTBINmin, is thus preferable.

The iambic stress pattern of singly prefixed disyllabic roots that themselves begin with open schwa-headed syllables provides evidence of the

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[6] Presumably, a single schwa-headed syllable would fail to meet the minimum requirements on prosodic words in the language (cf. McCarthy and Prince's MinWord (1986:8)).

[7] Notice also that candidate (18b) would also violate a requirement that words bear stress.

activity of a constraint that enforces word level iambic stress. (I refer to such roots as 'light-first' from here on.) (19) shows the stress pattern involved. The relevant constraint, in (20), is violated by stress on a syllable of a dependent foot, which I represent as 'ft'.

19a. pIN + <u>lIkat</u> pI.lIÑkat, *pÍ.lI.kaÑ 'adhesive', n.

b. di + <u>lIkat</u> di.lIÑkat, *di.1I.kaÑ 'stuck', pass.

c. sI + <u>oraŸ</u> sI.„oÑaŸ, *sÍ.„o.raÑ 'a person', n.

20. ***STRESS(ft)**: Words are right headed in stress placement.

The stress placement facts in (19) indicate that stressing a dependent foot is more unfavorable than incurring a WSP violation. The subranking responsible for these facts follows in (21), the tableau showing the results of it in (22). I assume the footing for singly prefixed disyllabic roots that I have argued for thus far. (There is no obvious ranking yet between ANTILAPSE and *STRESS(ft).)

21. ANTILAPSE, *STRESS(ft) >> WSP >> FT-TROCH >> *NONFINAL

22. Ungrammatical stress in singly-prefixed light-first disyllabic roots

input: tIr + <u>kInal</u>	ANTILAPSE	*STRESS(ft)	WSP	FT-TROCH	*NONFIN
a. [(tIr)(kIÑnal)] ➲			*		*
b. [(tIŕ)(kI.naÑ)]		*!		*	
c. [(tIr)(kI.naÑ)]	*!			*	
d. [(tIŕ)(kIÑnal)]	*!	*	*		

(22c) and (22d) fall afoul of ANTILAPSE, although (22c) violates FT-TROCH as well, and (22d) violates *STRESS(ft) and WSP as well. The contrast between (22b) and the grammatically stressed (22b), though, is evidence that ANTILAPSE must be honored in a way that avoids stressing a dependent foot, if possible, a WSP violation notwithstanding.

Having established the activity of *STRESS(ft) and the ranking between it and WSP, I now return to consider ungrammatical stress placement in singly-prefixed disyllabic roots.

I assume *STRESS(ft) and ft-TROCH are not in competition. (A constraint prohibiting stress on the dependent foot does not conflict with one disfavoring iambic stress on that foot.) Thus far, there is also no evidence for ranking either constraint with respect to ANTILAPSE, although *STRESS(ft) outranks WSP. All four constraints outrank FTBINmin, though, which is itself unranked with respect to FT≈MORPH and *NONFINAL. (There is no possible conflict between a constraint penalizing non-final stress and one prohibiting sub-binary feet.) The relevant subranking is shown in (23) and rules out wrong stress placement, as indicated in (24), below. (Since I am addressing stress placement, I omit reference to Strict Layering, FTBINmin, FT≈MORPH, and FTBINmax. There is no evidence yet of a ranking between ft-TROCH and WSP. I include two grammatically stressed candidates with different footing, (24d) and (24e), to show again that the footing I propose is consistent with my main claim, that feet are trochaic in Malay.)

23. Antilapse, *Stress(ft), ft-Troch >>WSP >> FT-Troch>> *NonFinal[8]

24. **Single Prefix and Disyllabic Root: Wrong Stress Outruled**

Input: kl + <u>mana</u>	ANTILAPSE	*STRESS(ft)	ft-TROCH	WSP	FT-TROCH	*NONFIN
a. [(klŇ)(ma.na)	*!	*(!)		*		*
b. [(kĺ)(ma.naŇ)]		*(!)		*	*	
c. [(kl)(ma.naŇ)]	*!				*	
d. [(kl)(maŇ.na)]➲						*
e. [(kl.maŇ)(na)]		*!	*(!)			
f. [(kĺ)(maŇ.na)]	*!			*		

(24a-b) and (24f) violate *STRESS(ft), since their dependent feet bear stress. The grammatically stressed (24e) is suboptimal because of its iambically stressed dependent foot. (It would also violate FT≈MORPH since its dependent foot is heteromorphemic.) (24a) and (24c) are undesirable because their stress pattern is not alternating. What I claim is a wrongly footed form, (24e), avoids such violation but its dependent foot bears, and iambically. (24d) is chosen, despite its *NonFinal violation because its syllables contrast for stress, its dependent foot lacks stress, and its head foot is stressed trochaically.

With the ranking in (23), I turn next to consider stress placement in the case of affixed monosyllabic roots. First, I consider a singly prefixed mono-syllabic form, in (25).

25. di + <u>had</u> di haŇd, *diŇhad ‘restricted, pass.

I assume such forms project a binary word. (26) (over) shows that the ranking in (23) selects a binary word as the correct footing for a singly-prefixed monosyllabic root. (I omit ANTILAPSE and candidates that violate it, as well as the irrelevant ft-TROCH. I include WSP in the tableau to aid subsequent discussion.) Recall that in considering the footing of light-first roots, I have shown that iambic stress placement is optimal only because the alternative is a violation of WSP. The stress placement in (26b), however, cannot be selected because there is no possible WSP violation to compel it. The ungrammatical stress placement in

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[8] Like ANTILAPSE, FTBINmax and *[σ] are unviolated constraints. FTBINmin is unranked with respect to *NONFINAL.

what I claim is inappropriate footing in (26c) is undesirable because of a *STRESS(ft) violation. (26d) violates *NONFINAL in its stress placement.[9] The footing in (26a) is therefore preferable, supported by the fact that grammatical stress placement here violates none of the relevant constraints.

26. **Singly-prefixed monosyllabic roots**

Input: di + <u>had</u>	*Stress(ft)	WSP	FT-Troch	*NonFinal
a. [(di)(haÑd)]➲				
b. [(di.haÑd)]			*!	
c. [(diÑ)(had)]	*!			*
d. [(diÑhad)]				*!

Having established the footing for singly prefixed and bare monosyllabic and disyllabic roots, I turn now to establish the correct footing for trisyllabic roots.

1.4 Trisyllabic Root Prosodic Status

Consider the stress pattern of bare trisyllabic roots, in (27).

27a. um.pa.Ñma 'like', adj.

b. sI.paÑtu 'slipper', n.

The stress placement in (27a) and (b) provides support for footing the forms as I have done with a singly prefixed disyllabic root. (28) shows how alternative footing is ruled out by the ranking established for singly prefixed disyllabic roots. (I exclude Strict Layering and ANTILAPSE, and candidates violating either. I include FT≈MORPH, unranked with respect to FTBINmin.)

28. **Trisyllabic root footing**

a. <u>umpama</u>	FTBINmax	*STRESS(ft)	ft-TROCH	FT-TROCH	FTBINmin	FT≈MORPH
i. [(um)(paÑma)]➲						*
ii. [(um.paÑma)]	*!			(?)[10]		
iii. [(um.paÑ)(ma)]		*!	*(!)			*
b. <u>sIpatu</u>	FTBINmax	*STRESS(ft)	ft-TROCH	FT-TROCH	FTBINmin	FT≈MORPH
i. [(sI)(paÑtu)]➲					*	*
ii. [(sI.paÑtu)]	*!			*?		
iii. [(sI.paÑ)(tu)]		*!	*(!)			*

[9] Notice that the heteromorphemic feet in (26b) and (d) violate FT≈MORPH.

[10] FT-TROCH (and ft-TROCH) penalize iambic stress, i.e., stress on the right of a foot. Presumably such a violation is not incurred here, since it is the middle syllable that bears stress, not the rightmost.

(28aii) and (28bii) contain ternary feet and are eliminated by the inviolable FTBINmax. (28aiii) and (28biii) contain undesirable iambically stressed dependent feet and also violate *STRESS(ft).) The optimal candidates, (28ai) and (28bi), avoid violating the four highest ranked constraints, although (28ai) does violate Ft≈Morph, and (28bi) violates both this constraint and FTBINmin.

I now show that ungrammatical stress placement in bare trisyllabic roots can be explained. (29) shows the selection made by the ranking established thus far for stress placement. (I omit the inviolable ft-Troch and violations of it.)

29. **Ungrammatical Stress Outruled: Trisyllabic Roots**

Input: <u>sIpatu</u>	ANTILAPSE	*Stress(ft)	WSP	FT-Troch	*NonFinal
a. [(sI)(paÑtu)]➲					*
b. [(sI)(pa.tuÑ)]		*!	*	*	

Since I have shown that a trisyllabic root has the same footing as a singly prefixed disyllabic root, ungrammatical stress placement in (29) is ruled out for precisely the same violations as in the case of a singly prefixed disyllabic root (cf. (24), earlier). (29b) violates *Stress(ft), WSP and FT-Troch and is therefore suboptimal. The optimal (29a) violates only the low-ranked *NonFinal.

Thus far, I have shown a unity in the stress pattern of trisyllabic roots and singly prefixed disyllabic roots, and have argued for a corresponding unity in their prosodic shape. For completeness, I consider one last footing option for trisyllabic roots and singly prefixed roots. I have argued that there is a binary maximum on prosodic words in Malay, where the word is composed of prefix(es) and a root (Delilkan 1999, 2002). My claim derives from the four-syllable limit that constrains the length of a string composed of prefix(es) and a root, and from the patterning of cluster resolution in loanwords. The constraint in (30) ensures that words are maximally binary. I assume this constraint is unviolated, as shown in (31) and therefore outranks FtBINmin and Ft≈Morph. (32) shows that neither a trisyllabic root nor a singly prefixed disyllabic one could project a ternary word. (I omit Strict Layering and relevant violations of it in the tableau.)

30. **WDBINmax**: Prosodic words contain a maximum of two feet.

31. WDBINmax, *[σ], FTBIN(Max) >> FT≈MORPH, FTBINmin

32. **WdBINmax: Trisyllabic roots and singly prefixed disyllabic roots**

a. <u>sIpatu</u>	WdBINmax	FtBINmax	FtBINmin	Ft≈Morph
i. [(sI)(paÑ)(tu)]	*!		*	*
ii. [(sI)(paÑtu)] ➲			*	*
b. sI + <u>oraŸ</u>				
i. [(sI)(„oÑraŸ)]➲	*!		*	
ii. [(sI)(„oÑ)(raŸ)]			*	*

The footing in (32ai) and (32bi) is undesirable because it violates WdBINmax, the (ii) candidates avoiding such violation. Clearer evidence of the activity of WdBINmax emerges next, in a consideration of the prosodic structure of doubly-prefixed disyllabic roots and singly-prefixed trisyllabic ones.

1.4.1 Doubly Prefixed Disyllabic Roots and Singly Prefixed Trisyllabic Roots

I have claimed that a doubly prefixed disyllabic root projects two disyllabic feet within a single word, the prefixes together projecting the first foot (Delilkan 1999: 38.) Such a structure avoids Strict Layering, WDBINmax, and FTBINmax violations but violates FT≈MORPH. The subranking in (32) is tested anew in (33). (I omit stress information but address it in the very next tableau. I limit the number of candidates that violate either Strict Layering or FTBINmax.)

33. **Two prefixes project a disyllabic foot**

Input: sI + sI + <u>oraŸ</u>	WDBINmax	FTBINmax	*[σ]	FTBINmin	FT≈MORPH
a. [(sI) (sI) („oraŸ)]	*!			**	
b. [(sI) (sI.„o.raŸ)]		*!		*	*
c. [sI.sI. („o.raŸ)]			**!		
d. [sI (sI)(„o.raŸ)]			*!	*	
e. [sI (sI.„o)(raŸ)]			*!		*
f. [(sI.sI) („o.raŸ)]➲					*

The ternary word in (33a) honors FT≈MORPH but violates WDBINmax. (33b) contains an undesirable ternary foot, while (33c-e) contain unacceptable unfooted syllables. (33f) is optimal despite its FT≈MORPH violation because all syllables are footed and no feet are either ternary or sub-binary, nor is the form a ternary word. The fact that (33f) honors FTBINmin does not support a ranking between that constraint and FT≈MORPH, as (33f) is selected over (33a) because WDBINmax outranks FT≈MORPH.

The correctness of the footing in (33) is corroborated by stress placement. (34) states the relevant ranking and (35) (over) displays the result of it. (I omit reference to WSP, ANTILAPSE, *NONFINAL and *STRESS(ft) in (35). All candidates are grammatically stressed.) (35a-c, e-h) contain undesirable unfooted syllables. (35i) illicitly comprises three feet. (35j) avoids such a WDBINmax violation but contains an unacceptable ternary foot. The polymorphemic first foot of the optimal (35d) violates only the low-ranked FT≈MORPH, and involves no ternary or iambically stressed feet, no ternary words, no unparsed syllables, and no schwa-headed words. In fact, because the prefixes together project a disyllabic foot, FTBINmin is not violated either. This reflects my claim that prefixes combine to create a more stable foot than each of them might separately project.

Notice also that the stress placement in (35d) conforms to the trochaic default of the language. Recall that I have claimed thus far that stressing a light syllable is undesirable (cf. WSP), and have accounted for stress placement in singly prefixed disyllabic roots as well as in trisyllabic roots by invoking such a restriction.

34. Ranking for Stress Placement:

FTBINmax, WDBINmax, *[σ], NON-HD(WD)-l, ft-TROCH >>FT-TROCH >> FTBINmin, FT≈MORPH

35. **Two prefixes form a foot: Grammatical stress explained**

sl + sl + <u>oraŸ</u> | | μ μ	FtBIN-max	WdBIN max	*[σ]	NonHd(WD) -l	ft-Troch	FT-Troch	FtBIN-min	Ft≈Morph
a.[sĺ(sl)(„oÑ.aŸ)]			*!				*	
b.[sl.́sl(„oÑ.aŸ)]			**!					
c.[(sĺ)sl(„o.ÑaŸ)]			*!				*	
d.[(sl.́sl)(„o.ÑaŸ)]➲								*
e. [sĺ(sl.„oÑ)(raŸ)]			*!		*	*(!)		*
f. [(sĺ) (sl.„oÑ)raŸ]			*!			*	*	*
g.[(sĺ)][(sl.„oÑ)raŸ]			*!	*!		*	*	*
h.[(sĺ)][(sl)][(„oÑ)raŸ]			*!	**!			**	*
i.[(sĺ) (sl)(„oÑraŸ)]		*!					**	
j. [(sl.́ sl. „oÑ)(raŸ)]	*!							*

The grammaticality of the stress placement in (35) follows from the prosodic shape I have derived for it but now provides evidence for a ranking between *STRESS(ft) and ANTILAPSE. Since ft-TROCH is unviolated in the language, I shall represent it as unranked with respect to ANTILAPSE, although it is also unranked with respect to *STRESS(ft). The constraint subranking responsible for grammatical stress placement in such a form follows in (36) and rules out all other stress patterns, as shown in (37) (over). (37(b-e)) include undesirable sequences of syllables that do not contrast for stress. (37(e-f) contain unacceptable iambically stressed dependent feet. My claim that two prefixes combine to form a disyllabic foot is thus corroborated independently by the optimal form in (37a), which involves two trochaically stressed feet and is the grammatical stress pattern.

36. ANTILAPSE, ft-TROCH >>*STRESS(ft)>> WSP >> FT-TROCH >> *NONFINAL

37. **Ungrammatical stress ruled out: Doubly prefixed disyllabic roots**

Input: sI + sI + <u>oraŸ</u>	ANTILAPSE	ft-TROCH	*STRESS(ft)	WSP	FT-TROCH	*NONFIN
a. [(sI´.sI)(„oŇaŸ)]➲			*	*		*
b. [(sI.sI´)(„oŇaŸ)]	*!	*(!)	*	*		*
c. [(sI´.sI)(„o.raŇ)]	*!		*	*	*	
d. [(sI.sI)(„oŇaŸ)]	*!					*
e. [(sI.sI´)(„oŇaŸ)]	*!	*(!)	*	*		
f. [(sI.sI´)(„o.raŇ)]		*!	*	*	*	

Given the same stress placement in singly prefixed trisyllabic roots, I assume the prosodic structure in (37a) may be assigned to the forms in (38).[11]

38a. sI´.sI.„<u>oŇaŸ</u> [(sI´.sI)(„oŇaŸ)] ‘whoever’, pron.

b. bIŕ.<u>sIm.buŇi</u> [(bIŕ.sIm)(buŇi)] ‘hide’, v.intr.

For completeness, I turn now to one last set of data relating to prefixation, the case of singly prefixed monosyllabic roots that display schwa epenthesis.

1.5 Schwa epenthesis and Prosodic Structure

I have argued for (39) as the correct prosodic structure for singly prefixed monosyllabic roots. Monosyllabic roots trigger schwa epenthesis, however, when preceded by consonant final prefixes (cf. (40)).[12] (40) shows the prosodic structure that I posit for such a form..

39. di + <u>had</u> [(di)(haŇ)] ‘limited’, v.pass.

40. mIN + <u>had</u> mI´.ŸI.haŇ [(mI´.ŸI)(haŇ)] ‘limit’, v. trans.

(42) (over) now shows that the established subranking, in (41), accounts for the footing I assume in (40). (This footing relates to the prosodic structure I have defended for double prefixes and disyllabic roots.) Despite honoring FtBINmin, the unfooted syllables in (42c) and (e) violate the high-ranked Strict Layering. ((42c) also violates Ft-Troch in its stress placement.) (42b) obeys Strict Layering but its ternary word violates WdBINmax instead. (42d) contains an undesirable iambically stressed head foot, (42f) an undesirable trisyllabic foot. (42a) avoids all violations of the constraints in the ranking established for footing in disyllabic roots.

41. Constraint Ranking for Footing:

FTBINmax,WDBINmax,*[σ],NONHD(WD)-I >> FT-TROCH >>FTBINmin, FT≈MORPH

[11] This parallel proves crucial to my analysis of fusion in the language (Delilkan 2002: ch 4).
[12] I shall not motivate the epenthesis here but discuss it in detail in Delilkan 2002.

42. **Epenthesized singly-prefixed monosyllabic roots**

Input: mɪN + <u>had</u> (μ; μ μ)	FTBINmax	WDBINmax	*[σ]	FT-TROCH	FTBINmin	FT≈MORPH
a. [(mɪ.Ÿɪ)(haŇ)]➲						
b. [(mɪ́)(Ÿɪ)(haŇ)]		*!			**	*
c. [mɪ́(Ÿɪ.haŇ)]			*!	*		*
d. [(mɪ́) (Ÿɪ.haŇ)]				*!		*
e. [mɪ́.Ÿɪ(haŇ)]			**!			
f. [(mɪ.Ÿɪ.haŇ)]	*!					*

The footing selected in (42a) now explains the ungrammaticality of alternative stress patterns for such epenthesized forms. (43) restates the ranking established for stress placement thus far and (44) shows the results of it.

43. Constraint Ranking for Stress Placement:

ANTILAPSE , ft-TROCH >> *STRESS(ft) >> WSP >> FT-TROCH >> *NONFINAL

44. **Stress in Epenthesized singly-prefixed monosyllabic roots**

Input: mɪN + <u>had</u>	ANTILAPSE	ft-TROCH	*STRESS(ft)	WSP	FT-TROCH	*NONFIN
a. [(mɪ.Ÿɪ)(haŇ)]➲			*	*		
b. [(mɪ.Ÿɪ́)(haŇ)]	*!	*	*	*		
c. [(mɪ.Ÿɪ)(haŇ)]	*!					
d. [(mɪ.ŸɪŇ(had)]		*!	*	*		*

The ranking of ANTILAPSE over *STRESS(ft), established for the case of doubly prefixed disyllabic roots, marks (44b-c) suboptimal. An iambically stressed foot eliminates (44d). The optimal (44a) incurs less costly *STRESS(ft) and WSP violations but honors ANTILAPSE and avoids foot level iambic stress.

Notice that the grammatical stress pattern of the optimal form sets it apart from the stress pattern of trisyllabic roots and singly prefixed disyllabic roots, both of which are stressed on their second syllables (cf. *<u>pelbaga</u>i*, /pɪl.baŇgai/ ('variety', n.), *se<u>orang</u>*, /sɪ.„oŇaŸ/ ('a person'), *ter<u>kenal</u>*, /tɪr.kɪŇa/l ('famous', adj.)). The footing I posit for the epenthesis form as opposed to that which I assign the other two crucially explains the contrast.

1.6 The Prosodic Status of Suffixes

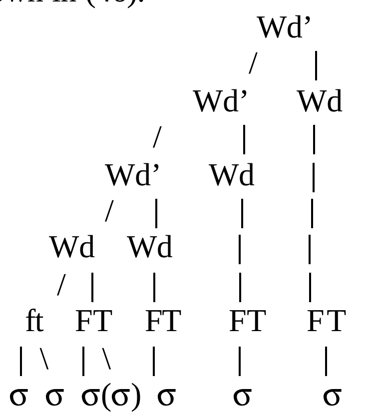
1.6.1 Single Suffixing

Thus far, I have tested the prosodic constraints operative in the language against all root shapes in the language, bare and prefixed. I show next that the subrankings in (45), established for the footing and stress placement of all forms thus far, will account for the footing and stress placement of suffixed forms, too.

45a. ANTILAPSE , ft-TROCH>> *STRESS(ft) >> WSP >> FT-TROCH >> *NONFINAL
b.FTBINmax,WDBINmax,*[σ], NONHD(WD)-I >> FT-TROCH >> FTBINmin, FT≈MORPH

I have claimed that suffixes separately project their own monopodal prosodic words, as shown in (46).

46.



Delilkan 1999, 2002

The prosodic structure of a singly suffixed disyllabic root follows from the ranking in (45a), which makes the selction in (47). (I omit Strict Layering and violations of it.).

47. **Suffix as Monopodal Word**

di + <u>tuhan</u> + kan |\\ μμ	FTBIN-max	WDBIN-max	*[σ]	NONHD(WD)-I	FT-TROCH	FTBIN-min	FT≈MORPH
a.[(di)(tu.ˈhan)][(kaŋ̀)]☞							
b.[(di)(tuˊ)(hankaŋ̀)]		*!			*(?)		*
c.[[(di)(tuˈhan)(kaŋ̀)]]		*!					
d. [(di)(tuˈhankaŋ̀)]	*!						*
e. [[(di)(tuˈhan)] kaŋ̀]	*!		*				

By contrast with (47a), (47b) and (c) are unacceptable ternary words, where (47b) containing an iambically stressed head foot as well.[13] (47d) is suboptimal because it contains an unacceptable ternary foot. Notice that, because I assume it is bimoraic, a monosyllabic suffix, in (47a), meets FTBINmin requirements and honors NONHD(WD)-I.[14] It also contains no iambically stressed feet, no ternary words, and no heteromorphemic feet.

The ranking of constraints employed in (47) supports the selection of the prosodic word structure of multiply suffixed forms shown in (46), as seen next.

1.6.2 Multiple Suffixing and Prosodic Structure

(48) (over) displays a doubly suffixed and a triply suffixed input. (I omit the irrelevant NONHD(WD)-I and limit the Strict Layering and FTBINmax violations.)[15] (48a(ii)), (48a(vi)), (48b(ii)) and (48b(vi)) violate WdBinmax in their lowest words. (48a(iii)) and (48b(iii)) contain undesirable ternary feet, while (48a(iv-vi)) and (48b(v)) contain unacceptable unfooted syllables. The foot that includes the first suffix in both (48a(vii)) and (48b(iv)) violates FT-TROCH. The stress placement in the dependent foot projected by the first two suffixes in (48bviii) violates ft-TROCH. (48b(vii)) avoids this violation but its heteromorphemic final foot violates FT≈MORPH. Each suffix in the optimal (48a(i)) and (48b(i)) meets minimum requirements to be a foot and does not violate NONHD(WD)-I and therefore can project a word. Note that no appeal to WDBINmax would force suffixes to fall within the same prosodic word occupied by any other suffix, since this constraint can only stop a word from being too big--it cannot force it to be larger. Further, by contrast with my claims about prefixes, no appeal to FTBINmin could compel footing any two suffixes as a single foot either, since each is bimoraic. In fact, (48b(vii)) shows that such footing would be eliminated by FT≈MORPH, even if no conflict with ft-TROCH occurs. Based on the selection of candidates in (48), I reassert my claim that each suffix projects a monopodal prosodic word.

The precise stress placement in the forms in (48) is readily explained if this word status is accorded each suffix. To show this, I shall refer to the very same constraint subranking that has accounted for stress placement in prefixed and bare roots.

[13] It is unclear what to name such a foot, though, as the head-dependent nomenclature works only in a binary structure. I have denoted this point by marking it as a FT-TROCH violation, but with a question mark.
[14] This last distinguishes suffixes from prefixes in general, for I have claimed it possible for a suffix to project a prosodic word of its own, since no suffix is a schwallable.
[15] I assume that prefixes and roots occupy distinct feet, as established earlier.

48. **Multiple Suffixes and Prosodic Structure : Monosyllabic Roots**

<table>
<tr><th>a. Input: di + <u>had</u> + kan + ba
|\ |\
μμ μμ</th><th>FTBIN max</th><th>WDBIN max</th><th>ft-TROCH</th><th>*[σ]</th><th>FT-TROCH</th><th>FTBIN min</th><th>FT≈MORPH</th></tr>
<tr><td>i. [[[(di)(há̍d)](kan)](baÑ)] ➲</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>ii. [[(di)(há̍d)(kan)](baÑ)]</td><td></td><td>*!</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>iii. [[(di)(há̍d.kan.baÑ)]</td><td>*!</td><td></td><td></td><td></td><td></td><td></td><td>*</td></tr>
<tr><td>iv. [[(di)(há̍d)](kan)]baÑ</td><td></td><td></td><td></td><td>*!</td><td></td><td></td><td></td></tr>
<tr><td>v. [[(di)(há̍d)]kan](baÑ)]</td><td></td><td></td><td></td><td>*!</td><td></td><td></td><td></td></tr>
<tr><td>vi. [[(di)(há̍d)(kan)]baÑ</td><td></td><td>*!</td><td></td><td>*(!)</td><td></td><td></td><td></td></tr>
<tr><td>vii. [[(di)(há̍d)](kan.baÑ)]</td><td></td><td></td><td></td><td></td><td>*!</td><td></td><td>*</td></tr>
<tr><td>b.Input:di + <u>had</u> + kan + ba +kah
|\ |\ |\
μμ μμ μμ</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>i. [[(di)(há̍d)](kan)](baÑ)](kah)] ➲</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>ii. [[(di)(há̍d)(kan)](baÑ)](kah)]</td><td></td><td>*!</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>iii. [[(di)(há̍d.kan.baÑ)](kah)]</td><td>*!</td><td></td><td></td><td></td><td></td><td></td><td>*</td></tr>
<tr><td>iv. [[[(di)(há̍d)](kan.baÑ)](kah)]</td><td></td><td></td><td></td><td></td><td>*!</td><td></td><td>*</td></tr>
<tr><td>v. [[(di)(há̍d)](kan.baÑ)]kah]</td><td></td><td></td><td></td><td>*!</td><td>*</td><td></td><td>*</td></tr>
<tr><td>vi. [[(di)(há̍d)(kan)](baÑkah)]</td><td></td><td>*!</td><td></td><td></td><td></td><td></td><td>*</td></tr>
<tr><td>vii. [[(di)(há̍d)](kan)(baÑkah)]</td><td></td><td></td><td></td><td></td><td></td><td></td><td>*!</td></tr>
<tr><td>viii. [[(di)(há̍d)](kan.baÑ)(kah)]</td><td></td><td></td><td>*!</td><td></td><td></td><td></td><td>*</td></tr>
</table>

1.7 Stress placement in multiply suffixed forms

1.7.1 Monosyllabic Roots

(49) restates the constraint subranking responsible for stress placement in the case of prefixed and bare roots in the language. (50) (over) shows the result of it for the doubly suffixed monosyllabic form in (48), on the assumption that each suffix is a monopodal word. (I omit the irrelevant WSP and FT-TROCH here.) (50b,c,e) and (f) contain undesirable sequences of syllables that do not contrasts for stress. (50d) has disfavored stress on a dependent foot syllable. The optimal (50a) avoids all violations. (Tableau A, showing the selection of grammatical stress placement as optimal for a triply suffixed monosyllabic root, follows in the Appendix.)

49. ANTILAPSE >> *STRESS(ft) >> *NONFINAL

50. **Doubly suffixed monosyllabic roots: No ungrammatical stress**

di + <u>had</u> + kan + ba	ANTILAPSE	*STRESS(ft)	*NONFINAL
a. [[[(di)(ha̍d)](kan)](baŇ➲			
b. [[[(di)(ha̍d)](kaŇ)](ba)]	*!		*
c. [[[(dí)(had)](kan)](baŇ	*!	*	
d. [[[(dí)(had)](kaŇ)](ba)]		*!	*
e. [[[(di)(had)](kaŇ)](ba)]	*!		*
f. [[[(di)(haŇ)](kan)](ba)]	*!		*

I turn next to the stress pattern of suffixed *di*syllabic roots.

1.7.2 Disyllabic Roots

(52) shows that grammatical stress is selected as optimal in the case of a singly suffixed disyllabic root.

52. **Singly suffixed disyllabic root: Ungrammatical stress ruled out**

mI N + p I r + <u>buku</u> + kan	ANTILAPSE	ft-TROCH	*STRESS(ft)	FT-TROCH	*NONFIN
a.[[(mI ́m.p I r)(bu.̍ku)](kaÒ)]➲			*		
b. [[(mI m.p I ŕ)(bu.kú)](kaÒ)]	*!	*	*	*	
c. [[(mI m.p I ŕ)(bu.̍ku)](kaÒ)]	*!	*	*		
d. [[(mI m.p I ŕ)(bu.kuŇ(kan)]		*!	*	*	*
e. [[(mI ́m.p I r)(bu. kuŇ(kan)]	*!		*	*	*
f. [[(mI ́m.p I r)(bu.̍ku)](kan)]	*!		*		*
g. [[(mI ́m.p I r)(bu.kuŇ(kan)]	*!		*	*	*
h. [[(mI m.p I r)(bú.ku)](kaŇ)]	*!				

(52b-c) and (e-h) contain undesirable sequences of syllables that do not contrast for stress. An iambically stressed dependent foot disqualifies (52d). The grammatically stressed candidate is optimal because it incurs a less costly *STRESS(ft) violation.

The same constraint subranking selects grammatical stress as optimal in the case of doubly and triply suffixed disyllabic roots. In the interest of space, I display this in tableaux B and C in the Appendix. The elimination of candidates follows the pattern shown for doubly-and triply-suffixed monosyllabic roots.

1.7.3 Light-first Roots

Next I turn to light-first roots, invoking the constraint ranking established as responsible for selection of grammatical stress. (53) shows the stress placement selection for a singly suffixed light-first root.

53. **Singly-suffixed light-first roots: Ungrammatical stress blocked**

di + pIr + <u>kInal</u> + kan	ANTILAPSE	ft-Troch	*Stress(ft)	WSP	FT-Troch	*NonFin
a. [[[(dí.pIr)(kÍ.nal)](kaÑ)]➲			*	*		
b. [[[(di.pIŕ)(kÍ.nal)](kaÑ)]	*!	*(!)	*	*		
c. [[[(di.pIŕ)(kI.nál)](kaÑ)]	*!	*(!)	*		*	
d. [[[(di.pIŕ)(kI.naÑ)](kan)]		*!	*		*	*
e. [[[(di.pIr)(kÍ.nal)](kaÑ)]	*!			*		
f. [[[(dí.pIr)(kI.nál)](kaÑ)]	**!		*		*	
g. [[[(dí.pIr)(kIÑal)](kan)]	*!		*	*		*

Once again, grammatical stress (in (53a)) is selected as optimal. (53b-c, e-g) contain undesirable pairs of either stressed or unstressed adjacent syllables. (53d) contains an unacceptable iambically stressed dependent foot. Tableaux D and E, illustrating the selection of grammatical stress in the case of doubly and triply suffixed light-first roots, appear in the Appendix

Having considered mono-and disyllabic roots, I turn to the stress pattern associated with suffixed trisyllabic roots next.

1.7.4 Trisyllabic roots

(54) (over) shows the selection of stress placement in the relevant form.

54. **Singly suffixed trisyllabic root: Ungrammatical stress ruled out**

[36n] kI + <u>sIlamat</u> + an	ANTILAPSE	ft-Troch	*Stress(ft)	WSP	FT-Troch	*NonFin
a. [[(kÍ.sI)(lámat)](taÑ)]➲			*	*		
b. [[(kÍ.sI)(lamát)](taÑ)]	**!		*	*	*	
c. [[(kÍ.sI)(lámat)](tan)]	*!		*	*		*
d. [[(kI.sÍ)(lámat)](taÑ)]	*!	*(!)	*	*		
e. [[(kI.sÍ)(la.mát)](taÑ)]	*!	*(!)	*	*	*	
f. [[(kI.sÍ)(lamaÑ)](tan)]		*!	*	*	*	*
g. [[(kI.sI)(lámat)](taÑ)]	*!					

(54b-e) and (g) violate ANTILAPSE. (54f) contains an impermissible iambically stressed dependent foot. (54a) violates only the lower-ranked *Stress(ft) and WSP. (Stress placement in doubly and triply suffixed trisyllabic roots appears in the Appendix.)

I have considered the full range of stress data first displayed at the start of this paper. The prosodic structure I posit for complex words in Malay violates none of the constraints on word or foot size I have referred to and, additionally, provides an explanation for ungrammatical stress placement in the language. This prosodic structure is the cornerstone of my claim, in Delilkan 1999 and 2002, that segmental processes in the language are distributed asymmetrically with respect to head and dependent feet.

APPENDIX: Ungrammatical Stress Ruled Out

A. Triply suffixed monosyllabic roots

Input: di + <u>had</u> + kan + ba + kah	ANTILAPSE	*STRESS(ft)	*NONFIN
a. [[[[(di)(ha´d)](kan)](baÑ](kah)]➲			*
b. [[[[(di)(ha´d)](ka´n)](ba)](kaÑ)]	*!		
c. [[[[(di)(ha´d)](kan)](ba)](kaÑ)]	*!		
d. [[[[(di)(ha´d)](kan)](ba´)](kaÑ)]	*!		
e. [[[[(di´)(had)](ka´n)](ba)](kaÑ)]		*!	
f. [[[[(di)(had)](ka´n)](ba)](kaÑ)]	*!		

B. Doubly suffixed disyllabic roots

pƖr + <u>d,alan</u> + an + ba	ANTILAPSE	*STRESS(ft)	FT-TROCH	*NONFIN
a. [[[(pƖr)(d,a´.lan)](naÒ)](ba)]➲				*
b. [[[(pƖr)(d,a´.lan)](nan)](baÑ]	*!			
c. [[[(pƖ´r)(d,a.la´n)](nan)](baÑ]		*!	*	
d. [[[(pƖ´r)(d,a´.lan)](naÒ)](ba)]	*!	*		*
e. [[[(pƖr)(d,a.la´n)](nan)](baÑ]	*!		*	
f. [[[(pƖr)(d,a.la´n)](naÒ)](ba)]	**!		*	*
g. [[[(pƖ´r)(d,a.lan)](naÒ)](ba)]	*!	*		*

C. Triply suffixed disyllabic root

Input: mƖN + <u>bulat</u> + an + kan + ba	ANTILAPSE	*STRESS(ft)	FT-TROCH	*NONFIN
a. [[[[(mƖm)(bu´.lat)](ta´n)](kan)](baÒ]➲				
b. [[[[(mƖm)(bu´.lat)](ta´n)](kaÑ)](ba)]	*!			*
c. [[[[(mƖ´m)(bu.la´t)](tan)](kaÑ)](ba)]		*!	*	*
d. [[[[(mƖm)(bu´.lat)](tan)](kaÑ)](ba)]	*!			*

e. [[[[(ml m)(bu.lat́)](tań)](kan)](baŊ̀)	**!		*	
f. [[[[(ml m)(bu.lat)](tań)](kan)](baŊ̀)	**!			
g. [[[[(ml m)(bú.lat)](tan)](kań)](baŊ̀)	**!			

D. Doubly suffixed light-first roots

Input: di + p l r + kl nal + kan + ba	Antilaps	ft-Troch	*Stress(ft)	WSP	FT-Troch	*NonFin
a. [[[(dí.p l r)(kĺ.nal)](kaŃ)](ba)] ➲			*	*		*
b. [[[(dí.p l r)(kl .nal̀)](kaŃ)](ba)]	**!		*		*	*
c. [[[(dí.p l r)(kl .nal̀)](kan)](baŃ)	*!		*		*	
d. [[[(dí.p l r)(kĺ.nal)](kan)](baŃ)	*!		*	*		
e. [[[(di.p ĺr)(kĺ.nal)](kaŃ)](ba)]	*!	*	*	*		*
f. [[[(di.p ĺr)(kl .nal̀)](kan)](baŃ)		*!	*		*	
g. [[[(di.p ĺr)(kl .nal̀)](kan)](ba)]	*!	*	*		*	*
h. [[[(di.p l r)(kĺ.nal)](kaŃ)](ba)]	*!			*		*

E. Triply suffixed light-first disyllabic roots

di + p l r + kl nal + kan + ba + kah	Antilapse	ft-Troch	*Stress(ft)	WSP	FT-Troch	*NonFin
a.[[[[(dí.p l r)(kĺ.nal)](kań)](ba)](kaŃ)] ➲			*	*		
b. [[[[(dí.p l r)(kl .nal̀)](kań)](ba)](kaŃ)]	*!		*		*	
c. [[[[(dí.p l r)(kl .nal̀)](kan)](baŃ)(kah)]	*!		*			*
d. [[[[(di.p ĺr)(kĺ.nal)](kań)](ba)](kaŃ)]	*!	*(!)	*	*		
e. [[[[(di.p ĺr)(kl .nal̀)](kan)](baŃ)(kah)]		*!	*		*	*
f. [[[[(di.p ĺr)(kl .nal̀)](kan)](ba)](kaŃ)]	*!	*(!)	*		*	
g. [[[[(di.p l r)(kĺ.nal)](kań)](ba)](kaŃ)]	*!			*		

F. Doubly suffixed trisyllabic roots

Input: kl + s l lamat + an + ba	Antilapse	ft-Troch	*Stress(ft)	WSP	FTTroch	*NonFin
a. [[[(kĺ.s l)(lá.mat)](taŃ)](ba)] ➲			*	*		*
b. [[[(kĺ.s l)(la.mat́)](taŃ)](ba)]	**!		*	*	*	*
c. [[[(kĺ.s l)(la.mat́)](tan)](baŃ)	*!		*	*	*	
d. [[[(kĺ.s l)(lámat)](tan)](baŃ)	*!		*	*		
e. [[[(kl .s ĺ)(lámat)](taŃ)](ba)]	*!	*(!)	*	*		*
f. [[[(kl .s ĺ)(lámat)](taŃ)](ba)]	*!	*(!)	*	*		*
g. [[[(kl .s ĺ)(la.mat́)](tan)](baŃ)		*!	*	*	*	
h. [[[(kl .s l)(lá.mat)](taŃ)](ba)]	*!					*

G. Triply suffixed trisyllabic root

Input: kl + s l lamat + an + ba + lah	Antilapse	ft-Troch	*Stress(ft)	WSP	FT-Troch	*NonFin

a.[[[(kI´.sI)(la´.mat)](taŊ̃)](ba)](laŊ̃)] ➲			*	*		
b.[[[(kI´.sI)(la.maˊt)](taŊ̃)](ba)](laŊ̃)]	**!		*	*	*	
c.[[[(kI´.sI)(la.maˊt)](tan)](baŊ̃](lah)]	*!		*	*		*
d.[[[(kI´.sI)(laˊmat)](tan)](baˊ)](laŊ̃)]	**!		*	*		
e.[[[(kI´.sI)(laˊmat)](tan)](baŊ̃](lah)]	*!		*	*		*
f. [[[(kI.sIˊ)(la.ˊmat)](taŊ̃)](ba)](laŊ̃)]	*!	*(!)	*	*		
g. [[[(kI.sIˊ)(la.maˊt)](tan)](baŊ̃](lah)]		*!	*	*	*	*
h. [[[(kI.sI)(la´.mat)](taˊn)](ba)](laŊ̃)]	*!					
i. [[[(kI.sI)(la.maˊt)](tan)](baŊ̃](lah)]	*!				*	*

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