Daniel Kaufman
Spring 2007
Ch.1 DRAFT

Tagalog clitics and prosodic phonology

1.0 Introduction

The first part of this dissertation aims to give a comprehensive picture of a single Philippine clitic system, including the phonological, morphological and syntactic facts. Tagalog has been chosen for this purpose because it is the best described Philippine language and because it is the most familiar to the author. In this chapter, a phonological sketch of Tagalog is presented and an analysis of four phonological and prosodic phenomena is argued for in support of a particular view of how word and phrasal constituents are parsed prosodically. The ultimate goal of this chapter is to show how Tagalog clitics are incorporated into their hosts and the surrounding prosodic structure.
Tagalog clitics have not yet been subject to the level of scrutiny that many varieties of Romanace and Slavic clitics have been. The prosody of clitics has been briefly discussed by Schachter & Otanes (1972) (henceforth S&O), Wolff, Centeno & Rau (1991) (henceforth WC&R) and Gonzalez (1970), although none of these works offers a very detailed picture of clitic-prosody interactions. The latter work contains an instrumental study but has methodological and analytic problems. The impediment to which several analyses of clitics have succumb is to be found in the stress facts, and more generally the question of how stress should be analyzed in Tagalog.[1]

Here, we employ the Prosodic Phonology approach developed principally by Selkirk (1978 *et seq*), Nespor & Vogel (1982 *et seq*), Hayes (1989) and Ito & Mester (1992 *et seq*) within the framework of Optimality Theory (Prince & Smolensky 1993). In Prosodic Phonology, the phonological component is constrained in only being able to reference prosodic categories rather than morphological categories. Within Optimality Theory, prosodic categories are created by two driving forces, ALIGNMENT constraints (McCarthy & Prince, 1993) which motivate correspondences between prosodic categories and morphological categories, and the EXHAUSTIVITY constraint (Ito & Mester, 1992) which requires all phonological material to be parsed on the various levels of the prosodic hierarchy. The prosodic hierarchy is the inventory of all prosodic domain types and is organized in a strict linear fashion, beginning from the mora reaching all the way to the utterance. In addition to explaining the imperfect correspondence between morphological

[1] Himmelmann (2004) summarizes the problem:

> "Stress is also unmarked in standard orthography. Its analysis is somewhat controversial. Some authors (e.g. Schachter & Otanes 1972:15-18, Wolff et al. 1991:12) consider vowel length the primary phenomenon, while others consider vowel length an epiphenomenon of stress (cf. Bloomfield 1917:141f; Matsuda French 1988:63f)."

Here, the former view will be defended, as it is clearly supported by both the phonetic and phonological evidence. The confusion alluded to above is due in part to dialectial differences between Manila Tagalog, which has been influenced by the large influx of speakers of other Philippine languages, and rural Tagalog, which is generally more conservative in preserving the original stress-length pattern.

and phonological domains, constraints on the well-formedness of prosodic structures also make predictions about where phonological processes can and cannot apply. It will be shown that these well-formedness conditions can be utilized profitably to account for great deal of Tagalog phonology, including difficult patterns of optionality. Importantly, for our purposes, the unique phonology of second position clitics can be accounted for in this framework without having to posit a unique type of morphological boundary or a stipulated syntactic constituent which subsumes the host and its clitic dependents. The facts follow directly from a prosodic structure which is built by simple, but conflicting, constraints on correspondence and parsing in the spirit of Optimality Theory.

The organization of this chapter is as follows. Section 2 introduces the phonome inventory, basic allomorphy and orthographic issues. Section 3 discusses root level prosody including syllable structure, and introduces constraints on the basic prosodic pattern of the root. Section 4 expands the scope to the level of the morphological word, including the effects of suffixes and other morphemes. Section 5, the main section of this chapter, introduces the prosodic hierarchy and the constraints which are responsible for building the higher levels of prosodic structure. A prosodic strucutre is posited for Tagalog and defended on the basis of several phonological and phonetic phenomenon. Finally, section 6 concludes by summing up the main points of the chapter.

2.0 Tagalog phoneme inventory

The Tagalog consonant inventory is shown in Table 1. The consonants in parenthesis are not part of the native phonemic system but rather arise from allophony or loan words. On the whole, this can be considered a typical Philippine inventory.

Table 1. Tagalog consonant inventory

		LABIAL	DENTAL	ALVEOLAR	PALATAL	VELAR	LARYNGEAL
STOP	[-VOICE]	p	t			k	ʔ
	[+VOICE]	b	d			g	
AFFRICATE	[-VOICE]				(tʃ)		
	[+VOICE]				(dʒ)		
FRICATIVE				s	(ʃ)		h
NASAL		m	n			ŋ	
LATERAL				l			
TAP				ɾ			
GLIDE		w			j		

Consonants contrast in three major places of articulation, labial, alveolar, and velar, plus the laryngeals, which may be considered placeless. The stops [t], [d] and nasal [n] are produced at the dental place of articulation, but dentals are not contrastive with alveolars in Tagalog, or any other Philippine language. Stops are always unaspirated and have a contrastive voicing distinction. Among the palatals, only the glide [j] is a bona fide phoneme in the native vocabulary. The rest of the consonants arise from the combination of an alveolar consonant with a high front vowel, as shown in (1), and in the case of [tʃ], also from the combination of /t/ and /s/, as shown in (2).

(1) a. [dʒan] b. [ʃʲa] ~ [ʃa]
/diyan/ /siya/
there 3S.NOM

c. [tʃʲan] ~ [tʃan]
/tiyan/
stomach

(2) [atʃaka]
/at saka/
and then

The tapped [ɾ] arises from intervocalic /d/ in the native phonology (see §6.4 for a detailed discussion of the conditions on tapping). Note that all these phones must be considered as full phonemes in the modern language as a result of loan words and lexicalized contractions. In the following, however, we restrict our scope to the native vocabulary and its attendant phonology as the large scale adoption of Spanish and English loans complicates the picture considerably and is subject to various degrees of nativization which depends on speaker and register.[2]

Tagalog has a basic three vowel system with allophonic lowering of the high vowels /i/ and /u/ to [ɛ] and [ɔ]/. Some authors, such as Carrier (1974) and S&O, make finer grained distinctions including [ɪ] and [ʊ] as a lower high allophones of /i/ and /u/ and [ə] as a centralized allophone of /a/ but instrumental studies are required to ascertain their validity. The diphthongs /iw/, /uj/, /aw/ and /aj/ are all constrastive and undergo allophonic lowering of their first element.

Table 2. Tagalog vowels inventory

	FRONT	CENTER	BACK
HIGH	i iw		u uj
MID	(ɛ) (ɛj)		(ɔ) (ɔj)
LOW		a aw aj	

2.1 A note on orthography

The Tagalog orthography employed in this dissertation here will be that of WC&R. It differs from the official orthography propagated by the *Komisyon ng Wikang Filipino* only in the way accentuation is marked. Whereas the official orthography marks oxytone

[2] For instance, the faithful pronunciation of [f], [v] and [z] in loan words is only present in fully bilingual speakers, and even then is not consistently present. On the other hand, Spanish and English loans containing /ɾ/ are never nativized to /d/ as may have happened in the initial stages of language contact. [ɾ] must thus be considered a full phoneme by all accounts which aim to include loan phonology.

words with an acute accent and leaves paroxytone words unmarked, as shown in (3), the WC&R orthography does the opposite, as shown in (4). Both orthographies thus suggest that one accentuation is unmarked in relation to the other. We will see in the following sections that treating the oxytone pattern as unmarked, as in the WCR orthography, receives wide support from various phonological facts.

(3) a. *sabi* b. *inóm* (Official orthography)

(4) a. *sábi* b. *inom* (WCR orthography)

Glottal stop is only indicated at word codas, where it is written as a grave accent on the preceding vowel, e.g. *bunsò* [bunsɔʔ] 'last born'. Because stress is unmarked on the final syllable there is never a conflict between marking accentuation and the glottal stop on the same vowel. Phrase-medially, the underlying glottal stop is written as a long vowel with an acute accent to indicate glottal stop deletion with compensatory lengthening, e.g. *bunsó ko* 'my last born'. Orthographically adjacent vowels are separated by the glottal stop and vowel initial words are glottal stop initial. Because there is no contrast with onsetless vowels in these positions, the glottal stop can be treated as predictable here and is therefore left unmarked. All phonemes are written as they appear in table 1 except for the palatal glide, written <y>, the tap, written <r>, and the velar nasal, written as a digraph <ng>. There are, additionally, two shortenings used in the official orthography and adopted in this dissertation: the genitive case marker /naŋ/ which is written *ng*, and the plural marker /maŋa/ written *mga*. Orthographic transcriptions will be given in italics, phonemic transcriptions in slanted brackets and phonetic transcriptions in square brackets (e.g. *abang* /abaŋ/ [ʔabaŋ] 'watch out for').

3.0 Root prosody

3.1 Syllable structure

The maximal syllable structure in the native vocabulary is CV(C).[3] Reductions in the first vowel of the root can yield onset clusters involving glides, such as /buwan/ [bwan] and /bijak/ [bjak] (S&O:26). These are the only types of tautosyllabic clusters allowed in the native vocabulary.

S&O, French, among others, represent all Tagalog words as consonant final. What are impressionistically vowel final words are represented in such a system as being /h/ final. This explains the presence of /h/ in apparently vowel final roots under suffixation but requires /h/ deletion when resyllabification as an onset of a following suffix is not possible. Here, I choose to treat surface vowel-final roots as underlyingly vowel-final. This makes for a more transparent mapping to the surface form and avoids several problems with the /h/ coda analysis: (i) /h/ codas are not licensed anywhere else in Tagalog, (ii) the root final segment is not always /h/, e.g. *kuha* 'take' + *-in* PV ⇨ *kuhanin* and *tawa* 'laugh' + *-an* LV ⇨ *tawanan*, and finally, (iii) it is an unviolated constraint in Tagalog that syllables must have onsets and thus epenthesis is fully expected

[3] Spanish loans introduced onset clusters with [ɾ] and [l] in the second C position and English loans introduced coda clusters and additional onset clusters.

from the general grammar. On the other hand, a morpheme structure constraint requiring that all roots be C-final is vanishingly rare (cf. Ito & Mester 2006).

Because all syllables predictably have an onset on the surface, I analyze glottal stop-initial morphemes as underlyingly vowel-initial.[4] Analyses which do not rely on glottal stop epenthesis must stipulate the fact that only affixes (suffixes -*in* and -*an*, and infixes <*in*> and <*um*>) can be underlyingly vowel initial. This falls out naturally if we take the prosodic word to be the domain of (re)syllabification. Other functional morphemes, such as proclitics (e.g. *ang*= NOM) cannot gain an onset by resyllabification across a preceding morpheme and thus must epenthesize.

3.2 Length and stress

The Tagalog of Metro-Manila and its environs possesses a root stress pattern with an unusual surface appearance. As in most Philippine languages, stress is phonemic but also predictable in certain environments. Native lexical roots may be from 2 to 4 syllables in length. The root must conform to the prosodic word minimality constraint by being at least bimoraic. In native roots, this is satisfied by disyllabicity. Borrowed monosyllables, on the other hand, are augmented in order to fufill minimality (cf. §5.2).

Primary stress is constrained to appear within a stress window that spans the last two syllables. As seen in table 3, in a disyllabic Tagalog root with an open first syllable, stress may either fall on the first or the second syllable. But – paradoxically, from the perspective of weight-stress correlations – if the first syllable is closed, it is only the second syllable which may receive stress.

Table 3. Tagalog stress patterns (preliminary)

TROCHAIC	IAMBIC
CV́.CV(C)	CV.**CV**(**C**́)
***CV́C**.CV(C)	CVC.**CV́**(**C**)

Table 3 suggests that the Tagalog stress system is sensitive to the presence of codas; but instead of attracting stress, they appear to repel it. The basis of this pattern obtains a clearer explanation when we examine the conservative dialects in which stress and length are discrete elements which need not coincide. In these dialects, length plays a distinct role in the morphology. This can be exemplified with the minimal pair relationship between agent nominalization and the actor voice prospective aspect. Agent nominalization is expressed with the actor voice prefix *mag*- attached to a root containing plain CV reduplication. The prospective aspect of the (*mag*- class) actor voice, on the other hand, is formed by prefixation of *mag*- with CV: reduplication. The resultant forms are identical except for the length in the reduplicant, as shown in (5) with the root *nákaw* 'steal' (S&O:15). (Stress is ignored for the moment, with only length indicated.)

[4] This implies two types of epenthetic segments: [ʔ] before roots and clitics and [h] before suffixes. This is not difficult to account for if we take into account contrast maintenence. Because the only location where the glottal stop is phonemic is in root-final position, epenthesis of a glottal stop would destroy the contrast between suffixed V-final and ʔ-final roots.

(5) a. /mag-na~na:kaw/ AV-AGNMZ-steal 'thief'

b. /mag-na:~na:kaw/ AV-PROS-steal 'SUBJ is going to steal'

Another minimal pair can be found in the patient voice abilitative and accidental prefixes, *ma-* and *ma:-*, respectively (6).

(6) a. /ma-ka:in/ PV.ABIL-eat 'SUBJ is able to be eaten'

b. /ma:-ka:in/ PV.ACD-eat 'SUBJ is eaten accidentally'

In the length preserving dialects, native roots may only bear length on the penultimate syllable.[5] Furthermore, this syllable may only bear length if it is open. A minimal pair distinguished by penultimate length is shown in (7). The lack of length contrast with closed penult roots is shown by the absence of forms with a structure as in (8)b.

(7) a. /baga/ QM

b. /ba:ga/ 'ember'

(8) a. /ganti/ 'retaliation'

b. *CV:C.CV

This suggests that consonantal codas are moraic in Tagalog and are therefore unable to cooccur with vowel length on the same syllable. The combination of a coda and vowel length would create a super-heavy syllable, which are commonly disallowed across languages.

In citation forms of roots which do not contain length, stress is consistently assigned to the final syllable. Thus, (7)a and (8)a above surface as [bagá] and [gantí]. Let us provisionally analyze this as iambic footing, although this will be subject to revision later (§5.7). Superimposed on this iambic pattern is a weight sensitivity principle which prioritizes long vowels over all else. This results in long penultimate vowels attracting the stress regardless of whether the final syllable is open or closed, as exemplified by (9).

(9) [bá:sag] cf. *[ba:ság]
/ba:sag/
'break'

But because vowel length can only occur on the penultimate syllable, there is only a binary prominence opposition in roots: either the penultimate syllable is prominent (marked by length and stress), as in [bá:ga] and [bá:sag], or the final syllable is prominent (marked only by stress), as in [bagá] and [gantí].[6]

[5] Loan words may show length on earlier syllables as in *telépono* 'telephone', from Spanish, and *dálità* 'suffering', from Sanskrit. The discussion of length and stress here is restricted to the native vocabulary.

[6] Bloomfield, who appears to have considered penultimate length a reflex of "non-final stress", states the following in connection to the phonetic differences between final and non-final stress:

Under this view, penultimate stress is purely a function of lexically marked vowel length. Vowel length, however, is not possible on a closed syllable and thus the unmarked iambic pattern emerges when the penultimate syllable is closed. This explains why closed penultimate syllables paradoxically appear to shun stress. The pattern seen above in table 3 can now be better represented as in table 4.

Table 4. Tagalog Stress patterns (with length)

TROCHAIC	IAMBIC
CV́:.CV(C)	CV.**CV́**(**C**)
***CV́:C**.CV(C)	CVC.**CV́**(**C**)

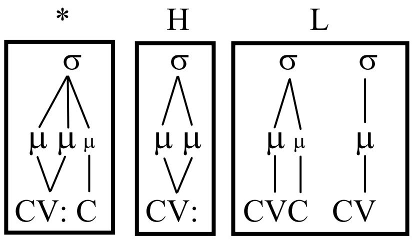
Another property which lends Tagalog an unusual appearance concerns the intermediate status of coda consonants. On one hand, their presence in the penultimate syllable disallows the cooccurrence of vowel length, but on the other hand, they are disregarded by the weight sensitivity principle, as demonstrated by the stress on roots of shape **CV́:**.CVC and CVC.**CV́**. This could be taken as *a priori* evidence that word final codas are extra-metrical. However, the presence of compensatory lengthening with glottal coda deletion (cf. §5.6) makes such an analysis unattractive if not impossible. The other solution is to relativize the weight sensitivity principle so that it considers moras associated with vowels heavier than moras associated with consonants (cf. Hyman, 1985; Zec, 1988; Hayes, 1995). Zec (1988) shows that such a relativiziation along the sonority hierarchy can account for the varying weight contributed by different kinds of consonant codas cross-linguistically.[7] For Tagalog, the relevant categories in the sonority hierarchy are simply consonant and vowel.[8] The relative weight of consonants and vowels is represented by a large mora μ for V-linked moras, and a small mora $\scriptstyle\mu$ for C-linked moras.

"The primary word-accent on a final syllable or...on a closed final syllable, consist merely in greater stress than that of an unaccented syllable, accompanied by a pitch rise of about half a note. On a non-final open syllable the primary word-accent involves an increase of stress (less than in English), a pitch-rise of two-notes, *lengthening of the vowel to about one and one-half times the duration of an unstressed vowel*, and open-syllable stress." (Emphasis mine) (Bloomfield 1917:141)

[7] But given this analysis, Tagalog may be added to the counterexamples to the moraic uniformity hypothesis which states that only a single definition of what counts as a heavy syllable should be necessary within a single language. Other counterexamples are discussed by Steriade (1991), Crowhurst (1991), Hyman (1992), Hayes (1995).

[8] There is some evidence from loan phonology that nasals and taps can be separated from other consonants in Tagalog. Namely, penultimate syllables with nasal codas, e.g. *bénta* 'sell', *báryo* 'neighborhood', can allow stress on the penultimate syllable to be faithful to the original (Spanish) stress. However, less sonorous codas in this position generally force iambic stress, as would be expected in the native vocabulary, e.g. *libró* 'book', *bastá* 'So long as', despite being trochaic in the donor language. This is, however, far from an exceptionless generalization and requires further study.

(10)



The classification of the above syllable types as heavy or light can be obtained by positing a universal ranking of articulated WEIGHT-TO-STRESS constraints (Prince 1990, Prince & Smolensky 1993). Let us assume a template for WEIGHT-TO-STRESS constraints as below, where μ represents a particular moraic quantity:

(11) WEIGHT-TO-STRESS
$\mu{=}\acute{\sigma}$ – A syllable containing μ receives stress

With this constraint in hand, the universal ranking in (12) ensures that syllables with two full moras have priority for receiving stress over syllables with one and a half mora, and so forth.

(12) $\mu\mu{=}\acute{\sigma} \gg \mu_{\mu}{=}\acute{\sigma} \gg \mu{=}\acute{\sigma} \gg {}_{\mu}{=}\acute{\sigma} \gg \varnothing{=}\acute{\sigma}$

In any given disyllabic root, at least some of the WEIGHT-TO-STRESS constraints in (12) will come into conflict with the constraint requiring iambic footing, as stated below:

(13) IAMB (ALIGN (Hd,R,Foot,R))
The head of a foot is aligned to the foot's right edge

Depending on where in the hierarchy IAMB is interpolated, certain moraic weights will override the basic iambic footing while lighter weights will not. In order to derive the facts stated in (10), the IAMB constraint must be dominated only by $\mu\mu{=}\acute{\sigma}$, as in (14).

(14) $\mu\mu{=}\acute{\sigma} \gg$ IAMB $\gg \mu_{\mu}{=}\acute{\sigma} \gg \mu{=}\acute{\sigma} \gg {}_{\mu}{=}\acute{\sigma} \gg \varnothing{=}\acute{\sigma}$

This way, only syllables associated with two full moras, i.e. syllables containing long vowels, will be able to attract stress. At the same time, coda consonants can still be considered moraic and are able to block the cooccurrence of vowel length via the constraint in (15).

(15) $*\sigma_{\mu\mu\mu}$
Syllables are maximally bimoraic

Finally, we can add the generalized faithfulness constraint in (16) which penalizes a mismatch between underlying moras and surface vowel length.

(16) FAITH-μ
A V-linked mora in the input has a correspondent long vowel in the output
A long vowel in the output has a correspondent V-linked mora in the input

Because vowel length takes precedence over the tendency towards final stress, the constraints μμ=σ́ and FAITH-μ must dominate IAMB. Because super-heavy syllables are unattested in the native vocabulary, we can further rank $*\sigma_{\mu\mu\mu}$ above FAITH-μ. This way, a bimoraic vowel in a closed syllable will surface as monomoraic, i.e. violating FAITH-μ to satisfy $*\sigma_{\mu\mu\mu}$. This ranking is shown in action in tableaux 1 and 2, where the location of stress is derived for long and short penult roots, respectively.

Tableau 1. Stress assignment in CV:CV(C) roots

Input: /ba$_\mu$sag/ 'break'	μμ=σ́	$*\sigma_{\mu\mu\mu}$	FAITH-μ	IAMB
a. ✓(bá:sag)				*
b. (ba:ság)	*!			
c. (baság)			*!	

Tableau 2. Stress assignment in CVCV(C) roots

Input: /bulag/ 'blind'	μμ=σ́	$*\sigma_{\mu\mu\mu}$	FAITH-μ	IAMB
a. ✓(bulág)				
b. (búlag)				*!
c. (bú:lag)			*!	*

In disyllabic roots with two closed syllables, the iambic pattern always emerges. This is demonstrated in tableau 3. (Vowel lowering is discussed in §5.3 below.)

Tableau 3. Stress and length in CVCCVC roots

Input: /bansut/ 'stunted'	μμ=σ́	$*\sigma_{\mu\mu\mu}$	FAITH-μ	IAMB
a. (bánsɔt)				*!
b.✓(bansɔ́t)				

In accordance with the Richness Of The Base hypothesis, which states that the constraint ranking should produce a well-formed output from any input, we can add a bimoraic vowel to the previous input and still derive the correct form. The vocalic mora will be deleted due to the high ranking constraint against superheavy syllables, as shown in tableau 4.[9]

[9] Deleting the penult coda would also satisfy $*\sigma_{\mu\mu\mu}$ but such a solution is assumed to be harmonically bounded as it involves deleting an entire segment in addition to the offending mora.

Tableau 4. Stress and length in CVCCVC roots

Input: /ba$_{\mu}$nsut/ ‘stunted’	μμ=σ́	*$\sigma_{\mu\mu\mu}$	FAITH-μ	IAMB
a. (bá:nsɔt)		*!		*
b. (ba:nsɔ́t)	*!	*		
c.✓(bansɔ́t)			*	
d. (bánsɔt)			*	*!

We can now consider trisyllabic stems, which introduce a potential choice of footing. As mentioned earlier, the primary stress of roots always falls within the final two syllables and thus the stress pattern does not differ from that of disyllabic roots. The two possibilities are exemplified in (17).

(17) a. [batí:bɔt]
/bati:but/
‘short and stout’

b. [balitɔ́k]
/balituk/
‘gold ore’

Secondary stress appears to be absent in trisyllabic roots, which is taken to mean that the first syllable in such roots remains unfooted. Assuming for now that footing operates over prosodic words, we can express the relevant pattern with the following alignment constraint:

(18) ALIGN (foot,R,PWord,R)
the right edge of a foot is aligned to the right edge of a prosodic word

This constraint is satisfied vacuously by a footed disyllabic root. In trysyllabic roots, however, this constraint will rule out candidates with initial stress. A potential conflict occurs in the case of a hypothetical trisyllabic root in the input with a long initial vowel. From the categorial absence of root forms like ***CV́:**.CV.CV, we know that the constraint responsible for the rightwards alignment of feet dominates FAITH-μ. Furthermore, from the lack of similar forms with an <u>unstressed</u> long vowel in the antepenult, we can exclude the possibility of simply leaving long vowels in this position unfooted or including them in a degenerate trisyllabic foot. The first possibility would incur a violation of μμ=σ́ while the second would incur a violation of FTBIN, as defined in (19).

(19) FTBIN
A foot is composed of two syllables

The above facts of stress prominence in trisyllabic roots provide us with ranking arguments for the constraints in (20).

(20) μμ=σ́ ALIGN (Foot,R;PrWd,R) FTBIN

FAITH-μ

Under this ranking, a long vowel in the antepenult will be shortened in the output and the foot will be aligned with the right edge of the prosodic word, as shown in Tableau 5.[10]

Tableau 5. Stress and length in trisyllabic roots

Input: /ba$_{\mu}$lituk/	$\mu\mu=\acute{\sigma}$	$*\sigma_{\mu\mu\mu}$	ALIGN (Foot,R,PWd,R)	FTBIN	FAITH μ	IAMB
a. (bá:li)tɔk			*!			*
b. ba:(litɔ́k)	*!					
c.✓ba(litɔ́k)					*	
d. (bá:litɔk)				*!		*

One fact which still requires explanation is the absence of long vowels in final open syllables, i.e. *CV(C).**CV́:**. As it turns out, this kind of neutralization in final syllables is not at all rare. In his survey of positional neutralization, Barnes (2002:260) offers the following generalization:

> "Languages in which there is contrast between phonologically long and short vowels in all positions save word-final are extremely common cross-linguistically. Final position, indeed, can safely be pronounced 'weak' for the licensing of quantitity contrasts, all things being equal....In most cases, the lack of contrast concerns phrase-medial and final syllables alike, and the resulting vowel is said to be short, presumably varying in actual duration according to position like any other vowel."

Barnes attributes this state of affairs to the phonologization of various articulatory phenomena in phrase-final contexts. For instance, Tagalog possesses phrase-final lengthening (SO 1972:17 for Tagalog and more generally Oller et. al. 1973, Beckman & Edwards 1990, Fowler 1990) which could potentially neutralize a root final length distinction, if such a distinction existed. Another possible explanation is the fact that the possibility of final length would introduce an extra distinction into the system. In the present system, length and stress are separable but do not constrast on the root level. There is a two way prominence distinction in roots between (i) length+stress (paroxytone roots) versus (ii) stress (oxytone roots). The additional possibility of final length would create a distinction between short stressed and long stressed syllables – a distinction which is not perceptually salient and can therefore be considered marked (cf. Flemming 1995, Padgett 2003).

Because nothing hinges on this issue, we can adopt Buckley's (1998) rather stipulative constraint in (21) to handle this fact for the time being. Although not explanatorily adequate, it is widely observed cross-linguistically, and can thus serve as a place holder for a more well-grounded constraint in the future.

(21) *WORD-FINALLONGVOWEL (*LONGV]#)
Word-final long vowels are prohibited

[10] For ease of exposition, underlying moras wlll be indicated by the symbol for length (:) in the following sections.

4.0 Word Prosody

We can now move on to the more complex morphological domain of the word. Tagalog has a relatively large inventory of verbal affixes, the majority of which are prefixing. Prefixes do not effect the prosody of the stem and will thus not be given as much attention in the following. On the other hand, the two suffixes in Standard Tagalog pose some interesting problems for the prosody-morphology interface and will be the primary focus of this section.

Standard Tagalog possesses only two suffixes, *-in* PATIENT VOICE, and *-an* LOCATIVE VOICE.[11] These are suffixed to the root and trigger *h*-epehthesis in the case of vowel-final roots (22)a. Root final codas are resyllabified as onsets of the following syllable (making epenthesis unnecessary), as seen with the glottal stop (22)b.

(22) a.	[pa.ta.wa.hin]	b.	[pa.ta.ba.ʔin]
	/pa-tawa-in/		/pa-tabaʔ-in/
	CAU-laugh-PV		CAU-fat-PV
	'to make SUBJ laugh'		'to make SUBJ fat'

These suffixes typically form verbs but can also form nouns with the meaning 'something to be √-ed' (PV) and 'a place for √-ing' (LV). The verbal and nominal functions of the suffixes correspond to two different prosodic patterns. We turn our attention first to the suffixes in their verbal function.
When a lengthless root, as in (23)a, appears with a suffix, as in (23)b, the main stress shifts to the suffix. In roots which do contain length and penultimate stress, the same suffix pulls the length and the stress one syllable to the right, as in (24)b. This is referred to as 'length shift' by S&O (p.17).

(23) a.	[ʔinɔ́m]	b.	[ʔinumín]
	/inum/		/inum-in/
	drink		drink-PV
(24) a.	[bá:sa]	b.	[basá:hin]
	/ba:sa/		/ba:sa-in/
	read		read-PV

The phenomenon of shift is treated by French (1988) from an autosegmental perspective. Roots are marked in the lexicon as being either penultimately or ultimately stressed and this stress is then inherited on the word level. This captures the generalization that a penultimately stressed root generally derives penultimately stressed verbs and an ultimately stressed root derives ultimately stressed verbs. Stress (or length, as in the present analysis) is thus a feature of words and not of morphemes per se. This is an attractive approach at first glance, but it fails to make a clear connection between stress shift and the prosodic pattern observed with simple roots. As seen earlier, Tagalog

---

[11] The dialect of Batangas preserves the older Proto-Austronesian dependent form suffixes: *-a* for PATIENT VOICE and *-i* for LOCATIVE VOICE, not discussed here.

stems cannot bear primary stress any further from the right edge of the word than the penult. With this in mind, consider the potential outcomes of suffixation with and without stress shift in (25) with the root /ba:sa/ 'read'.

(25) a. *[bá:sahin] b. *[ba:sahín]

c. *[basahín] d. [basá:hin]

In (25)a, the WEIGHT-TO-STRESS principle is obeyed without any change in the position of the root's vowel length. But this results in stressing a syllable which is too far from the right edge of the word. In (25)b, the primary stress does not coincide with the long root vowel leading to an unattested violation of WEIGHT-TO-STRESS. In (25)c, an input mora does not surface at all, violating FAITH-μ. Crucially, the grammatical output in (25)d, satisfies both FAITH-μ and ALIGN (Foot, R; PrWd, R) simultaneously. This can only be accomplished by shifting the vowel length rightwards by one syllable. Shifting vowel length involves delinking a mora from its input vowel and attaching it to an adjacent vowel. This delinking violates the constraint in (26), (Morén 2000:376).

(26) MAXLINK-μ[V]
Do not delete an underlying mora from a vowel

If FAITH-μ outranks MAXLINK-μ, a mora will be able to delink from its original vowel to satisfy a higher ranking constraint but, because of FAITH-μ, there will still be pressure for it to surface within the word. The mora will be realized on the adjacent syllable to remain within the stress window. This is the basis for length shift. The ranking and evaluation for the form in (24)b is given in tableau 6.

Tableau 6. Length shift and mora delinking

Input: /ba$_{\mu}$sa-hin/	μμ= σ́	*$\sigma_{\mu\mu\mu}$	ALIGN (Foot,R,PWd,R)	FTBIN	FAITH μ	MAX LINK	IAMB
a. (bá:sa)hin			*!				*
b. (bá:sahin)				*!			*
c. ba:(sáhin)	*!						*
d. ✓ ba(sá:hin)						*	*
e. ba(sa:hín)	*!					*	
f. ba(sahín)					*!	*	

Stress shift also occurs in citation forms without length, and thus without mora delinking. This is expected if the (unmarked) iambic foot is aligned to the right edge of the morphological word, as in (27).

(27) a. [(ʔinɔ́m)] b. [ʔin(umín)]
/inum/ /inum-in/
'drink' 'to drink SUBJ'

Note that this also demonstrates that the ROOT-SUFFIX domain is subject to the same prosodic constraints as the bare ROOT. This implies that the ROOT-SUFFIX domain is coextensive with the prosodic word. As we have seen, the prosodic word is (i) the domain of resyllabification and (ii) the domain of length shift (i.e. the primary stress window). Adopting the analysis in which glottal stops are epenthesized as onsets, we note that the ROOT-SUFFIX boundary differs from other boundaries. Consonant final prefixes, such as *mag*-, for instance, do not allow resyllabification, as seen in (28). Rather, the glottal stop is epenthesized at the left edge of the root.[12] Resyllabification is also barred from occuring between word final codas and following proclitics such as *ang* NOM, as demonstrated by the obligatory epenthesis between the verb final /m/ and the following case marker.

(28) [nagʔinɔm ʔaŋ bilaŋgɔʔ]
/nag-inum aŋ=bilaŋguʔ/
AV.PRF-drink NOM=prisoner
'The prisoner drank (heavily)'[13]

Other prefixes do not show this behavior and are taken to be integrated into the minimal prosodic word. Accordingly, we follow Zuraw (2006) in assigning morphological words the prosodic structure in (29). Here, suffixes cohabit the minimal prosodic word with the root while prefixes have the choice of integration into the minimal prosodic word or left adjunction. Prefixes such as *mag*- are always adjuncts while prefixes such as *maŋ*- and μ-reduplication can form a minimal prosodic word with the root (triggering resyllabification and obligatory tapping cf. §5.4). The lack of adjunction for suffixes is in agreement with the universal tendency for suffixes to adhere more closely than prefixes to roots.

(29) $[\text{PREF-}[\text{PREF-ROOT-SUFF}]_{\omega}]_{\omega}$

Nominal derivation with the patient and locative voice affixes is more complex because it involves additional non-segmental morphology. In addition to affixation, as above, nominal derivation is signalled by a "flip morpheme" which adds a mora to every vowel of a "short root" (i.e. one which contains no underlying bimoraic vowels) and removes the vocalic mora from a "long root" (i.e. one which contains a bimoraic vowel in the penult). This morpheme also occurs in other morphological constructions and will be referred to here as μ-Flip.[14] Let us take a look at the above two roots with patient voice nominalizations. In (30), we see the root *bása* 'read' with a lexically specified bimoraic

[12] This is precisely the same situation as has been observed with certain prefixes by Booij (1996) for Dutch and Peperkamp (1997) for Italian dialects.

[13] The use of the *mag*- ACTOR VOICE prefix, as opposed to <*um*>, can convey an intensive action meaning to the stem. This is not glossed here as it is not a consistent semantic component of *mag*- but rather exists paradigmatically with a certain set of roots which ordinarily take <*um*>, such as *inom* 'drink'.

[14] Such flip morphemes are cross-linguistically rare and have been argued to be ruled out by universal grammar because of their non-concatenative and highly base-dependent nature (Stoneham 1994). Nonetheless, there appears to be no other plausible analysis of the facts then to posit such a process (cf. Carrier 1971:113-18, Himmelmann 1991).

vowel in the penult. The μ-Flip morpheme removes this mora and the resulting derivation contains no length, thus being stressed on the ultima by the default iambic foot. In (31), the root *inom* ‘drink’, which contains no bimoraic vowel in the input, emerges with a long vowel in the antepenultimate and penultimate syllables after composition with μ-Flip. The penultimate syllable is stressed because it contains a long vowel and is within the stress window.

(30)	/ba:sa/ +	/-in/ +	μ-Flip	⇨	[ba(sahín)]$_{\omega}$
	read	PV	NMLZ		‘readings’

(31)	/inum/ +	/-in/ +	μ-Flip	⇨	[ʔi:(nú:min)]$_{\omega}$
	drink	PV	NMLZ		‘a drink’

Note that the final syllable in (31) does not surface with length as a result of μ-Flip. This, is because it would create an extra-heavy syllable, a configuration which is militated against by the undominated constraint $*\sigma_{\mu\mu\mu}$.[15] On the other hand, μ-Flip is clearly not structure preserving in respect to the otherwise good generalization that long vowels only appear in the penult. We find that length can be assigned indefinitely far from the right edge of the word as shown by longer roots such the one in (32). In these cases, the penult always receives the stress because the foot is strictly aligned to the right edge of the word.[16]

(32)	/himataj +	-in/ +	μ-Flip	⇨	[hi:ma:(tá:jin)]$_{\omega}$
	faint	PV	NMLZ		‘one who is prone to fainting’

This same μ-Flip morpheme is also active in deriving agent nominalizations with prefixed stems. These constructions are formed with the actor voice distributive prefix *maŋ-*, CV-reduplication and μ-Flip. In (33), because the root does not contain a bimoraic vowel, μ-Flip adds a mora to all vowels. In (34), because the root contains a bimoraic vowel, μ-Flip simply removes the second mora.

(33)	/maŋ-	+ μ-REDP +	laruʔ/ +	μ-Flip	⇨	[manla:(lá:ruʔ)]$_{\omega}$
	AV.DIST	NMLZ	play	NMLZ		‘player’

[15] This would appear to pose problems for a derivational analysis as resyllabification would have to take place between two elements of the same morpheme; the nominalization morpheme which is, despite first appearances, not decomposible, contains both *-in* and μ-Flip. Crucially, length appears in open syllables after addition of *-in* and resyllabification. A derivational analysis would have to rely on adding and deleting length, a typical Duke-of-York derivation (Pullum, 1976).

[16] This leads to the question of how these long vowels get parsed in view of the earlier analysis of stress and length. This can be handled by ranking a REALIZE-MORPH constraint (Kurisu, 2001) enforcing the realization of μ-Flip higher than WEIGHT-TO-STRESS and FAITH-μ. The basic ranking would look like (i). Incidentally, this offers a ranking argument for $*\sigma_{\mu\mu\mu} >> \mu\mu=\acute{\sigma}$.

(i) $*\sigma_{\mu\mu\mu}$ >> *REALIZE MORPH (μ-Flip) >> $\mu\mu=\acute{\sigma}$ >> FAITH-μ

(34) /maŋ- + μ-REDP + i:big/ + μ-Flip ⇨ [maŋiŋ(ibíg)]$_{\omega}$
AV.DIST NMLZ love NMLZ 'lover'

This concludes our discussion of root and affix morphophonology. In the next section we will move beyond the domain of the minimal word and investigate the behavior of clitics.

5.0 Above the minimal prosodic word

5.1 The prosodic hierarchy and the prosody-syntax interface

Since the earlier work of Selkirk (1981, 1986), Inkelas (1989), and Nespor & Vogel (1982, 1983, 1986) the hypothesis that phonology does not make direct reference to syntactic categories has become widely accepted. Under this view, The function of mediating between morphosyntactic representation and phonology is left to prosodic structure. Phonological processes are restricted to taking place within certain prosodic domains or on certain prosodic boundaries and may also be blocked by the intervention of such boundaries.

Prosodic structure is built upon morphosyntactic syntactic structure but not necessarily homologous to it. The categories which can be referenced by phonology are limited and well-defined. The currently popular version of the prosodic hierarchy adopted here (beginning from the level of the prosodic word) is shown in (35) (Selkirk, 1978).[17]

(35)
Utterance (U)
|
Intonational Phrase (iP) (≈IP,CP, etc.)
|
Prosodic Phrase (ϕ) (≈NP,DP,PP, etc.)
|
Prosodic Word (ω) (≈MWd)

As symbolized above, there is a loose correspondence between the morphological and prosodic word, between the syntactic and prosodic phrase and finally between the clausal categories and the intonational phrase. This correspondence is enforced by constraints which align prosodic categories to corresponding morphosyntactic categories. Due to the mitigation of other constraints, however, the alignment is often imperfect.

Prosodic well-formedness was originally posited by Selkirk (1980) to fall out from the strict layer hypothesis, as stated in (36) (cf. Nespor & Vogel 1986).

(36) **Strict layer hypothesis**
"A prosodic constituent of rank N is immediately dominated by a single constituent of rank n+1"

[17] As will become clearer below, the status of the foot is uncertain in Tagalog and its inclusion perhaps unwarranted.

This principle was later to seen to be too monolithic, as it subsumed several distinct constraints (Nespor & Vogel, 1986:7), some of which turned out to be commonly violated. The strict layer hypothesis was consequently decomposed by Ito & Mester (1992/2003) into four component parts, as shown in (37) (where C^i represents a prosodic category of level *i*).

(37) **Layeredness:** No C^i dominates a C^j where $j > i$
(e.g., no ω contains a ϕ)
Headedness: Every C^i directly dominates some C^j where $j \geq i - 1$
(e.g. a ϕ must dominate a ω)
Exhaustivity: No C^i directly dominates a C^j where $j < i - 1$
(e.g., no iP directly dominates a ω)
Non-recursivity: No C^i directly dominates another C^i
(e.g., no ω contains another ω; adjunction structures do not exist)

Layeredness and headedness are considered inviolable, either as a result of a univerally high ranking of their respective constraints or as a result of restrictions on admissible representations. Exhaustivity and non-recursivity, on the other hand, are now widely considered violable constraints. To demonstrate under what conditions these structural constraints may be violated we return to Tagalog.

Recall that prosodic words in Tagalog are subject to a minimality requirement. This can now be expressed as a result of HEADEDNESS on the prosodic word level. A prosodic word must contain at least one foot (and a foot, in turn, must be branching on the mora level). This constraint is obeyed by all native lexical words via disyllabicism due to the mapping between lexical words and prosodic words as formulated in (38).

(38) ALIGN (MWd_{Lex} L,R; PWd L,R)
For every lexical grammatical/morphological word (ROOT+AFFIXES) there exists a prosodic word such that the L and R edges of the prosodic word are aligned with the L and R edges of the grammatical word

In addition to the creation and alignment of prosodic words to fit lexical words, there exists the more general constraint which demands that the entire output is parsed on the level of the level of the prosodic word. This is the exhaustivity constraint from (37), whose relevant version – simplifying slightly for our purposes – can be stated as in (39).

(39) EXHAUSTIVITY (PWd)
All material must be parsed into a prosodic word

Exhaustivity, as formulated here, is blind to the nature of the parsed material. Thus, it includes functional and hence potentially monosyllabic elements. When we add NON-RECURSIVITY into our set of basic constraints, it becomes clear that an input which contains a monosyllabic function word cannot avoid a violation of at least one of the constraints listed in (37), above. All of the plausible parsings of a monosyllabic clitic and its host are shown in (40), with their correspondent violations.

(40)	a.	[[HOST]$_{\omega}$=1σCL]$_{\omega}$	violated: NON-RECURSIVITY (PWd)
	b.	[HOST]$_{\omega}$=1σCL	violated: EXHAUSTIVITY (PWd)
	c.	[HOST=1σCL]$_{\omega}$	violated: ALIGN-MWd
	d.	[HOST]$_{\omega}$[=1σCL]$_{\omega}$	violated: HEADEDNESS (PWd)

The parsing in (40)a contains a prosodic word within a prosodic word, thus violating NON-RECURSIVITY; (40)b leaves the clitic unparsed at the level of the prosodic word – presumably to be parsed at the level of the phrase – thus, triggering a violation of EXHAUSTIVITY; (40)c parses the entire HOST+CLITIC constituent as a single prosodic word, violating ALIGN MWd in not aligning a right prosodic word edge to the right edge of a lexical word; (40)d parses the host and the clitic as separate prosodic word constituents, but because the clitic is monomoraic and cannot contain a foot, it now violates HEADEDNESS.

As will be argued in the following sections, the correct structure for Tagalog enclitics is the one in (40)a, termed "affixal clitics" by Selkirk (1996). This parsing is the natural outcome of the ranking in (41). (The ranking of HEADEDNESS and LAYEREDNESS is not shown, as they are considered universally inviolable.)

(41) **Ranking for affixal clitics**

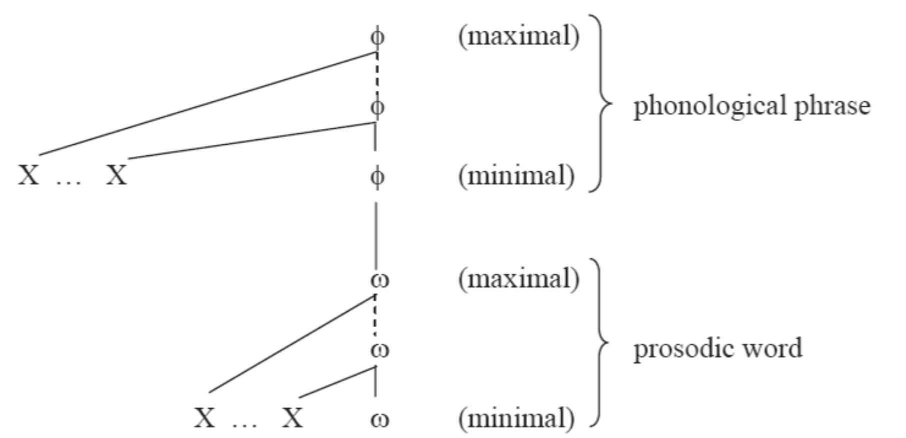
ALIGN-MWd   EXHAUSTIVITY-PWd

NON-RECURSIVITY-PWd

The result is that a prosodic word can be composed of several segments. In recent work, Ito & Mester (2006, 2007) have advocated against the proliferation of prosodic categories in favor of reference to minimal and maximal projections. Under this conception, adjunction takes the form as shown in figure 1, and minimal and maximal are defined as in (42). Phonological processes can now make reference to a minimal or maximal prosodic word. (Reference to the smaller category will imply reference to the larger category as well.)

(42) $C_{max} =_{def}$ not dominated by C
$C_{min} =_{def}$ not dominating C

Figure 1. Minimal and maximal prosodic categories (Ito & Mester 2006)



5.2 The prosodification of Tagalog clitics

In this section we introduce Tagalog clitics and some of their defining properties. We then work backwards, introducing first some additional principles of prosodic domain formation and arguing for a particular view of prosodification in Tagalog before offering the phonological evidence in the following sections.

Tagalog possesses pronominal and adverbial clitics. The Tagalog pronominal paradigm is listed in table 1. There exist both free and clitic sets of nominative and genitive pronouns which are differentiated primarily by their position in the sentence. The free set may appear in clause initial position while the clitic set must appear in second position. In the case of the nominatives, only the second person singular differs in form from its free counterpart. In more formal language, pronouns of the oblique set are positioned as free elements but in the spoken language these too may take second position.

Table 1. Tagalog pronominals

Trad. labels	Gloss	Features	NOM	GEN	NOM	GEN	OBL
			CLITIC		FREE		
1st sing.	1S	[1]	*=ako*	*=ko*	*ako*	*ákin*	*sa ákin*
2nd sing.	2S	[2]	*=ka*	*=mo*	*ikaw*	*iyo*	*sa iyo*
3rd sing.	3S	[∅]	*=siya*	*=niya*	*siya*	*kaniya*	*sa kaniya*
1st excl. pl.	1+3	[1, p]	*=kami*	*=námin*	*kami*	*ámin*	*sa ámin*
(1st dual)	1+2	[1,2]	*=kata/kita*	*=ta*	*kata/kita*	*kanita*	*sa kanita*
1st incl. pl.	1+2P	[1,2,p]	*=táyo*	*=nátin*	*táyo*	*átin*	*sa átin*
2nd pl.	2P	[2,p]	*=kayo*	*=ninyo*	*kayo*	*inyo*	*sa inyo*
3rd pl.	3P	[∅,p]	*=sila*	*=nila*	*sila*	*kanila*	*sa kanila*
			Portmanteau forms: [1.GEN+2.NOM] *=kita, kita*				

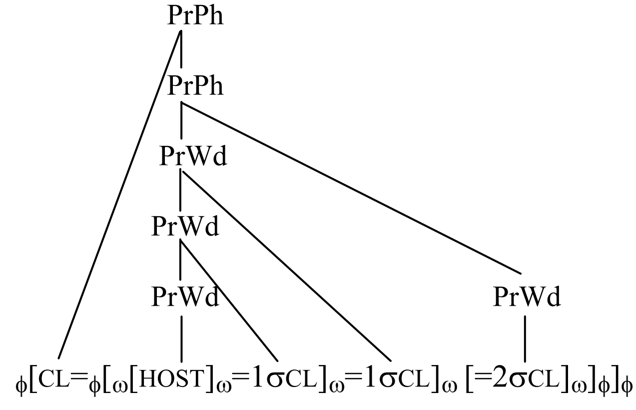
Table 2. Tagalog adverbial clitics

	CLITIC	FREE
aspect	*=na* ‘already’	∅
	=pa ‘still’	∅
focus	*=din* ‘also’	∅
	=man ‘even’	∅
	=naman ‘switch topic’	(*naman*)
	=ngà ‘emphasis’	∅
	=lang ‘only’ *=lámang*	∅ *lámang*
	=talaga ‘emphasis’	*talaga*
politeness	*=pò*, *=hò* ‘politeness’	∅
mood	*=pala* ‘surprise’	∅
	=yátà ‘perhaps’	∅
	=sána ‘hopefully’	*sána*
	=náwa ‘hopefully’	*náwa*
	=ba ‘question marker’ (*=baga*)	∅ (*baga*)
	=daw reported speech	∅

Two important facts can be gleaned immediately from the tables above: (i) unlike disyllabic morphemes, monosyllabic morphemes (i.e. *=ko, =mo, =ta, =ka, =na, =pa, etc.*) are always enclitic and (ii) disyllabic morphemes can also bear length (and consequently stress). This second property sets Tagalog clitics apart from general expectations concerning the prosodic status of clitics. In fact, the inability to bear stress is often cited as a defining feature of clitics (Zwicky 1977).

The prosodic structure defended here for Tagalog clitics is shown in (43), expanded to include every type of element. According to this structure, enclitics are adjuncts to the prosodic word and trigger recursion of this category, creating an embedded structure. Disyllabic clitics, are independent prosodic words which are parsed directly by the prosodic phrase as adjuncts. Proclitics, monosyllabic or otherwise, must attach to the prosodic phrase as recursive adjuncts. The entire host plus clitic complex is then subsumed under a single prosodic phrase.

(43)



The unorthodox nature of prosodic words which are at the same time clitics requires some comment. Much current work (Inkelas 1989, Selkirk 1995, van der Leeuw 1997, Zec 2005, Anderson 2006) accepts a strict dichotomy between prosodic words and prosodic affixes. The former are considered independent elements which often must satisfy minimality requirements while the latter are prosodically deficient elements whose position may furthermore be specified in the lexicon (Inkelas, 1989; Zec & Inkelas, 1990) or determined by LEFTMOST constraints (Legendre, 2000). The syntactic depedency of second-position clitics is often mirrored by a phonological dependency and thus no conflict arises in classifying such clitics as being both syntactically and prosodically dependent. Halpern (1995:14) offers two "rules of thumb" for diagnosing clitics (i) being (lexically) stressless/accentless and (ii) occupying one of a characteristic set of positions (second position, adjacent to the predicate of a clause, etc.). Tagalog offers clear evidence that these two "rules of thumb" need not agree in their diagnosis, supporting a theory in which syntactic dependency is not contingent on prosodic dependency.

As discussed above, there is a bimoraic minimality requirement on prosodic words in Tagalog. For lexical words, this constraint is respected by their underlying form, that is, in the lexicon. Function words, however, need not fufill this requirement in the lexicon as they always occur adjacent to other material within an utterance. This is evident by the presence of (unaugmented) monosyllabic pronouns, case markers and complementizers in Tagalog. Such items are obligatory clitics which attach to prosodic words or phrases. A monosyllabic pronoun such as *ka* 2S.NOM, or adverb such as *na* 'already' can never stand in clause initial position as a result of their prosodic deficiency, as shown in (44) and (45).

(44) **Ka ay nag-lútò ng=ampalaya*
1S.NOM TOP AV.PRF-cook GEN=bitter.melon
(for, 'You cooked bitter melon')

b. *Nag-lútó=ka ng=ampalaya*
AV.PRF-cook=1S.NOM GEN=bitter.melon
'You cooked bitter melon'

(45) **Na ay nag-lútó=sila*
ALR TOP AV-cook=3P.NOM
(for, 'Already, they cooked.')

b. *Mag-lútó=na=sila*
AV-cook=ALR=3P.NOM
'They cooked already.'

In contrast, disyllabic pronouns have "homophonous" non-clitic counterparts which *are* able to occupy clause initial position (by virtue of topicalization, clefting, etc.).[18] Compare the (a) and (b) sentences in (46), with a disyllabic pronominal, and (47) with a disyllabic clitic adverb.

[18] This only applies to nominative pronouns as genitive pronouns are banned from initial position by a general syntactic constraint which is also operative for phrasal arguments.

(46) *Kami ay nag-lútò ng=ampalaya*
1P.NOM TOP AV.PRF-cook GEN=bitter.melon
'We cooked bitter melon'

b. *Nag-lútó=kami ng=ampalaya*
AV.PRF-cook=1P.NOM GEN=bitter.melon
'We cooked bitter melon'

(47) *Sána ay mag-lútó=sila*
OPT TOP AV-cook=3P.NOM
'Hopefully, they will cook.'

b. *Mag-lútó=sána=sila*
AV-cook=OPT=3P.NOM
'Hopefully, they will cook.'

Prosodically, there is no difference at all between the clitic and free versions of these morphemes. In both positions they fufill prosodic word requirements and may receive prosodic prominence under the right conditions. The sole difference then is that in the (a) sentences they are syntactically free while in the (b) sentences they are syntactically dependent on a host to their left. This is a striking constrast to the situation found in Slavic and Romance where clitics are phonologically (regularly or irregularly) reduced versions of full pronominals.[19] In these language families, if clitics are not segmentally reduced then they are at least prosodically reduced as manifested by their inability to receive prosodic prominence.

In Tagalog, where no such pattern of reduction is apparent, stipulating that the disyllabic elements above are anything less than prosodic words when they occupy clitic position amounts to an ad-hoc stipultation in the absence of supporting phonological evidence. The approach taken here is that there is no inherent conflict between prosodic word status and clitichood, which is interpreted here as primarily a syntactic deficiency. Note that there is somewhat of a parallel in morphosyntax if we compare the morphologically bound behavior of independent words in compounding and incorporation. We would not want to strip the word *bear* of its morphological word status when it is incorporated in a word like *bear-hunting*. Rather, some type of embedded word structure (e.g. [[*bear*]*hunting*]) would seem more appropriate to express the fact that both components are syntactically free elements on an underlying level (Anderson 2005, chap.9). Thus, under the view espoused here, a prosodically deficient element must be prosodized as a clitic in order to be parsed by the phonology, but a morpheme need not be

[19] This generalization does not hold true across the board. Zec (2005:93-95) discusses a generally similar situation for Serbo-Croatian where several functional elements have homophonous free and clitic forms. In the case of Serbo-Croatian, however, there is external evidence from prominence relations that the clitic forms are not prosodic words. This type of evidence is entirely lacking in Tagalog.

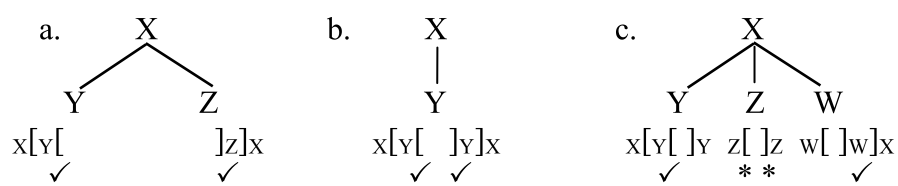
deficient in order to be specified as a clitic in the lexicon. Prosodic deficiency thus emerges as only one ingredient in the characterization of clitics.[20]

We can now query other aspects of the structure in (43). As noted above, enclisis triggers recursion.[21] Here, prosodic structure is motivated only by alignment constraints between morphological and prosodic categories and a constraint on parsing phonological material at every level of the prosodic hierarchy. Simultaneously, domain formation is restricted by constraints on well-formedness for prosodic trees.

One of the principles of well-formedness which is involved in adjudicating between recursive adjunction, (e.g. $]_{\omega}\, X]_{\omega}\ Y]_{\omega}$) and flat adjunction (e.g. $]_{\omega}\, X\ \ Y]_{\omega}$), is the constraint on binary branching (cf. Ito & Mester, 1992/2003, 2006; Selkirk, 2000) termed HIERARCHICAL ALIGNMENT, adopted here from Ito & Mester (1996) and defined in (48).

(48) HIERARCHICAL ALIGNMENT
Every prosodic constituent is aligned with some properly containing prosodic constituent
$\forall$PCat1 $\exists$PCat2 [PCat2 $\supset$ PCat1 & Align (PCat1, PCat2)]

Ito & Mester (1996) exemplify this constraint with the schematic prosodic representations in (49). The upper bound on branching structures is enforced by an alignment constraint which requires that an edge of every prosodic category is aligned to one of the edges of its containing category. In the binary branching and non-branching structures in (49), this constraint is satisfied. It is violated however in a ternary branching structure, in which neither of the edges belonging to the central daughter (Z), is aligned with an edge of its containing category (X).

(49)


[20] If the lexical specification for clitichood correlates with any systematically observable weakness in Tagalog it should correspond with “semantic weakness”. Second position clitics in Tagalog share functional and semantic commonalities which appear to determine their clitic status (Anderson 1992 *et seq*). We return to this topic in chapter 3, simply noting here that the presence of prosodic word clitics should not be a cause for concern.

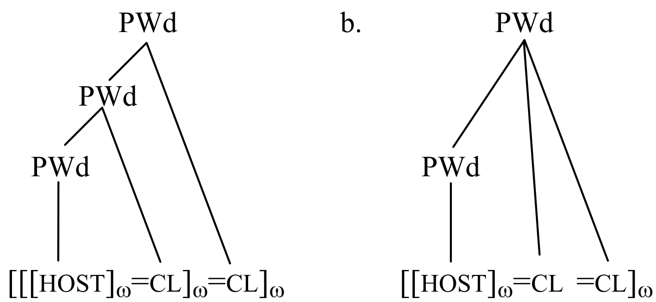
[21] In the framework of prosodic subcategorization (Inkelas, 1989; Zec & Inkelas, 1990) this falls out of the nature of the subcategorization frame, which takes the basic form of (i).

(i) $]_{\omega}$ __ $]_{\omega}$

Crucially, this frame specifies both the locus of attachment for a given morpheme and the prosodic category which results from attachment. This latter property of prosodic subcategorization appears to overlap in function with the basic constraints on prosodic domain formation. This is of course an anachronistic criticism, as the theory of prosodic subcategorization preceded that of constraint-based domain formation. However, these two methods for motivating prosodic structure are often taken to be co-present in the grammar.

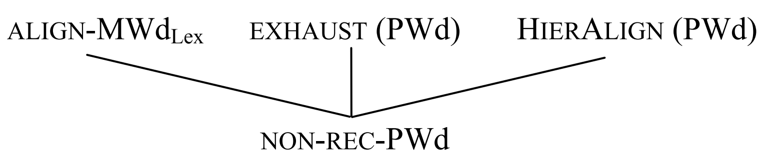
Crucially, recursive adjunction does not violate HIERARCHICAL ALIGNMENT and thus it is this constraint which does the work of the outer bracket in Inkelas's original prosodic subcategorization framework. In the case of recurisve adjunction to the right edge of a prosodic category, the left edge of the adjunct will always be aligned with the containing prosodic category. This can be seen by comparing (50)a and b, which illustrate two competing structures for enclitics. Only in (50)a is the leftmost enclitic aligned to the higher prosodic word.

(50) a. b.

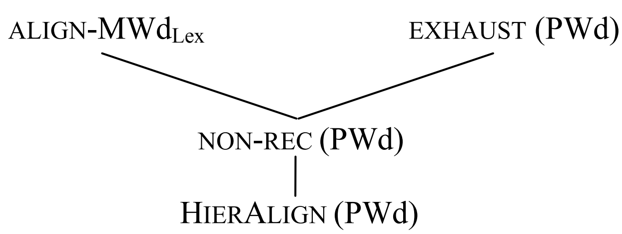


Recursive and flat adjunction are both permitted by the grammar and are derived by the rankings in (51) and (52), respectively. When HIERARCHICAL ALIGNMENT is ranked above NON-RECURSIVITY, a recursive adjunction structure is preferred, as it respects edge alignment with the containing category at the expense of adding an intermediate node. On the other hand, when HIERARCHICAL ALIGNMENT is ranked low, it will be preferable to keep recursion to a minimum at the expense of having an element which is unaligned to one of its mother's edges.

(51)



(52)



In the previous section we saw that EXHAUSTIVITY (PWd) required elements to be parsed on the level of the prosodic word. If this constraint were ranked low enough, we obtain clitics which are parsed directly by the prosodic phrase, i.e., the "free clitics" of Selkirk 1996. I argue that such a parsing is incorrect for Tagalog enclitics. Interestingly, however, there is good evidence that monosyllabic proclitics are of this type.[22] The

[22] This represents a counter-example to Ito & Mester's (2007) hypothesis that exhaustivity is inviolable on the level of the prosodic word. The evidence, as discussed in the following sections, does not appear

existence of two different types of clitics in the same grammar could potentially necessitate specifying constraints to refer to particular classes of clitics. This is analytically unattractive, as it detracts from the generality of the ranking (cf. Kaufman 2002). Fortunately, in our case, there is a clear syntactic explanation for the difference in prosodicization of the two types of clitics. While enclitics are made up of pronominals and adverbials, proclitics are uniformily phrasal heads which take complements to their right, specifically, the case markers *ang*, *ng* and *sa* and the conditional *kung*. As phrasal heads, their syntactic environment is quite different from that of enclitics. Crucially, there is a left phrasal boundary which intervenes between clitic and host, as shown in (53).

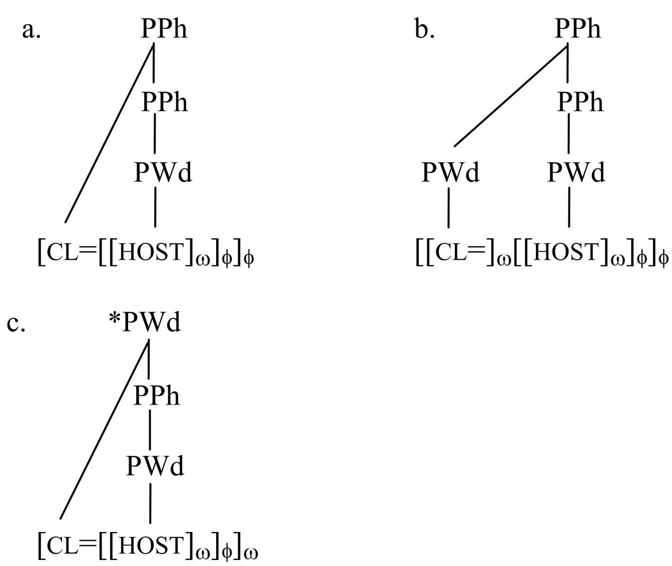
(53) a. $_{\text{CaseP}}$[*ang*=$_{\text{NP}}$[*gúrò*]]
NOM=teacher
'the teacher'

b. $_{\text{CP}}$[*kung*=$_{\text{IP}}$[*umalis*...]]
COND=left
'if SUBJ left'

Recall that, just as lexical words are aligned to prosodic words, syntactic phrases are also aligned to prosodic phrases. This is mandated by the alignment constraint in (54).

(54) ALIGN (XP L,R; PPh L,R)
For every overtly headed syntactic phrase, there exists a prosodic phrase such that the L and R edges of the prosodic phrase are aligned with the L and R edges of the syntactic phrase

Now, assuming that this correspondence is crisp, consider the effect of a left prosodic phrase boundary intervening between the clitic and its host. The clitic can either remain unparsed on the prosodic word level, as in (55)a, or be parsed in its own prosodic word, as in (55)b. Crucially, however, adjunction to the neighboring prosodic word, as in (55)c, requires that the prosodic word domaintes the prosodic phrase and is therefore ruled out by the inviolable principle of layeredness, as defined above.

(55)


amenable to an analysis in which proclitics are parsed by the prosodic word, either as adjuncts or independent constituents.

Monosyllabic proclitics cannot be parsed into their own prosodic word without violating HEADEDNESS, the constraint which requires prosodic words to be headed by a foot. As we will see, monosyllabic proclitics are left unparsed on the word level, as in (55)a. This incidentally gives us a ranking argument for ALIGN-XP dominating EXHAUSTIVITY (PWd), as the grammar prefers to leave the clitic unparsed by the prosodic word rather than misalign the edges of a prosodic phrase. The full ranking now appears as in (56).

(56) ALIGN-MWd_{Lex} ALIGN-XP HIERALIGN (PWd)

EXHAUST (PWd)

NON-REC (PWd)

This ranking results in all morphological words being parsed into prosodic word unless they both are (i) below the bimoraic minimality requirement and (ii) separated from adjacent prosodic words by phrase boundaries. Monosyllabic enclitics fail on (i) but never (ii), as they are second position clitics and thus never separated from their hosts by a syntactic phrase. Monosyllabic proclitics on the other hand, always fail on both (i) and (ii), only being able to achieve integration into the prosodic structure at the phrase level.

It should be mentioned here that although all native lexical words are underlyingly disyllabic, and thus automatically satisfy the minimality requirement imposed by ALIGN-$MWd_{LEX,}$ there do exist monosyllabic lexical loan words in Tagalog which do not satisfy this constraint automatically. ALIGN-MWd_{LEX} affects these monosyllabic elements in a different way, namely, by augmentation of vowel length.[23] This can be accounted for simply by the ranking shown in tableau 7. Because ALIGN-MWd_{LEX} dominates DEP-μ, vowels of lexical monosyllables will always be augmented to fufill the bimoraic requirement on prosodic words.[24] Monosyllabic clitics, as function words, do not trigger a violation of ALIGN MWd_{LEX} and thus undergo adjunction rather than augmentation.

Tableau 7. Monosyllabic lexical loans versus monosyllabic clitics

Input: /bɛl/$_{Lex}$ 'bell'	HEADED NESS	ALIGN MWd_{Lex}	DEP-μ	EXHAUST PWd
i.a. [bɛl]$_{\omega}$	*!			
i.b. ✓[bɛ:l]$_{\omega}$			*	
i.c. bɛl		*!		*
i.d. bɛ:l		*!	*	*

[23] S&O state (p.15):

"Monosyllabic words of native Tagalog origin – e.g the markers *ang, sa, si,* etc. – never have inherently long vowels. The vowels of monosyllabic loan-words from English and Spanish, on the other hand, are always inherently long."

[24] Note that this augmentation violates $*\sigma_{\mu\mu\mu}$, which was seen to be undominated in regard to the constraints considered earlier.

Input: /sa=/ OBL	HEADED NESS	ALIGN MWd_{Lex}	DEP-μ	EXHAUST PWd
ii.a. $[sa=]_\omega$	*!			
ii.b. $[sa:=]_\omega$			*!	
ii.c. ✓ sa=				*
ii.d. sa:=			*!	*

The final aspect of the parsing in (43) above which requires explanation is the fact that the HOST+ENCLITIC constituent can correspond to a prosodic phrase without being a syntactic phrase. Recall that prosodic parsing on the level of the prosodic word is motivated by two separate constraints: ALIGN-MWd_{LEX}, which matches morphological words with prosodic words, and EXHAUSTIVITY (PWd), which simply demands that all material be parsed on this particular level. The same duality is present for all prosodic categories. While ALIGN-XP matches syntactic phrases to syntactic phrases EXHAUSTIVITY (PPh) demands that all material be parsed on the level of the prosodic phrase, irrelevant of its X-bar status. This latter constraint allows for the alignment of prosodic phrases to non-phrasal categories.

In most discussions of prosodic phrases, the languages examined are those in which the verb phrase is a surface constituent in the unmarked case. Tagalog is generally not considered such a language. Most syntactic analyses involve the verb moving out of the verb phrase to a higher projection which is generally occupied by the head of the predicate (cf. Aldridge, 2004; Richards, 2000; *inter alia*). Under this view, even when the verb and its object are adjacent in surface structure, they are still separated by at least one phrase boundary due to the requirement that the predicate raise. This is represented schematically in (57), with the brackets symbolizing syntactic phrase boudaries.

(57) $_{IP}[[V_i]\ _{VP}[t_i\ _{KP}[\text{CaseP}]]]$

In (57), the phrase containing the predicate head at surface structure is a functional projection. It is thus not included in the scope of ALIGN-XP as defined above in (54). Keeping this in mind, let us now look at the three plausible ways for the structure in (57) to be parsed by the phonology, shown in (58).

(58) a. [*nag-bigay*] [*ng*=[*pérà*]]
AV.PST-give GEN=money
'SUBJ gave money'

b. [*nag-bigay* [*ng*=[*pérà*]]]

c. *nag-bigay* [*ng*=[*pérà*]]

As we have already seen, the basic parse of the Case Phrase must be as shown in (58) due to ranking discussed above. The verb (and its clitic dependents), however, will not be targeted by ALIGN-XP but will rather be parsed by virtue of the more general EXHAUSTIVITY (PPh). This results in the non-phrasal "leftovers" being parsed into a single phrase. In careful speech, there appears to be a maximality constraint on prosodic phrases which effects parsing, as stated in (59), and a minimality constraint, as in (60), which is the phrasal analogue of foot binarity (FTBIN) (cf. Sandalo & Truckenbrodt, 2002).

(59) MAX-BIN (PPh)
Prosodic phrases consist maximally of two prosodic words

(60) MIN-BIN (PPh)
Prosodic phrases consist minimally of two prosodic words

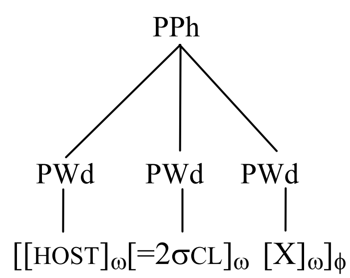
The ranking of these two constraints will decide between two possible parsings of strings containing odd numbered prosodic words as shown in (61). If the maximality requirement is higher ranked then odd words out will be phrased alone. If the minimality requirement is higher ranked then prosodic word triplets may be parsed together into one prosodic phrase.

(61) a. MAX-BIN (PPh) >> MIN-BIN (PPh) = [PWd_1 PWd_2] [PWd_3]
b. MIN-BIN (PPh) >> MAX-BIN (PPh) = [PWd_1 PWd_2 PWd_3]

All else being equal, the parsing in (61)b is preferred in Tagalog, and thus MIN-BIN is taken to dominate MAX-BIN. But because of the dependence on speech rate and register, we will treat the choice between splitting, as in (61)a, and wrapping, as in (61)b, as optional. This is supported by the phonological rules which refer to prosodic phrases discussed below but will not be crucial to what follows and will thus be omitted from the following tableux for the sake of simplicity.[25]

Finally, we note that prosodic phrases differ from the other categories discussed here in their ranking of HIERARCHICAL ALIGNMENT (PPh). This means that, as long as no lexically headed syntactic phrase intervenes, which would trigger a violation of ALIGN-XP), constituents may be parsed into a flat adjunction structure on the prosodic phrase level, for instance, as in (62).[26]

(62)



[25] Richards (2006), under different theoretical assumptions, offers intonational evidence for treating Tagalog as a "moderate wrapping" language (cf. Büring, 2006). This entails that the verb (or other predicate head) is always phrased with following material.
[26] Ito & Mester (2007) note the desirability of doing away with parochial constraints referring to particular prosodic levels. Instead, apparent parochiality should be derived from the natural properties of higher versus lower prosodic levels. This program lays out a clear direction for further research but for present purposes, I maintain parochial constraints to facilitate a simpler analysis.

In this subsection, the fundamental prosodic phrasing in (43), repeated here in (63), has been posited for Tagalog and motivated by the interaction of several constraints enforcing full prosodic parsing and a correspondence between morphosyntactic and prosodic categories.

(63) $[\text{CL}{=}[[[\text{HOST}]_{\omega}{=}1\sigma\text{CL}]_{\omega}{=}1\sigma\text{CL}]_{\omega}\ [{=}2\sigma\text{CL}]_{\omega}]_{\phi}]_{\phi}$

In order to justify the above parsing we now inspect the empirical data: clitic interactions with regular phonological and prosodic processes. The relevant phenomena here are vowel lowering (§5.3), tapping (§5.4), glottal stop deletion (§5.5), phrasal prominence (§5.6) and function word reduction (§5.7). We will look at the evidence from these in turn.

5.3 Vowel lowering

Vowel lowering in Tagalog effects /i/ and /u/ turning them into [ɛ] and [ɔ], respectively, in the final syllable of a domain which is claimed here to be as small as the prosodic word or as large as the prosodic phrase.[27] This is more salient and regular with the back vowel (Gonzalez, 1970), which will be used in most of the examples here. The lowering rule is given in (64) (cf. Zuraw 2000, 2002).

(64) *vowel lowering rule*

$$\underset{[+\text{high}]}{\text{V}} \Rightarrow \underset{[-\text{high}]}{\text{V}} \ / \ [\_\_]_{\sigma}]_{\omega-\phi}$$

Taking the word *bato* 'stone' as a single word utterance, we find that lowering occurs obligatorily, as in (65). When a root containing a final high vowel is suffixed, lowering is prevented as shown by (66).

(65) [batɔ] cf. *[bat**u**]
/batu/
stone

(66) [bat**u**hin] cf. *[batɔhin]
/batu-hin/
stone-PV
'to throw stones at SUBJ'

[27] It is worth quoting Bloomfield (1917:134,135) here in full as he describes the process as "phrasal":
"In the final syllable of a phrase (or of a word spoken alone) the tongue position of i and u is as a rule lowered, often all the way to mid-position; the tenseness and lip position are, however, kept, so that the resulting sound often resembles è and lower o...Within a closely unified phrase the lowering is as a rule omitted: ulí siya again he (ulèʔ) hintú na! Stop! (hintòʔ). In this regard the habits are variable; the form chosen depends mostly on the speakers momentary attitude toward the closeness of joining of the words."

Lowering is optional at word-internal junctures involving foot (Σ) reduplication (Carrier's 1979 "R2") and compounding.[28] The stem-initial reduplicant in (67) and the first member of the compound in (68) can be pronounced with or without lowering.[29]

(67) [bat**u** batɔ] ~ [bat**ɔ** batɔ]
/batu≈batu/
COLL≈stone
'bunch of stones'

(68) [ʔam**u**j tʃíkɔ] ~ [ʔamɔj tʃíkɔ]
/amuj tsíku/
smell sapodilla
'a sapodilla (alcohol) smell'

The possibility of lowering in pre-final compound members and foot reduplicants suggests that these morphological constituents are parsed into their own prosodic words. This is further supported by evidence from epenthesis in vowel-initial bases. In (69), the vowel-initial base /agad/ is subject to foot reduplication, but the coda of the reduplicant cannot resyllabify as the onset of the base.

(69) [.ʔa.gad.ʔa.gad] cf. *[ʔa.ga.da.gad]
/agad≈agad/
INTNS≈immediate
'immediately'

Furthermore, a stress window exists in both elements of these constructions. This can be seen in (70), where both the base and reduplicant display the lexically specified length. Erasure of length in the reduplicant is disallowed.

(70) [b**a:**hajb**a:**haj] cf. *[bahajba:haj]
/ba:haj≈ba:haj/
DIST≈house
'house by house'

At the same time, the optionality of vowel lowering on non-final compound members and foot reduplicants suggests that these elements are simultaneously final and non-final within the prosodic word domain. We can thus assign the recursive structures in (71) and

---

[28] Foot reduplication is employed in several different morphological constructions, most commonly, the collective, intensive, moderative, and as an negative polarity item meaning 'not at all'. These different functions correspond with the use of other affixes in conjunction with reduplication.

[29] Lowering in a reduplicant is attested in non-formal written language. The idiom *batu-batu sa langit* returned 2,030 hits on Google (4/21/07) without lowering on the reduplicant and 681 hits with lowering (*batu-bato)*. It is not clear however if the unexpected lowering reflects an optional pronounciation or a (unofficial) orthographic convention. (See also Zuraw 2002 for another possible explanation.)

(72), in which both elements constitute prosodic words which are subsumed by a larger prosodic word which is coextensive with the larger grammatical word.[30]

(71) [[Σ≈]$_{\omega}$[ROOT]$_{\omega}$]$_{\omega max}$ (foot reduplication)

(72) [[ROOT]$_{\omega}$[ROOT]$_{\omega}$]$_{\omega max}$ (compounding)

Having established the prosodification of reduplication and compounding, observe now that when a word-final high-vowel is sentence medial, as when it is followed by a short prepositional phrase, lowering is clearly the unmarked option (contra Carrier 1979:161). This is shown in (73). Maintaining the mapping of lexically headed syntactic phrases to prosodic phrases, the prosodic structure of (73) is as in (74).

(73) [ʔaŋ maŋa batɔ sa daʔan] cf. ?*[ʔaŋ maŋa bat**u** sa daʔan]
/aŋ=maŋa=batu sa=daan/
NOM=PL=stone OBL=road
'the stones on the road'

(74) [ʔaŋ=maŋa=batɔ]$_{\phi}$ [sa=daʔan]$_{\phi}$
NOM=PL=stone OBL=road

The inability of a following prosodic phrase to block lowering suggests that the maximal domain of lowering is either at the right edge of maximal prosodic words or prosodic phrases. Assuming for now that this domain is the maximal prosodic word, when vowel lowering takes structures like (71) and (72) as its input, it may apply either to all prosodic words, in which case both morpheme-final vowels are lowered, or to only maximal prosodic words, in which case only the vowel of the entire word is lowered.

Moving on to clitics, we find that behavior is also mixed. When a clitic follows a word ending in a high-vowel, lowering is optional, as can be seen by the variation in (75)-(76).

(75) [batɔ kɔ] ~ [bat**u** kɔ]
/batu=ku/
stone=1S.GEN
'my stone'

(76) [sa:bɛ kɔ] ~ [sa:b**i** kɔ]
/sa:bi=ku/
say=1S.GEN
'I said'

[30] I depart here from Zuraw's (2006) analysis in which these constructions are treated as having either the structure [[1]$_{\omega}$[2]$_{\omega}$]$_{\omega}$ or [1[2]$_{\omega}$]$_{\omega}$. In general, I attempt to derive the attested variation via optionality in the domain of rule application while for Zuraw, this is done via optionality of structure. Some of the advantages of positing a uniform structure are discussed at the end of §5.4.

This is the same variation attested at the right edge of prosodic words in compounding and reduplication and thus suggests that the host is still adjacent to the right edge of a prosodic word in the case of clisis. If clitics were incorporated into the same minimal prosodic word as the host – as suffixes are – then lowering should be impossible in the host in a HOST+ENCLITIC constituent. The structure for (75) should thus be made parallel to (77), with the variation being governed by parametrization of the lowering domain.[31]

(77) a. [[batɔ]$_{\omega}$=kɔ]$_{\omega}$
stone=1S.GEN
'my stone'
lowering: PrWd

b. [[bat**u**]$_{\omega}$=kɔ]$_{\omega}$
stone=1S.GEN
'my stone'
lowering: $PrWd^{max}$

If this analysis is correct, we expect to find an asymmetry in regard to monosyllabic proclitics. While enclitics coincide with the right prosodic word edge, monosyllabic proclitics do not coincide with the right edge of any prosodic category, as is made clear by the structure in (78). Lowering should therefore not apply to such proclitics. This prediction is borne out by the monosyllabic function word *kung* COMP/COND as shown by (79).[32]

(78) [CL=[HOST]$_{\omega}$]$_{\phi}$

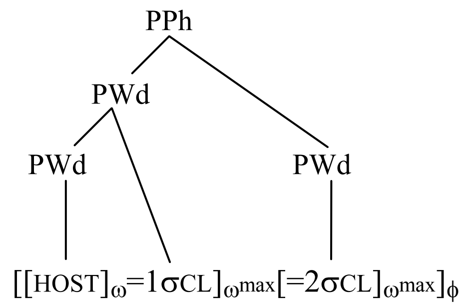
(79) [k**u**ŋ maglu:tɔʔ] cf. *[kɔŋ=[mag-lu:tɔʔ]
/kuŋ=mag-lu:tuʔ/
COND=AV-cook
'if cooking…'

Further predictions are made about structures which contain multiple enclitics and those which contain both foot reduplication and enclitics. In cases such as these we expect that the parametrized choice of the lowering domain applies consistently within, at least, a single HOST+CLITIC complex.

Keeping in line with the parsing posited in (43), monosyllabic clitics adjoin to the prosodic word to their left while polysyllabic clitics form prosodic words of their own, which are then parsed directly by the prosodic phrase. Because of HIERARCHICAL ALIGNMENT (PWd), each monosyllabic clitic adjoins to an individual segment, creating an embedded structure, shown in (80).

[31] Lowering at the right edge of the prosodic word, as in (77)a, also implies lowering at the right edge of the prosodic phrase. This is clear from the obligatory lowering in the clitic *ko*, which does not constitute a prosodic word on its own. Note that the optionality cannot be the result of prosodic restructuring – parsing the entire constituent as a prosodic word – because restructuring would also effect the stress pattern, which remains stable regardless of lowering.
[32] The proclitic status of *kung* is further supported by its inability to host enclitics, as will be discussed in the following chapter.

(80)



A structure like (80), also allows us to disambiguate the maximal prosodic word from the prosodic phrase as it contains two maximal prosodic words, only the second of which is adjacent to the right edge of the prosodic phrase. A convenient instantiation of this structure is given in (81). In (82), we see the plausible phonetic outcomes of the lowering rule, along with their grammaticality.[33]

(81) /p<in>a:luʔ=mu=aku/
<PV.PRF>beat=2S.GEN=1S.NOM
'You beat me.'

(82)
a. *[pina:l**u**: m**u** ʔak**u**] *no lowering*
b. ✓[pina:l**u**: m**u** ʔakɔ] *lowering domain*: $]_{\phi}$
c. ✓[pina:l**u**: mɔ ʔakɔ] *lowering domain*: $]_{\omega max}$
d. ✓[pina:lɔ: mɔ ʔakɔ] *lowering domain*: $]_{\omega}$

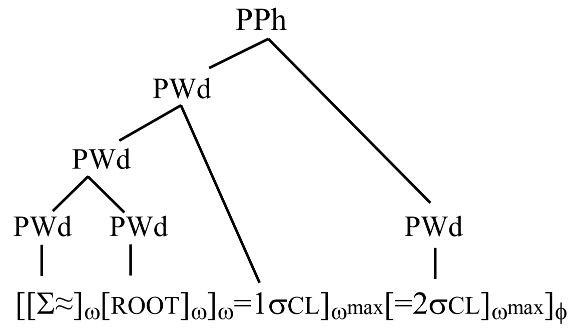
As indicated by the grammaticality of (82)b-d, lowering can take any of three prosodic category edges as its domain of application. Crucially, this rules out inconsistent application, as in (83). In order to arrive at the output of (83), lowering would have to take place at the right edge of a non-maximal prosodic word (i.e. the host), but not at the right edge of a maximal prosodic word (i.e. the host plus monosyllabic clitic).

(83) *[pina:lɔ: m**u** ʔak**o**]

The same type of predictions made for multiple clitics also hold for structures in which foot reduplication and enclisis cooccur. Adding verbal foot reduplication – which appears identical in behavior to compounding – to the structure in (80), we arrive at the prosodic tree in (84), exemplified by the sentence in (85).

[33] The glottal coda deletion rule also applies here. This is discussed in §5.6 below.

(84)



(85) /p<in>a:luʔ≈pa:luʔ=mu=aku/
<PV.PRF>ITR≈beat=2S.GEN=1S.NOM
'You beat me repeatedly.'

The possible realization of (85) are consistent with the analysis, as shown in (86). If the lowering domain is the prosodic phrase or the maximal prosodic word, then lowering in the reduplicant is impossible, as exemplified by (86)a.ii and (86)b.ii. If the domain is the prosodic word, however, it is not clear that raising is required in the reduplicant, as shown by (86)c.i. If (86)c.i does turn out to be fully acceptable, this can perhaps be accounted for as an effect of being internal to the grammatical word (although only at the expense of the strict version of the hypothesis which disallows reference to morphosyntactic categories by phonological rules).

(86) a.i. ✓[pina:l**u**:pal**u** m**u** ʔakɔ] *lowering domain*: $]_{\phi}$
ii. *[pina:lɔ:pal**u** m**u** ʔakɔ]

b.i. ✓[pina:l**u**:pal**u** mɔ ʔakɔ] *lowering domain*: $]_{\omega max}$
ii. *[pina:lɔ:pal**u** mɔ ʔakɔ]

c.i. *?*[pina:l**u**:palɔ mɔ ʔakɔ] *lowering domain*: $]_{\omega}$
ii. ✓[pina:lɔ:palɔ mɔ ʔakɔ]

This concludes our investigation of the first phonological process. Vowel lowering in the native vocabulary was shown to obtain an explanation as a rule (or constraint) which targets the final syllable of a prosodic domain which is as small as the minimal prosodic word or as large as the prosodic phrase. Under this analysis, the parsing in (43) receives support in treating monosyllabic enclitics as recursive adjuncts to the prosodic word and monosyllabic proclitics as adjuncts to the prosodic phrase, as this accounts for why only enclitics may be subject to vowel lowering.

5.4 Tapping

Tagalog /d/ has a tapped allophone [ɾ]. The structural description for tapping, shown in (87), is simple, but the influence of additional factors, discussed below, complicates the picture considerably.

(87) *tapping rule*
d ⇨ ɾ / [V__V]$_{\phi}$

The basic facts for tapping are as following (in agreement with Zuraw 2006):

(i) always occurs with a root final /d/ when followed by a suffix (88)
(ii) most often occurs root-initially with a vowel-final prefix (89)
(iii) never occurs at the left edge of a lexical morphological word (90)

(88) [baja:**ɾ**an] cf. *[baja:**d**an]
/ba:jad-an/
pay-LV
'to pay SUBJ'

(89) [naka**ɾ**atiŋ] ~ %[naka**d**atiŋ]
/naka-datiŋ/
AV.ABL.PRF-arrive
'SUBJ was able to arrive.'

(90) [ba:gɔ **d**umatiŋ] cf. *[ba:gɔ **ɾ**umatiŋ]
/ba:gu d<um>atiŋ/
new <AV.PRF>arrive
'before SUBJ arrived'

Zuraw (2006) identifies the domain of tapping with the prosodic word. According to Zuraw's (2006:4) analysis, tapping applies to a /VdV/ seuqence if no prosodic word boundary intervenes. Here, I claim that the maximal proper domain for tapping is the prosodic phrase, but that this is obscured by the blocking effect of other prosodic boundaries when they interrupt the intervocalic environment.

Importantly, for our purposes, there exist two /d/-initial clitics, *daw* REPORTED SPEECH and *din* ADDITIVE (glossed as 'also'). Tapping is common but not obligatory when these clitics follow a vowel-final word, as shown in (91).

(91) a. [[pumunta]$_{\omega}$=**ɾ**in]$_{\omega}$ ~ %[[pumunta]$_{\omega}$=**d**in]$_{\omega}$
/p<um>unta=din/
<AV.PRF>go=also
'SUBJ also went'

This places tapping in line with the vowel lowering data: before a suffix, tapping of a root coda /d/ is obligtory and lowering of a root-final vowel is always blocked; at the left edge of a prosodic phrase, tapping is impossible and lowering is obligatory; and at the boundary between the right edge of a morphological word and a clitic, both tapping and lowering are optional. Tapping can be sensitive to internal prosodic word boundaries, but such sensitivity is the marked case. If tapping is sensitive to internal boundaries then the conditions for tapping will not be met for a clitic initial /d/. In a ROOT-SUFFIX constituent, the intervocalic environment for tapping will always be contained within a minimal prosodic word, making tapping obligatory regardless of parametric variation (cf. (88)).

However, as already noted, the data from tapping is not so straightforward. Zuraw (2000, 2006) claims that tapping is not licensed in morphological constructions such as foot-reduplication and compounding. This would make tapping considerably different from vowel lowering, but, as can be seen from the attestations in (92)-(94), this observation is not precise; tapping is in fact allowed in these environments. Rather, it will be argued that tapping can be absent even when its structural description is met because of mitigating factors.

(92) *ang=dami~rami pa=ng inhibitions na hindi=mo ma-intindi-han.*
NOM=ITNS-many still=LNK inhibitions COMP NEG=2S.GEN ABL-understand-LV
'there are so many more inhibitions that you don't understand.'[34]

(93) [ba:bɔj-ɾamɔ]
/babuj-damu/
pig-grass
'wild boar'

(94) [da:tiɾa:ti]
/da:ti≈da:ti/
INTS≈previous
'previously'

Before we examine these factors we must first remove from consideration apparently vowel-initial reduplicated forms such as *agad-agad* 'immediately' (Zuraw 2006:9). A root-final /d/ in such a word can never undergo tapping under foot reduplication because, as seen in (69) earlier, foot reduplicants constitute prosodic words and the prosodic word boundary between the reduplicant and base blocks resyllabification. Hence the vowel initial base in such constructions must surface with the epenthetic glottal stop onset, as shown in (95).

(95) $[\text{ʔaga}\mathbf{d}]_\omega[\text{ʔagad}]_\omega$ cf. $*[\text{ʔagaɾ}]_\omega[\text{agad}]_\omega$ $*[\text{ʔagaɾ}]_\omega[\text{ʔagad}]_\omega$
/agad≈agad/
ITNS≈immediate
'immediately'

Having excluded such examples, the irregularity in tapping alluded to above can be accounted for by (i) multiple phonological representations for certain roots, (ii) a faithfulness constraint enforcing reduplicative identity and (iii) the blocking effects of prosodic boundaries. Each factor can be shown to be indepedently necessary. These are discussed in turn.

Certain roots, such as *dámi* 'many' have reanalyzed variants which are underlyingly tap-initial (i.e. *rámi*) (cf. Zuraw 2002 for a similar situation with pseudo-

[34] From: http://www.abante.com.ph/issue/june1906/showbiz_ds.htm

reduplicated forms). These variants can occur anywhere regardless of phonological environment. This is seen clearly in (96), where tapping occurs despite being preceded by an obstruent.

(96) *sana mas r<um>ami=pa=tayo*
OPT more <AV>many=INC=1+2P.NOM
'hopefully, we will further increase.'[35]

Furthermore, there are native roots, such as *dala* 'carry', whose initial /d/ never taps. Zuraw (2006) seeks to tie this to the frequency with which roots appear alone versus with vowel-final prefixes with the hypothesis that the most frequent environment affects its perceived compositionality and hence its prosodic structure. In sum, what was at one time in history a completely allophonic relationship between [d] and [ɾ] is now only partially predictable. This is handled by allowing certain roots to contain variants with /ɾ/ in their underlying representation and specifying certain underlying instances of /d/ as non-tapping. Reanalysis to /ɾ/ and non-tapping /d/ is, however, clearly circumscribed in only applying to a certain group of roots. Most roots, e.g. *dating* 'arrive', are never attested with unmotivated tapping. And yet, as a result of factor (ii) above, these roots can also surface with unmotivated tapping when in the presence of a foot reduplicant which does offer the proper tapping environment. Reduplicative identity effects can be seen in attestations such as (97) (contra Zuraw, 2006:10; 2002, 423 fn.22). Here, only the initial foot reduplicant (*maka-**rating**~rating*) is situated in the proper intervocalic environment for tapping. Nonetheless, tapping is found in both the reduplicant and the base.

(97) *hindi=na maka-rating≈rating sa=pangpang ng=ka-unlar-an*
NEG=CMP AV.ABL-INTS≈arrive OBL=shore GEN=NMZ-progress-NMZ
'Unable to reach the shores of progress'[36]

It is possible that the opposite effect is also present, that is, seeming underapplication of tapping, as in (98). The root /du:sa/ 'suffer' is attested with tapping in other contexts, e.g. *pa-rusa* 'make suffer/punish'. Note, though, that it is impossible to ascertain whether non-tapping in a from like (98) is due to identity effects or the blocking effect of the internal prosodic word boundary.

(98) [mag-du:sa≈**d**u:sa]
/mag-du:sa≈du:sa/
AV-MOD≈suffer
'for SUBJ to suffer somewhat'

As noted above, prefixes have the potential to be prosodized as prosodic word adjuncts. Thus, given the structure [PREF-[ROOT]$_{\omega}$]$_{\omega}$, a root-initial /d/ may be prevented

[35] From: http://pinoyexchange.com/forums/showthread.php?t=239774&page=11&pp=40
[36] From: http://www.pcij.org/blog/?p=745

from tapping by a minimal prosodic word boundary. Such blocking results in forms like (99) (repeated from (89)), in which a /d/-initial root resists tapping after a prefix.[37]

(99) [naka-[**d**atiŋ]$_{\omega}$]$_{\omega}$
AV.ABL.PRF-arrive

The effect of intervening boundaries becomes categorial as we move up the prosodic hierarchy. When a prosodic phrase boudary interrupts the required intervocalic environment, tapping is totally unattested. This creates an asymmetry between proclitics and enclitics, parallel to that seen in the previous section for vowel lowering. The structure for a proclitic with multiple monosyllabic enclitics is repeated here in (100) with the relevant syntactic categories indicated.

(100) $_{\text{CaseP}}$[CL=$_{\text{NP}}$[[[[HOST]$_{\omega}$=1σCL]$_{\omega}$=1σCL]$_{\omega}$]$_{\phi}$]$_{\phi}$

Given the boundaries above, our analysis predicts that a clitic host or enclitic will supply the tapping environment for a following enclitic, but a proclitic will not be able to do so for its host. This is borne out by the data in (101). The onset of the clitic *din* commonly taps in this environment but the root onset is forbidden from doing so.[38]

(101) [sa **d**a:ti pa **ɾ**in] cf. *[sa **d**a:ti pa **d**in] *[sa **ɾ**a:ti pa **ɾ**in]
/sa=da:ti=pa=din/
OBL=previous=still=also
'Still at the previous one also'

Treating the prosodic phrase as the domain of tapping receives further support from the behavior of deictics. Tagalog deictics (*díto* 'here (proximate)', *diyan* 'there (medial)' and *doon* 'there (distal)') are all free-standing prosodic words which satisfy the disyllabic minimality requirement and are eligible to receive sentence level prominence. But because of their function word status, deictics are not required by ALIGN-XP to project their own prosodic phrases, and will thus be parsed as adjuncts to neigboring prosodic phrases as shown in (102). Because HIERARCHICAL ALIGNMENT (PPh) is ranked low, the adjunction structure is flat. In this structure, a function word is situated in the domain of tapping, which will apply unless it is blocked by the prosodic word boundary. Both pronunciations in (103) are thus attested.

[37] A similar case is the blocking of prevocalic flapping of /t/ and /d/ in English by prosodic boundaries as discussed by Nespor & Vogel (1986), and Hayes (1989:215).

[38] Note that the (less attested) possibility of non-tapping between clitics supports the recursive adjunction structure as opposed to a flat adjunction structure. If multiple clitics were adjoined into a flat structure then there should be absolutely no possibility for non-tapping, as their juncture would be on par with the ROOT-SUFFIX juncture. The categoriality of tapping at the ROOT-SUFFIX juncture, however, is markedly different from that of CLITIC-CLITIC junctures, supporting an analysis in which there exist prosodic boundaries separating multiple clitics.

(102) [[HOST]$_{\omega}$[=CL]$_{\omega}$ [FUNC]$_{\omega}$]$_{\phi}$

(103) [nakatiɾa sila ɾi:tɔ] ~ [nakatiɾa sila **d**i:tɔ]
/naka-tida=sila di:tu/
STA-live=3P.NOM here
'They live here.'

Just as we saw above for lexical words, tapping of a function word is blocked when initial in a prosodic phrase. We can compare (103) with the minimal pair in (104) below, in which tapping on the deictic is categorically blocked despite following a vowel-final clitic. This is because, in (104), the clitic is a complementizer which takes a following IP complement. Because these are overtly headed phrases, they are wrapped in prosodic phrases by virtue of ALIGN-XP, thus creating an intervening prosodic phrase boundary.

(104) ...$_{CP}$[COMP $_{IP}$[[FUNC]$_{\omega}$ ...]$_{\phi}$]$_{\phi}$
[hindi: kɔ alam=na **d**i:tɔ sila nakatiɾa] cf. *[...**ɾ**...]
/hindiʔ=ku alam= na di:tu=sila naka-tida/
NEG=1S.GEN know=COMP here=3P.NOM STA-live
'I didn't know they live here.'

One advantage of this analysis is that it can predict the probability of tapping based on the type and number of the intervening prosodic boundaries.[39] This is shown in **Error! Reference source not found.**. At the very bottom, we see that a morphological boundary without a corresponding prosodic boundary is treated the same way as a root internal environment; tapping is obligatory. At the boundary between a host and an enclitic or between two enclitics, corresponding to the location of the right edge of a prosodic word, tapping is very common but not obligatory. At the boundary between a prefix and a root or a word and a deictic, corresponding to the left edge of a prosodic word (with certain prefixes), tapping is less common, but fully permissible. Next, at the boundary between two roots in compounding or between a foot reduplicant and its base, which corresponds to both a left and right prosodic word boundary, tapping is quite rare, but still attested. Between a proclitic and its host, at the left edge of a prosodic phrase, tapping is totally unattested. As expected, the same holds true for syntactic phrase boundaries, which correspond to both left and right prosodic phrase edges.

[39] This does not include the lexically specified tapping discussed in Zuraw 2006, nor is it incompatible with the general idea behind her treatment of that phenomenon.

(105)

M-boundary	P-boundary	tapping frequency
WORD WORD	$]_{\phi}\ _{\phi}[$	↕
CL=HOST	$_{\phi}[$	0%
ROOT-ROOT / Σ≈ROOT	$]_{\omega}\ _{\omega}[$	↑
PREF-ROOT / WORD FUNC	$_{\omega}[$	⋮
HOST=CL / CL=CL	$]_{\omega}$	↓
ROOT-SUFF	∅	100%

The elements and conditions of tapping are summarized in (106). The basic environment for tapping is found in (106)a, where the domain is posited to be [VɾV]$_{\phi}$. Tapping can be blocked by the intervention of prosodic boundaries. A stem-initial foot reduplicant can optionally trigger overapplication and underapplication in the base when the structural description is satisfied by one copy and not the other. Overapplication occurs when the reduplicant-initial /d/, but not the base-initial /d/, is intervocalic. Underapplication occurs when the base-initial /d/ is intervocalic but not the reduplicant initial /d/, opacity being driven by the reduplicant.[40] (Note though that this can only occur with foot, and not syllable, reduplication, as indicated by the subscript Σ.) Finally, reanalysis of a lexical /d/ to a lexical /ɾ/ can occur in which case no phonological change takes place and /d/ can also be marked diacritically in the lexicon for resistance to tapping (indicated here by superscript *).

(106) a. Total transparency – /[VdV]$_{\phi}$/ ⇨ [VɾV]$_{\phi}$
b. Blocking by prosodic boundaries
b. RED>BASE opacity –
overapplication: /[V[dV…]$^{\Sigma}$≈[d…]]$_{\omega}$/ ⇨ [V[ɾV…]$^{\Sigma}$≈[ɾ …]]$_{\omega}$
underapplication: /[C[d…V]$^{\Sigma}$≈[dV…]]$_{\omega}$/ ⇨ [C[d…V]$^{\Sigma}$≈[dV…]]$_{\omega}$
c. Reanalysis of /d/>/ɾ/ – /ɾ/ ⇨ [ɾ]
Non-tapping /d/>/d*/ – /d*/ ⇨ [d]

Despite the presence of these diverse constraints with potentially contradictory effects on the output, strong predictions can still be made for reduplicated structures. Taking a word with prefixation and foot reduplication of the root, as in (107) we could, a priori, expect the four outcomes in (108) (assuming integration of the prefix into the prosodic word). The principles in (106), however, rule out half, as shown below.

---

[40] McCarthy & Prince (1995) demonstrate that such cases argue for a correspondent theory of base-reduplicant opacity as ordered rules can only derive opacity in which the reduplicant is influenced by the base.

(107) $[\text{PREF-}[\Sigma\approx]_{\omega}[\text{ROOT}]_{\omega}]_{\omega}$
/ma-dami≈dami/
ADJ-MOD≈many
'moderately many'

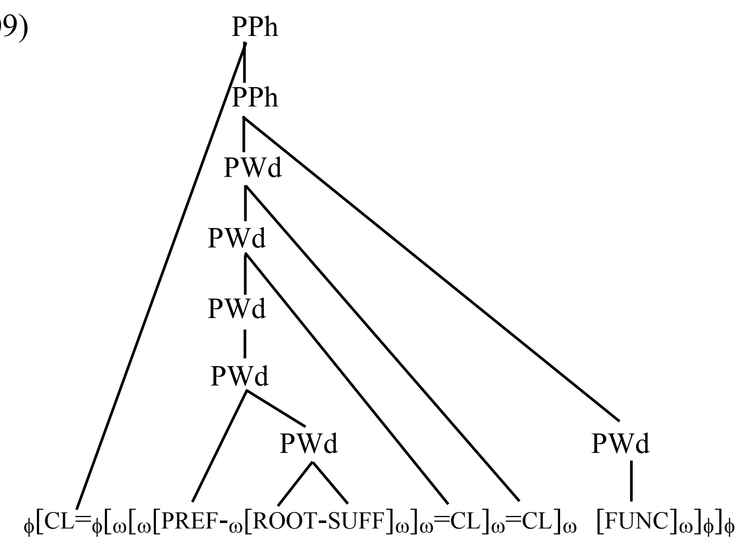
(108) a. [maɾamiɾami] b. [ma**d**ami**d**ami]

c. *[ma**d**amiɾami] d. *[maɾami**d**ami]

Both instances of /d/ satisfy the structural description for tapping on the surface and thus may undergo tapping by virtue of (106)a in order to yield the output in (108)a. Optionally, (106)b can apply and block tapping to yield (108)b. Nothing, however, can apply to trigger tapping asymmetrically in such a morphological construction. If tapping occurs in the reduplicant, it must occur in the base, and if it occurs in the base, it must occur in the reduplicant. If the phonological representation of the root is reanalyzed with an underlying /ɾ/, then the output is again as in (108)a.

In this section we defended the prosodic structure posited earlier for Tagalog based on evidence from the allophonic alternation of tapping. The complete structure discussed here (excluding compounding and foot reduplication and only showing outer prefixes) is shown in (109). With minimal assumptions about the basic domain of tapping itself, this structure accounts for all the facts in a principled manner once we understand prosodic boundaries to potentially block phonological environments. The core facts accounted for were obligatory tapping within minimal prosodic words, non-tapping at PROCLITIC-HOST boundaries, and slightly attenuated tapping at HOST-ENCLITIC boundaries. Furthermore, tapping on deictic onsets was accounted for as they are non-branching function words and therefore expected to incorporate into an adjacent prosodic phrase. In the next section we investigate nasal assimilation and its contribution to our understanding of prosodic structure.

(109)



5.5 Glottal stop deletion

The rule for glottal stop deletion is given in (110). Put in simplest terms, this rule states that a glottal stop coda is deleted with compensatory lengthening everywhere except the right edge of a prosodic phrase (minimally) or intonational phrase (maximally). The fact that the minimal domain for this rule is the prosodic phrase makes it a higher level phenomenon than any of the other processes examined so far.

(110) *Glottal stop deletion and compensatory lengthening*
Vʔ ⇨ V: / $\_\_]_{\omega}[\ldots]_{\omega}]_{\phi - iP}$

As noted by Bloomfield (1917:136) and WCR (p.12), the glottal stop is regularly deleted before clitics. This rule however appears to be currently expanding its domain to the extent that, in the contemporary Tagalog of Manila, glottal stops may be deleted everywhere except for the intonational phrase final position. In the more conservative dialects, such as those described by Bloomfield and WCR, the rule still takes the prosodic phrase as its domain. Unlike the previous phenomena we have examined, application to only the edges of the minimal prosodic word is unattested, as seen in (111).

(111) [maŋa ba:ta**:** ŋa**:** pala sila] cf. *[maŋa=ba:ta**ʔ**=ŋa**ʔ**=pala=sila]
/maŋa=ba:taʔ=ŋaʔ=pala=sila/
PL=child=EMPH=SURP=3P.NOM
'Surprisingly, they are really children.'

Even maximal prosodic words, such as the disyllabic clitics cannot maintain their final glottal stops if there is following material within the prosodic phrase. For instance, the final glottal stop of the clitic /ya:taʔ/ EVID ('perhaps') must delete if there is a following clitic, as in (112).

(112) $[[[\text{VERB}]_{\omega}\text{=CL}]_{\omega}[\text{=CL}]_{\omega}[\text{=CL}]_{\omega}]_{\phi}$
[ʔumalis na ya:ta**:** sila] cf. *?[ʔumalis na ya:ta**ʔ** sila]
/<um>alis=na=ya:taʔ=sila/
<AV.PRF>leave=CMP=EVID=3P.NOM
'It seems they already left.'

When the glottal stop is final in the prosodic phrase, as in (113), deletion is optional. The conservative dialects preserve the glottal stop in this position while the non-conservative dialects tend to delete it.

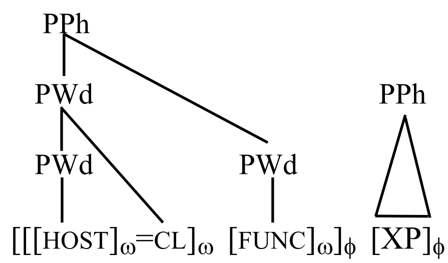
(113) $[[[\text{VERB}]_{\omega}\text{=CL}]_{\omega}]_{\phi}$ $[\text{CL=}[[\text{NOUN}]_{\omega}]_{\phi}]_{\phi}$
[humu:li ŋa**:** naŋ ʔisdaʔ] ~ [humu:li ŋa**ʔ** naŋ ʔisdaʔ]
/h<um>u:li=ŋaʔ naŋ=isdaʔ/
<AV.PRF>catch=EMPH GEN=fish
'SUBJ really caught a fish'

The observation made earlier concerning the integration of non-branching function words into adjoining prosodic phrases also has consequences for the phenomenon at hand. When a deictic follows a glottal stop final word, glottal deletion appears to be impossible, as indicated by (114). This falls out naturally as the glottal stop can no longer be aligned with the right edge of a prosodic phrase in this configuration and must delete.

(114) [[[VERB]$_{\omega}$=CL]$_{\omega}$ [FUNC]$_{\omega}$]$_{\phi}$
[pumunta ŋa: ɾi:tɔ] cf. *?[pumunta ŋaʔ di:tɔ]
/p<um>unta=ŋaʔ di:tu/
<AV.PRF>go=EMPH here
'SUBJ really came here'

In this section, we have offered additional support for the parsing shown in (115), in which a clitic host and all of its morphological dependents are parsed into a single prosodic phrase together with any following non-branching function words. We have also found extra support for the idea that all overtly headed phrasal constituents are aligned to their own prosodic phrase.

(115)



5.6 Phrasal prominence

As mentioned at the outset of this chapter, the facts of stress and prominence in the clitic domain have been the source of considerable confusion in the literature. All can agree that clitics lie outside the basic stress window as regards length shift (cf. §4). Unlike suffixes, clitics do not shift root length to the right, as can be seen with the monosyllabic pronominal clitic in (116).

(116) [ʔaŋ ba:haj kɔ]
/aŋ=ba:haj=ku/
NOM=house=1S.GEN
'my house'

On the other hand, the absolute prominence relations are not entirely clear even in a simple example such as the one above. The brunt of the confusion stems from the fact that durational prominence has three sources (i) the lexicon, (ii) compensatory lengthening from glottal stop deletion, and (iii) phrase-final lengthening. On the other hand, intonational prominence, as manifested by pitch accents, associates with the right edges of intonation phrases and most prosodic phrases. Pitch accents tend to align with durationally prominent syllables, if present, but clearly not all durationally prominent syllables receive pitch accents. The difficulty is that the perception of phrasal stress in Tagalog is based on both durational and intonational prominence but these do not regularly coincide in utterances of more than a single prosodic phrase.[41]

Furthermore, post-lexical length can overshadow lexical length. For instance, if asked to identify the phrasal prominence in (116), the vast majority of speakers would place it on the first syllable of *báhay*, despite the phrasal lengthening which the clitic is subject to. But judgments become blurred when the clitic is disyllabic and thus fufills the requirements of a prosodic word. When a disyllabic clitic does not bear lexical length, as in (117)a, the host may still be judged to bear phrasal prominence but when the clitic also bears lexical length, as in (117)b, the clitic appears to bear phrasal prominence.

(117) a. [CL=[[HOST]$_{\omega}$[=CL]$_{\omega}$]$_{\phi}$]$_{\phi}$
[ʔaŋ bá:haj ninjɔ]
/aŋ=ba:haj=ninju/
NOM=house=2P.GEN
'your house'

b. [CL=[[HOST]$_{\omega}$[=CL]$_{\omega}$]$_{\phi}$]$_{\phi}$
[ʔaŋ ba:haj ná:min]
/aŋ=ba:haj=na:min/
NOM=house=1P.GEN
'our house'

If there is following material within the same prosodic phrase, as in (118), the clitic will not be subject to final-lengthening and thus the predicate head will unquestionably be more prominent than the clitic. In terms of absolute primary prominence within the phrase, the result is now ambiguous between the predicate head and the phrase-final adjunct.

(118) [CL=[[HOST]$_{\omega}$[=CL]$_{\omega}$ [FUNC]$_{\omega}$]$_{\phi}$]$_{\phi}$
[ʔaŋ bá:haj ninjɔ ɾuʔún]
/aŋ=ba:hay=ninju duun/
NOM=house=2P.GEN there
'your house over there'

Clitic prominence is even clearer when the host does not contain underlying length, as in (119)a and b. Here the host is a disyllabic root without inherent length and the resulting phrasal prominence falls squarely on the clitics.

(119) a. [CL=[[HOST]$_{\omega}$[=CL]$_{\omega}$]$_{\phi}$]$_{\phi}$
[ʔaŋ taŋa nilá]
/aŋ=taŋa=nila/
NOM=stupid=3P.GEN
'How stupid they are!'

b. [CL=[[HOST]$_{\omega}$[=CL]$_{\omega}$]$_{\phi}$]$_{\phi}$
[ʔaŋ taŋa ná:min]
/aŋ=taŋa=na:min /
NOM=stupid=1P.GEN
'How stupid we are!'

We can also compare the minimal pairs in (120). In (120)a, the word stress falls on the final syllable as the suffix attaches to a root without lexical length. In (120)b, the

[41] Contra Gonzalez 1970, amplitude is not a regular element of prominence in Tagalog. I am, in fact, unaware of any language where amplitude plays a consistent role in the prominence relations of the word or phrase level.

same root is followed by the clitic *din* 'also', which attracts the prominence in exactly the same way as the clitic. The resulting patterns are identical.

(120) a. [ROOT-SUFF] b. [HOST=CL]

	a.	b.
(120)	[ROOT-SUFF]	[HOST=CL]
	$[\text{pula-hín}]_{\omega}$	$[[\text{pula}]_{\omega}\text{=rín}]_{\omega}$
	red-PV	red=also
	'to redden SUBJ'	'SUBJ is also red'

The above facts appear to contradict our earlier iambic analysis of stress. Namely, it appears impossible to reconcile the fact that clitics appear to be included in the stress domain for iambic length but not for length shift in trochaic roots. To align iambic feet with a phrasal domain and trochaic feet to the minimal prosodic word would create a stress system which has no precedent. More plausible is the idea that footing in Tagalog is simply a convenient device for describing word level prominence and constraining the domain of vowel length in the minimal prosodic word, but has no real formal status in the prosodic system. Iambs, in particular, are simply an artifact of higher level prominence relations and their formal status in several analyses (French 1988 *inter alia*) is in turn an artifact of comparing citation forms. Crucially, when the right edge of the minimal prosodic word does not coincide with the right edge of a prosodic phrase, the final syllable does not receive prominence.[42,43] Our constraint in (13), repeated here in (121), can now be revised to that in (122).

(121) IAMB (ALIGN (Hd,R;Foot,R))
The head of a foot is aligned to the foot's right edge

(122) PHRASE FINAL STRESS (ALIGN (Hd,R;PPh,R))
The head of a prosodic phrase is aligned to the phrase's right edge

Examining first the durational correlates of stress, we can posit the simple algorithm in (123) for length assignment in a grid-type framework ala Prince 1983.

(123) **Length assignment**
i. Assign one mark to all bimoriac vowels
ii. Assign one mark to vowels preceding deleted glottal stops
iii. Assign two marks to vowels at the right edge of the prosodic phrase

Let us now apply this algorithm to the sentence in (124). We assign one mark to the underlyingly bimoriac vowels, which in this case is only in the first syllable of the

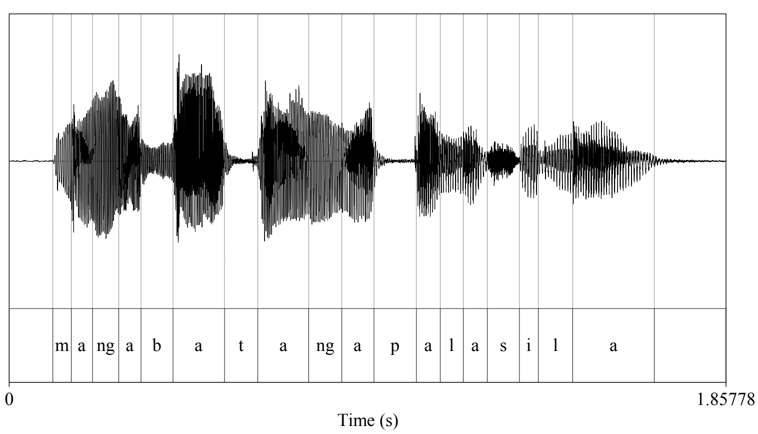
[42] This fact is given recognition by Himmelmann (2006): "Within intonational phrases, lexical stress (i.e. the stress pattern that occurs on words in isolation) is modified in a number of ways as a result of its interaction with pitch changes related to intonational contours".
[43] Tagalog is of course not unique in being subject to such a misanalysis. Fox (2000:94 fn.77) notes, "French is sometimes said to have word-final stress, but this is a misconception. It is the final syllable of a *phrase* that is prominent, and a word spoken in isolation constitutes a phrase and is therefore accented on the final syllable. But *within* the phrase there is no such accent." Hixkaryana, as described by Derbyshire (1979), provides another example of such a system (cf. Klavans 1995:149).

host *bátà*. We then assign marks to the vowels which undergo compensatory lengthening as the result of glottal stop deletion. Finally, we assign two marks to the final vowel in the phrase, which is found in the last syllable of the pronominal clitic *sila* and arrive at the grid shown below.

                                   *
          *   *   *   *
(124) [maŋa=ba:ta:=ŋa:=pala=sila]
/maŋa=ba:taʔ=ŋaʔ=pala=sila/
PL=child=EMPH=SURP=3P.NOM
'Surprsingly, they are children.'

How well does this predict actual durations? This was tested by having a speaker pronounce fifteen repetitions of the sentence in (124) and averaging out the durations of all the segments. A typical exemplar is seen below in figure 2.

Figure 2. *mga batà ngà pala sila*



As predicted by our grid, the two vowels of the host *bátà* are almost exactly equal after compensatory lengthening and the phrase final vowel is twice as long. Note, however, that although the [a] in the enclitic *nga'* is lengthened in comparison to the short vowels of the following two clitics *pala* and *sila*, it is not as long as the vowels in the host. The fact that the following [p] in the clitic *pala* is slightly lengthened suggests that compensatory lengthening could be carried out by both the vowel preceding the deleted glottal stop and the consonant following it. More instrumental studies are required to test this hypothesis, however, as the present data is equivocal on this point. The full set of duration data across the fifteen recorded reptitions is shown in table 5.

Table 5. Durations

	b	*a*	*t*	*a*	*ŋ*	*a*	*p*	*a*	*l*	*a*	*s*	*i*	*l*	*a*
1	.09	.12	.098	.124	.077	.096	.083	.059	.058	.062	.095	.047	.085	.196
2	.108	.15	.096	.105	.115	.084	.115	.054	.06	.066	.097	.047	.09	.211
3	.093	.133	.102	.117	.075	.081	.092	.055	.057	.062	.091	.051	.09	.24
4	.102	.133	.095	.116	.073	.062	.1	.066	.063	.069	.095	.06	.084	.249
5	.083	.133	.087	.132	.086	.083	.110	.062	.059	.063	.083	.049	.09	.211
6	.11	.154	.108	.126	.09	.065	.104	.064	.065	.065	.09	.052	.083	.24
7	.081	.115	.1	.108	.078	.091	.078	.07	.042	.064	.084	.053	.075	.277
8	.094	.133	.098	.137	.074	.067	.116	.056	.061	.062	.093	.053	.081	.252
9	.107	.147	.101	.151	.069	.059	.111	.069	.056	.073	.096	.056	.091	.186
10	.112	.17	.113	.164	.11	.125	.099	.063	.069	.055	.094	.076	.075	.246
11	.079	.114	.094	.12	.079	.079	.105	.066	.057	.056	.1	.039	.089	.228
12	.094	.14	.11	.165	.099	.098	.118	.055	.069	.055	.107	.046	.079	.182
13	.101	.14	.113	.128	.095	.081	.107	.057	.056	.051	.097	.068	.071	.179
14	.119	.154	.119	.165	.106	.144	.097	.059	.06	.063	.091	.067	.068	.201
15	.113	.168	.113	.139	.112	.115	.116	.064	.064	.057	.101	.073	.076	.196
Avr	**.099**	**.14**	**.103**	**.133**	**.089**	**.089**	**.103**	**.061**	**.06**	**.062**	**.094**	**.056**	**.082**	**.22**
Dev	.013	.017	.009	.02	.016	.024	.012	.005	.006	.006	.006	.011	.007	.03
Units	**5**	**7**	**5**	**7**	**4**	**4**	**5**	**3**	**3**	**3**	**5**	**3**	**4**	**10**

To simplify this data, I have divided the average durations for the vowels and divided them by an arbitary timing unit of .02 seconds. The durations in timing units is shown in the last row of table 5. In (125), the duration in timing units is superimposed over our predictions from the grid in to facilitate comparison.

```
                              10
         7  7   4              *
         *  *   *   3 3    3 *
(125)  [maŋa=ba:ta:=ŋa:=pala=sila]
```

The data fits the output of our simple algorithm almost perfectly except for the duration in the first clitic *ngà*. As alluded to above, this could be due to different behaviors of stops versus nasals in being able to pick up compensatory lengthening.

Predicting the positioning of pitch prominence is not nearly as simple as predicting duration. Sticking with the same example, there are only two generalizations which can be made for a simple declarative pronunciation: there is an HL pitch accent associated with the left edge of the prosodic phrase which can dock onto any of the first four vowels and an H accent which regularly attaches to the final vowel of the phrase. The positioning of the left edge pitch accent is difficult to pin down. The two exemplars below can serve to show the variation.

Figure 3. Pitch track for *mga batà ngà pala sila*

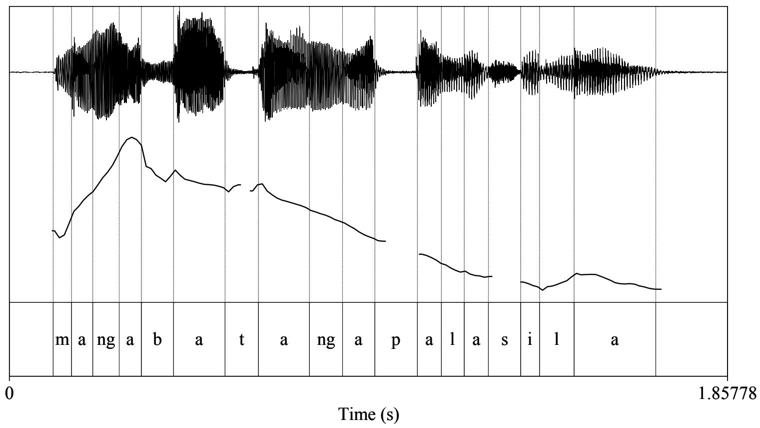
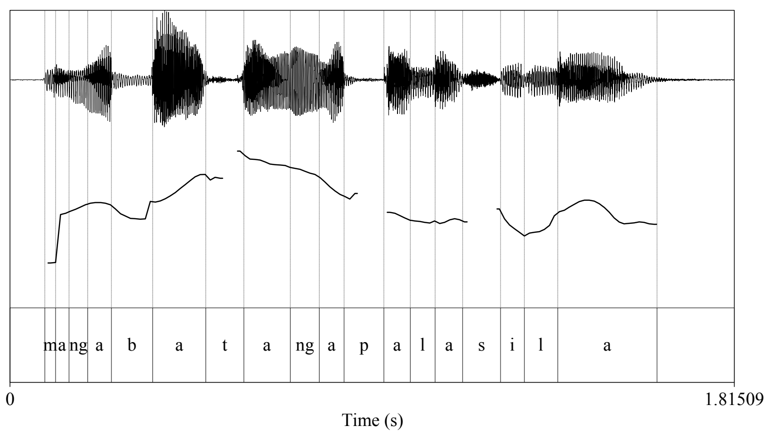


Figure 4. Pitch track for *mga bátà ngà pala sila*

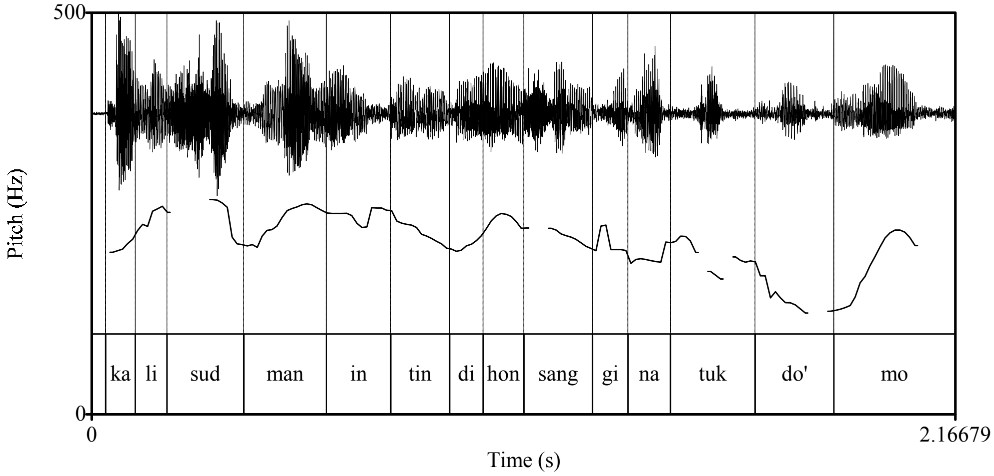


Thus, I will not attempt here to provide a simple algorithm for pitch accent placement as there is still much more research to be done before definitive statements can be made (see Richards 2006 for one proposal). The point which I would like to emphasize here is simply that there is no deaccenting of the clitic domain in Tagalog. The phrase final pitch accent attaches to the right edge of the prosodic phrase without regard to whether its host is bound or free, functional or lexical.

Although we are restricting our scope to Tagalog in this chapter, it should be noted that this is a very general prosodic property among Philippine languages, especially those of the Central Philippine group. This can be illustrated with the example in (126), from Masbatenyo, another Central Philippine language spoken on the island of Masbate south of Luzon. This example was culled almost arbitrarily from a naturalistic, albeit scripted, religious audio recording. There are several salient pitch movements in the pitch track but note the extreme rise and lengthening found on the monosyllabic clitic =*mo* at end of the utterance.

(126) [ka-lisud=man intindi-hɔn saŋ=gina-tukdɔʔ=mɔ]
STA-difficult=EMPH understand-PV GEN=PV.PRF-teach=2S.GEN
'How difficult it is to understand what you taught!'

Figure 5. Pitch track for *Kalisud man intindihon sang ginatukdò mo*



Examples such as this could multiplied for various Philippine languages. Although this level of prominence may be unusual for clitics crosslinguistically, it appears to be the norm in Philippine languages.

In this section we have revised our analysis of apparent iambic stress from a foot based phenomenon to a phrasal phenomenon. We have also seen that clitics are clearly part of the prosodic phrase from the perspective of prominence assignment and are not differentiated from non-clitic material. This puts Tagalog together with languages such as French and Hixkaryana typologically and militates against the view in which clitics cannot be legitimate bearers of prosodic prominence.

5.7 Phonological reduction

There are several function words in Tagalog which regularly undergo reduction in the spoken language. These include *hindì* > *dì* NEG, *saan* > *san* 'where', *bákit* > *bat* 'why'. Reduction is restricted to contexts in which following material is present. For instance, reduction of negation is prohibited in the single word utterance in (127)a, but optional in (127)b, when the verb follows.

(127) a. [hindɛʔ] cf. *[dɛʔ]
/hindiʔ/
NEG
'No.'

b. [hindi: kuma:ʔin] ~ [di: kuma:ʔin]
/hindiʔ k<um>ain/
NEG <AV.PRF>eat/
'SUBJ didn't eat.'

Phonological reduction which is contingent on the presence of following material is very often treated in the literature as evidence for proclisis. There are several facts which militate against such an analysis for these items in Tagalog. These reduced function words diverge from the proclitic case markers and functional heads discussed earlier on three counts. First, interrogatives are clearly not phrasal heads, and negation can be treated equally well as an adverb in Tagalog. Thus, there is no syntactic basis for proclisis as was argued for the robust instantiations of phrasal heads (i.e. case markers and complementizers) in §6.2. Consequently, proclisis of these items would have to be stipulated in the lexicon, a move which is impossible within the theory developed here. Second, unlike the phrasal heads, reduced function words can attract stress. This is clear with negation, whose final glottal stop is deleted with compensatory lengthening when there is following material as in (127)b. The long vowel which results often receives a phrasal pitch accent. Finally, all reduced function words may host clitics while this is impossible for the phrasal head proclitics.

Fortunately, a superior analysis is motivated by the constraints already introduced in this chapter. Recall that the alignment constraint responsible for matching up grammatical word edges with prosodic word edges is specified to apply only to lexical words. In the framework adopted here, function words are therefore integrated into prosodic words only by virtue of EXHAUSTIVITY (PWd), the equal opportunity parsing constraint which is blind to category and status. Because no constraint forces function words to align to prosodic words, function words are freer to adjoin to adjacent categories and thus freer to undergo reduction, as they are no longer subject to minimality conditions. The constraint which disallows reduction in single word utterances is the unviolable HEADEDNESS from (37) above. HEADEDNESS mandates that prosodic phrases must be "headed" by prosodic words, that is, a prosodic phrase is not licensed if it does not domainate at least one prosodic word. It also mandates that an utterance – even a monomorphemic one – must be headed all the way down the prosodic hierarchy. This requirement cannot be met by a reduced monosyllabic function word without violating other high-ranking constraints. Looking at the complete parsing of the reduced function word *bat*, from *bákit* 'why', in (128), we see that a major violation is unavoidable. In (128)a, headedness is violated by the prosodic phrase which contains no prosodic word. In (128)b, the prosodic phrase contains a prosodic word but this word does not contain a foot. In (128)c, the word contains a foot but the foot is not bimoraic, violating FTBIN.

(128) a. $*[[[\text{bat}]_{\phi}]_{iP}]_{U}$ b. $*[[[[\text{bat}]_{\omega}]_{\phi}]_{iP}]_{U}$ c. $*[[[[[\text{bat}]_{\Sigma}]_{\omega}]_{\phi}]_{iP}]_{U}$

Thus reduction is impossible in a context without material to adjoin to. We can now examine the problem in the framework developed above.

Using unreduced forms is never ungrammatical. Thus, the alternation between reduced and unreduced forms cannot be treated as completely regular allomorphy. Furthermore, it is not clear that the pattern of reduction is fully predictable. Compare, for instance, *saan* > *san*, *hindì* > *dì* and *bákit* > *bat*. Reduced variants must therefore be stored separately in the lexicon and are present in their reduced form in the input. In more careful speech, the reduced variants will not be present at all in the input. In casual speech, however, the variants will compete with each other as allomorphs. The unreduced form will be penalized by a generalized *STRUCTURE constraint (Zoll, 1993).[44] Consequently, the reduced allomorph will defeat its unreduced counterpart whenever it is licensed by the prosody. The evaluation of a single morpheme utterance is shown in tableau 8. In the following, we employ the same ranking as argued for earlier but here the

[44] Clearly, the ranking MAX>>*STRUCTURE must hold to prevent deletion of input material to satisfy *STRUCTURE. Selecting the lighter allomorph will not trigger any violations of MAX as these forms are not evaluated against their unreduced counterparts.

two undominated constraints, HEADEDNESS and EXHAUSTIVITY (PPh), are made explicit for the sake of clarity.

Tableau 8. Single morpheme utterance

Input: /bat/ /ba:kit/	HEADEDNESS	EXHAUST PPh	ALIGN MWd_{Lex}	*STRUCT	EXHAUST PWd	NON-REC PWd
a. bat		*!			*	
b. [[bat]$_{\omega}$]$_{\phi}$	*!(ω)					
c. [bat]$_{\phi}$	*!(ϕ)				*	
d. ✓[[bakit]$_{\omega}$]$_{\phi}$				*		

In tableau 9, we now have both forms competing to fill a position adjacent to a prosodic word. In this case, the reduced form wins. The best unreduced candidate, (a), is ruled out by *STRUCTURE. The reduced candidate in (f), which is evaluated as optimal, avoids violating *STRUCTURE while still managing to be parsed by the adjacent prosodic word and phrase by adjunction (thereby triggering the lower ranked NON-RECURSIVITY PWd).

Tableau 9. Adjunction to a prosodic word

Input: bat /ba:kit k<um>a:in/ why <AV.PRF>eat	HEADEDNESS	EXHAUST PPh	ALIGN MWd_{Lex}	*STRUC	EXHAUST PWd	NON-REC PWd
a. [[ba:kit]$_{\omega}$[kuma:ʔin]$_{\omega}$]$_{\phi}$				*!		
b. [[ba:kit kuma:ʔin]$_{\omega}$]$_{\phi}$			*!	*		
c. [ba:kit [kuma:ʔin]$_{\omega}$]$_{\phi}$				*!	*	
d. [[ba:kit [kuma:ʔin]$_{\omega}$]$_{\omega}$]$_{\phi}$				*!		*
e. [bat [kuma:ʔin]$_{\omega}$]$_{\phi}$					*!	
f. ✓[[bat [kuma:ʔin]$_{\omega}$]$_{\omega}$]$_{\phi}$						*
g. [[bat]$_{\omega}$[kuma:ʔin]$_{\omega}$]$_{\phi}$	*!					
h. [[bat kuma:ʔin]$_{\omega}$]$_{\phi}$			*!			

We can now ask on which level do reduced words have to be parsed? The optimal candidate in tableau 9 above was able to adjoin to the prosodic word and thus was not informative in this regard. As argued for earlier, the Case Phrase demands a strict alignment to prosodic phrase edges. It thus offers a testing ground for reduced words as a monosyllabic element to the left of a Case Phrase cannot adjoin to a prosodic word on its right and must adjoin directly to the prosodic phrase, violating EXHAUSTIVITY PWd. This was argued to be the reason that proclitics cannot trigger tapping on their hosts. If reduced monosyllables can occur to the left of a Case Phrase, it means that, like proclitics, they may be parsed directly by the prosodic phrase. As it turns out, reduced allomorphs can precede a Case Phrase, suggesting that parsing on the prosodic phrase is what is crucial for grammaticality. This is shown in tableau 10. The constraint ALIGN (XP, PPh) is undominated and can be therefore grouped together with ALIGN MWd in the same column. The winning candidate in (d), has the reduced allomorph parsed as a second adjunct to the prosodic phrase. Forming a prosodic word with the proclitic, as in (e), is impossible as it necessarily separates the left edge of the Case Phrase from the left edge of the prosodic phrase.

Tableau 10. Adjunction to a prosodic phrase

Input: /bat/ /ba:kit sa=diliman/ why OBL=diliman	HEADEDNESS	EXHAUST PPh	ALIGN MWd_{Lex} ALIGN XP	*STRUC	EXHAUST PWd	NON-REC PWd
a. [[ba:kit]$_\omega$ [sa=[[diliman]$_\omega$]$_\phi$]$_\phi$]$_\phi$				*!	*	
b. [[ba:kit sa=]$_\omega$[[diliman]$_\omega$]$_\phi$]$_\phi$			*!	*		
c. ba:kit [sa=[[diliman]$_\omega$]$_\phi$]$_\phi$		*!		*	*	
d. ✓[bat [sa=[[diliman]$_\omega$]$_\phi$]$_\phi$]$_\phi$					**	
e. [[bat sa=]$_\omega$[[diliman]$_\omega$]$_\phi$]$_\phi$			*!			
f. bat [sa=[[diliman]$_\omega$]$_\phi$]$_\phi$		*!			*	

As mentioned, both reduced and unreduced function words can host enclitics. According to the ranking posited here, there is no basis for adjunction in case as enclitic attaches to a reduced function word, because together, the two elements can constitute a minimal prosodic. This is permitted by the fact that the ALIGN ($MWd_{Lex,}$ PWd) applies neither to the function word nor to the enclitic. This prediction is borne out as shown in tableau 11, where enclisis "licenses" reduction.[45]

Tableau 11. Reduced form with enclitic

Input: bat /ba:kit =ŋaʔ/ why EMPH	HEADEDNESS	EXHAUST PPh	ALIGN MWd_{Lex} ALIGN XP	*STRUC	EXHAUST PWd	NON-REC PWD
a. [[[ba:kit]$_\omega$=ŋaʔ]$_\omega$]$_\phi$				*!		*
b. [[ba:kit=ŋaʔ]$_\omega$]$_\phi$				*!		
c. ✓ [[bat=ŋaʔ]$_\omega$]$_\phi$						
d. [[[bat]$_\omega$=ŋaʔ]$_\omega$]$_\phi$	*!(ω)					*

[45] Interestingly, two reduced function words cannot join to constitute a prosodic word, as shown in (i). Non-reduction, as in (i)a, is, as always, grammatical. Reduction of the first element, in this case the interrogative, is permitted, as shown in (i)b. However, reduction of the second element, as in (i)c, is disallowed.

(i)a. *bákit hindì*
why NEG
'why not?'

b. *bat hindì*
why NEG
'why not?'

c. **bakit dì*
why NEG

This follows a strong cross-linguistic tendency to avoid reduction before a gap. The same constraint makes itself felt in constructions such as sluicing, shown in (ii), where reduction is also disallowed. Similar facts have been discussed extensively for English (Selkirk 1986, Selkirk 2000, Ito & Mester 2006, 2007). Integrating these facts into the current analysis must be left to further work.

(ii) *Di=ko alam kung bákit/*bat*
NEG=1S.GEN know COMP why
'I don't know why.'

Note that this analysis also makes predictions about the application of some of the phonological processes discussed earlier. Particularly relevant is tapping; if a function word and an enclitic can form a single minimal prosodic word then tapping with the /d/ initial clitics should occur without exception. This prediction was checked against internet texts using the Google search engine and to a large extent borne out by the results, which are given in table 6. The columns contain the number of hits with the tapped and untapped variants after negation as opposed to after three common verbs (based on orthographic *din* vs. *rin*). As shown, 98.6% of the instantiations of the clitic /din/ were found to be written as tapped after negation.[46] After the lexical words tapping was attentuated, being attested in less than half of the exemplars. This is expected due to the intervention of the prosodic word boundary as discussed in §5.4.

Table 6. Tapping after function words[47]

	din	*rin*	Tapping %
hindì	761	53,500	**98.6%**
sabi	4,930	5,100	**49.4%**
sinabi	1,830	761	
sinasabi	376	796	
sundò	19	24	**52.8%**
sinundò	18	24	
sinusundò	6	5	
punta	2,620	3,040	**44.1%**
pumunta	1,370	1,490	
pumupunta	267	86	
pupunta	1,480	1,240	

6.0 Conclusion

In this chapter, we have offered a relatively comprehensive analysis of several phonological processes in Tagalog and argued for a particular prosodification of morphological and syntactic constituents using five diagnostic phenomena including phonetic data from duration as evidence. Monosyllabic clitics were argued to be affixal clitics, adjoining to the prosodic word in a recursive, binary branching structure and disyllabic clitics were argued to be prosodic words despite their bound nature. Clitic dependencies should thus not have to be characterized as prosodic – although this is

[46] The numbers for the reduced form are not as categorial, but this could be an effect of casual writing style, in which allophonic alternations are not indicated as faithfully. Out of 33,340 hits of the reduced form of negation *di* followed by /din/ only 75% were found to tap. Out of 14,470 hits of the abbreviation *d* followed be /din/, 81.6% were written as tapped. Nonetheless, these percentages are still significantly larger than those for tapping after lexical words in table 6. (The searches were carried out using an additional word, *ako* 1S.NOM, to root out interference from languages other than Tagalog. They thus represent only an arbitrary sample of all occurences.)

[47] The examples in table 6 are the bare form, perfective, progressive and, in the case of the last example, the prospective aspect of the roots *sábi* 'say', *sundò* 'pick up' and *punta* 'go'.

certainly a common feature of clitics – but rather, the possiblity of a lexically specified dependency independent of prosodic weakness must be accepted. As we will see in the following chapters, dependencies of this nature are more related to semantic features than prosodic ones, but nonetheless, must be specified in the lexicon.

The phonological differences between proclitics and enclitics received a principles explanation which falls out from the alignment of prosodic phrases to syntactic phrases. Because proclitics directly precede syntactic phrases they cannot adjoin to a prosodic word to their right. If monosyllabic, they must thus forego prosodic word status, giving rise to several asymmetries.

On the phrasal level we saw that non-branching function words, such as deictics, are prosodic words but may be parsed as adjuncts into an adjacent (non-recursive) prosodic phrase. The phonological exceptionality of deictics can thus ultimately be seen to result from their syntactic status.

In the following chapters, we will build a theory of clitc syntax which matches and interacts with the prosodic structure developed here.