

SPECIAL COLLECTION: PROSODY AND CONSTITUENT STRUCTURE

Some notes on Tagalog prosody and scrambling

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This paper outlines some facts of Tagalog prosody. The basic pitch excursions of Tagalog turn out to be remarkably similar to those of Irish, as described by Elfner (2012; 2015). After discussing in some detail the properties of Tagalog pitch rises and falls, and their sensitivity to the position of stress and of prosodic word boundaries, I make an observation about the interaction of word order with pitch peak height. It turns out that objects are generally higher-pitched than subjects would be in the same position, both in VOS and in VSO order; interestingly, this generalization is blind to the “Philippine-style voice” system, and makes reference only to thematic subjects and objects. I speculate that this generalization represents the Tagalog expression of nuclear stress: objects, no matter where they are in the Tagalog sentence, receive nuclear stress, realized as a heightened pitch peak.

Keywords: Tagalog; scrambling; prosody; Match Theory; nuclear stress; Irish

1 Introduction

This paper will be concerned with facts like those represented in the pitch track in Figure 1, from the Austronesian language Tagalog.¹

I will first offer an account of the distribution of rises and falls in pitch in Tagalog statements like that in Figure 1. We will see that the facts of Tagalog are remarkably similar to those of Connemara Irish, as discussed by Elfner (2012; 2015), and so I will be able to take Elfner’s theory of Irish as the starting point for the analysis of Tagalog. Having outlined the basics of Tagalog prosody, I will turn to the effects of scrambling on pitch contour.

¹ In the segmental tier of pitch tracks, I will generally use IPA, though I will mark stress with accents on the relevant vowels. The Tagalog determiner/case particle *ang* probably underlyingly begins with a glottal stop, but this stop is not reliably realized in casual speech (or is sometimes realized only as glottalization of the vowel), and I have opted not to transcribe it.

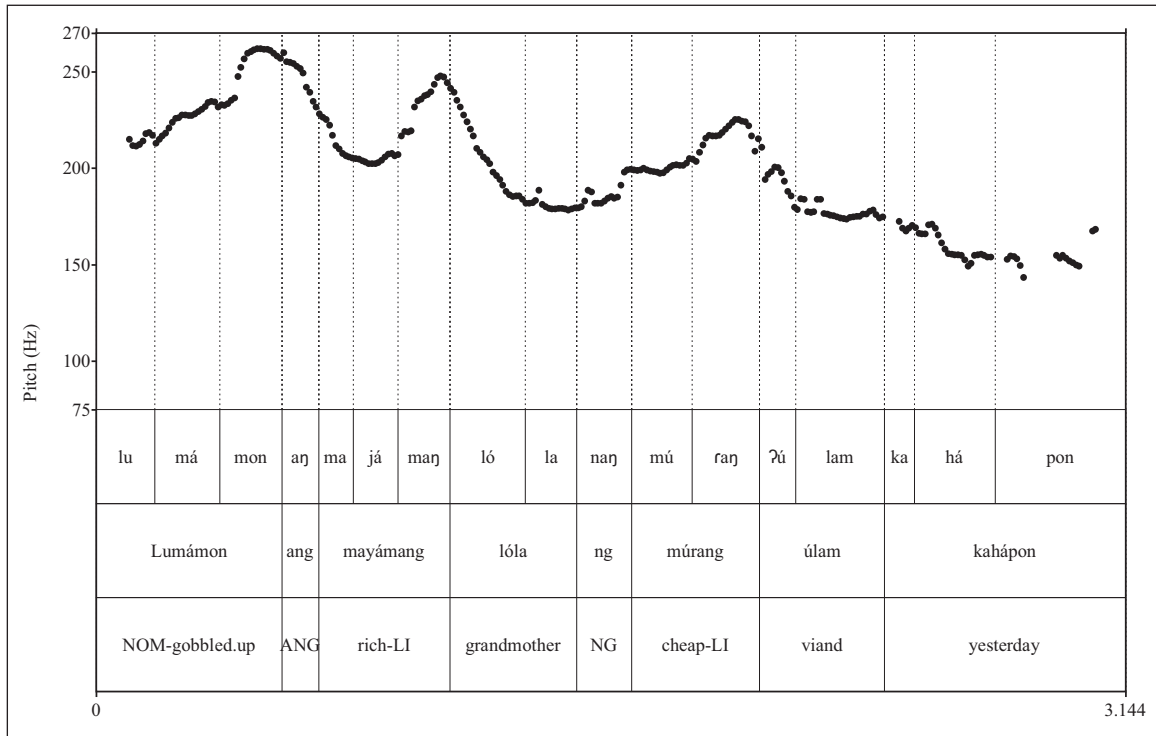


Figure 1: ‘The rich grandmother gobbled up the cheap viand² yesterday’.

2 Tagalog background

Tagalog is a verb-initial language, with scrambling in the postverbal field.³

- (1) a. Lumunon ang ina ng mani.
 NOM.swallowed ANG mother NG peanut
 ‘The mother swallowed a peanut’.
- b. Lumunon ng mani ang ina.
 NOM.swallowed NG peanut ANG mother
 ‘The mother swallowed a peanut’.

The Tagalog verb typically bears morphology picking out one of the DPs in the clause, which has its ordinary case morphology changed to a morpheme *ang* (or *si* for proper names). The examples in (1) above, for example, have nearly synonymous translations in (2).

- (2) a. Nilunon ng ina ang mani.
 ACC.swallowed NG mother ANG peanut
 ‘The mother swallowed the peanut’.

² *Ulam* means ‘the part of the meal which is not rice’; that is, traditionally, a standard meal consists of rice together with something else, and that something else is the *ulam*. ‘Viand’ is a standard translation for many Tagalog speakers, so I will use it here.

³ The verb for ‘swallowed’ has the variants *lumunón* and *lumulón*; I will reproduce examples throughout as they were uttered by speakers.

- b. Nilunon ang mani ng ina.
 ACC.swallowed ANG peanut NG mother
 ‘The mother swallowed the peanut’.

The alternation in (1–2) is sometimes called “Philippine-style voice”; it has a number of syntactic and semantic effects, which are the topic of much literature on Tagalog and related languages (Schachter 1976; 1996, Guilfoyle, Hung and Travis 1992; Kroeger 1993; Richards 1993; 2000; Maclachlan 1996; Rackowski 2002; Aldridge 2004; and much other work). We will see that the prosodic facts to be discussed here are apparently blind to the contrast in (1–2). In this paper I will use the conventions developed by Rackowski (2002) for glossing the relevant morphology. Rackowski analyzes the verbal morphology as case agreement with a DP in the clause (thus, for instance, the verb in (1) is glossed with NOM agreement, reflecting the fact that the thematic subject is picked out by the verb’s morphology). The case markers on the DPs that will be relevant for us are ANG, indicating the DP with which the verb agrees, and NG, a default marker which appears on all DPs which are not agreed with by the verb (and which are not dative; dative nominals receive a third marker, SA).

Attributive adjectives in Tagalog may either precede or follow the nouns that they modify, with a morpheme standardly referred to as the “linker” between them.

- (3) a. hilaw na mani
 raw LI peanut
 b. mani-ng hilaw
 peanut-LI raw
 ‘raw peanut’

The form of the linker, in this syntactic context, is determined phonotactically; it appears as a velar nasal, attached to the preceding word, after words ending in vowels, glottal stops, or /n/, and as a free-standing syllable *na* after other words.

Tagalog sentence-level prosody has so far been fairly sparsely described (though see Richards 2010; Himmelmann 2014; Sabbagh 2015; Travis and Hsieh 2015; Hsieh 2016 for discussion). In what follows I will outline the basics of the prosodic system.

3 Tagalog (and Irish) prosody

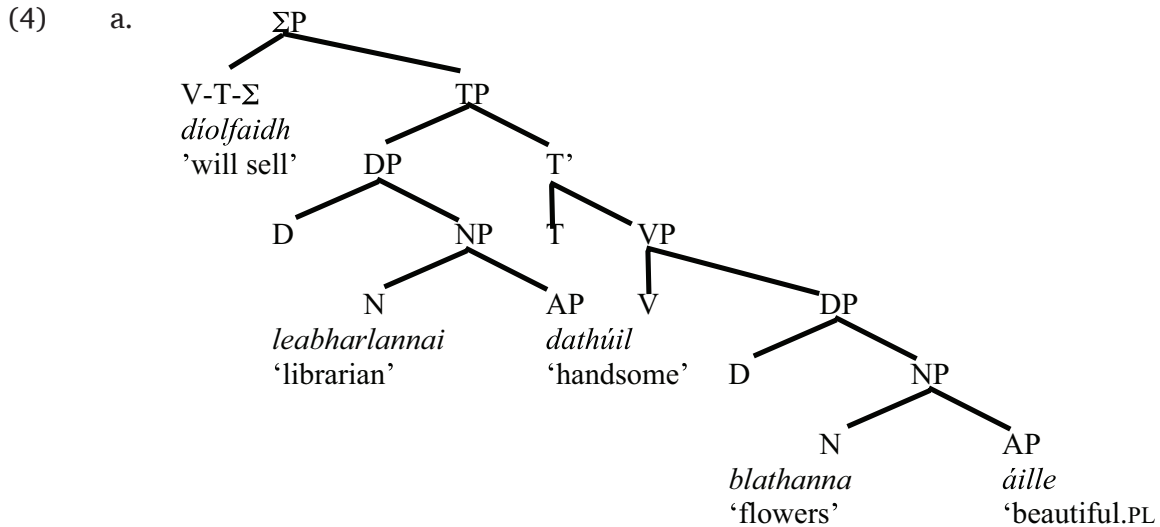
The basic facts of Tagalog prosody are amenable to an explanation like that developed by Elfner (2012; 2015) for Connemara Irish. The generalization to be captured by this explanation is that, in a sentence consisting of a verb followed by a number of DPs, each DP will typically have a pitch fall associated with its last stressed syllable, and all other stressed syllables will generally be associated with pitch rises.

If this generalization were exceptionless, we might seek to account for it in terms of something like the End-based theory of prosody developed in Selkirk (1986) and much subsequent work. We could say, for example, that DPs have prosodic phrase boundaries at their right edges, and that these right edges are marked with boundary tones that are realized as falls in pitch. Pitch rises could then be the default realization of stress, in positions lacking a boundary tone.

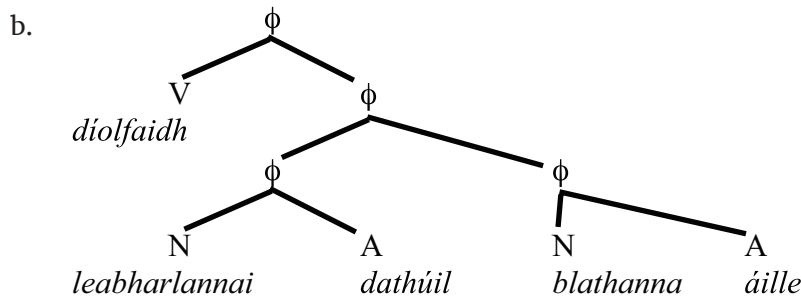
Elfner, however, offers evidence for one deviation from the overall pattern, which is important in motivating the particular theory of prosody that she proposes. The final

phrase in a clause, she argues, lacks a pitch rise, containing only a pitch fall. This is unexpected under the End-based account sketched above, which leads Elfner to pursue an alternative.

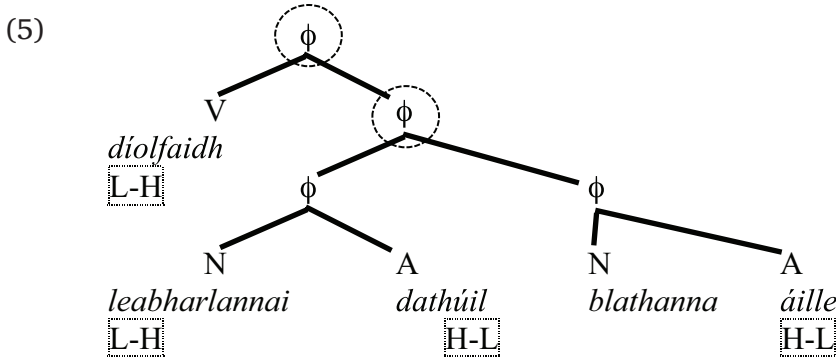
Elfner’s alternative uses Match Theory (Selkirk 2009; 2011), an approach to the relation of syntax to prosody which starts from the proposal that prosodic structure is generally isomorphic to syntactic structure, with failures of isomorphy requiring explanation and motivation. For instance, Elfner proposes that the syntactic tree for the Irish sentence in (4a) should correspond to the prosodic tree in (4b).



‘A handsome librarian will sell beautiful flowers’.



(4b) differs from (4a) mainly in that phonologically null heads (such as D and T) have been pruned from the tree; every maximal projection which dominates multiple branches has then been mapped onto a prosodic phrase ϕ . This procedure for mapping the syntactic tree onto the prosodic one is proposed to be universal; in sharp contrast to its End-based predecessor, Match Theory seeks to avoid language-specific statements about the relation between syntactic structure and prosodic structure. What is specific to Irish, in Elfner’s account, are the tonal elements that associate themselves to the tree in (4b). She borrows from Ito and Mester (2012; 2013) a distinction between *non-minimal* ϕ (those instances of ϕ which dominate another instance of ϕ) and *minimal* ϕ (which do not). She then claims that every non-minimal ϕ begins with a rise in pitch, while every ϕ (minimal or not) has a fall in pitch at its right edge.



In (5), two instances of ϕ (circled) are non-minimal, dominating other instances of ϕ , and are therefore associated with pitch rises at their left edges, realized on the first two words of the sentence. The adjectives *dathuil* ‘handsome’ and *aille* ‘beautiful.PL’ are both given pitch falls, since they come at the right edges of instances of ϕ . The resulting pitch track is shown in Figure 2 (Elfner 2012: 61).

Crucial to Elfner’s account is the lack of a pitch rise on *blathanna* ‘flowers’, the penultimate word of the sentence; the absence of a rise here is what her particular algorithm predicts, in a way that would be difficult to replicate in an End-based theory.

As we can see in Figure 3, Tagalog prosody resembles its Irish counterpart, in that DPs generally begin with pitch rises and end with pitch falls, and the verb contains a pitch rise. I will enclose DPs throughout with dotted-line boxes, just to make the examples easier to parse.

The Tagalog example in Figure 3 differs from its Irish counterpart in Figure 2 in two relevant ways. One is that the sentence in Figure 3 ends in an adverb, which means that Elfner’s theory predicts, correctly, that both of the DPs in this example should contain a pitch rise, while the utterance-final adverb should contain only a final fall. The other is that Tagalog stress is generally either penultimate or word-final, unlike Irish stress which is generally word-initial; consequently, the Tagalog pitch rises are later in the word than they would be in Irish, a fact we can capture by associating these pitch movements, in both languages, with stressed syllables.

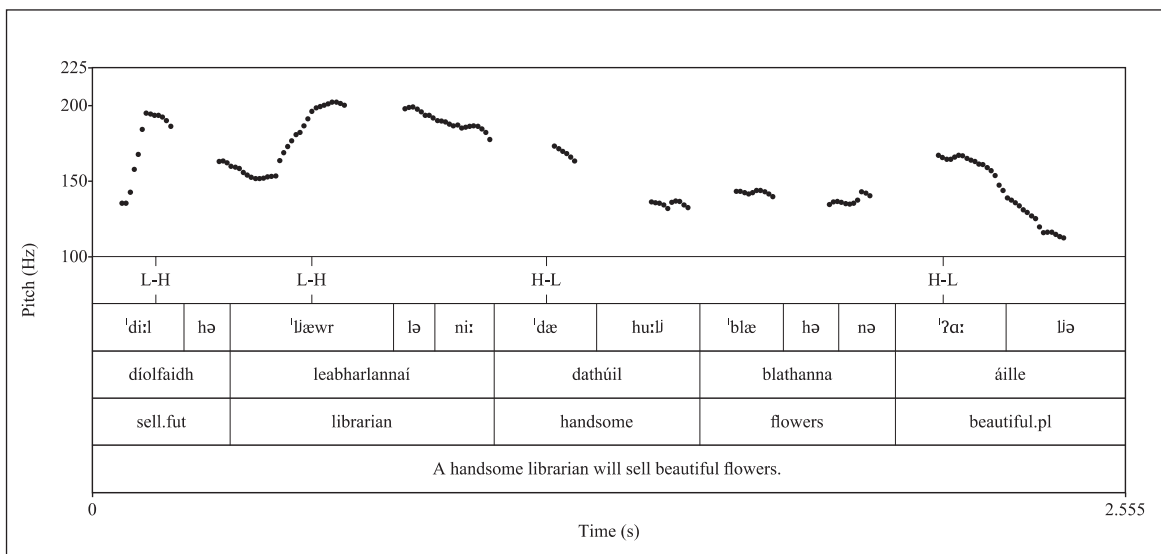


Figure 2: Irish pitch track.

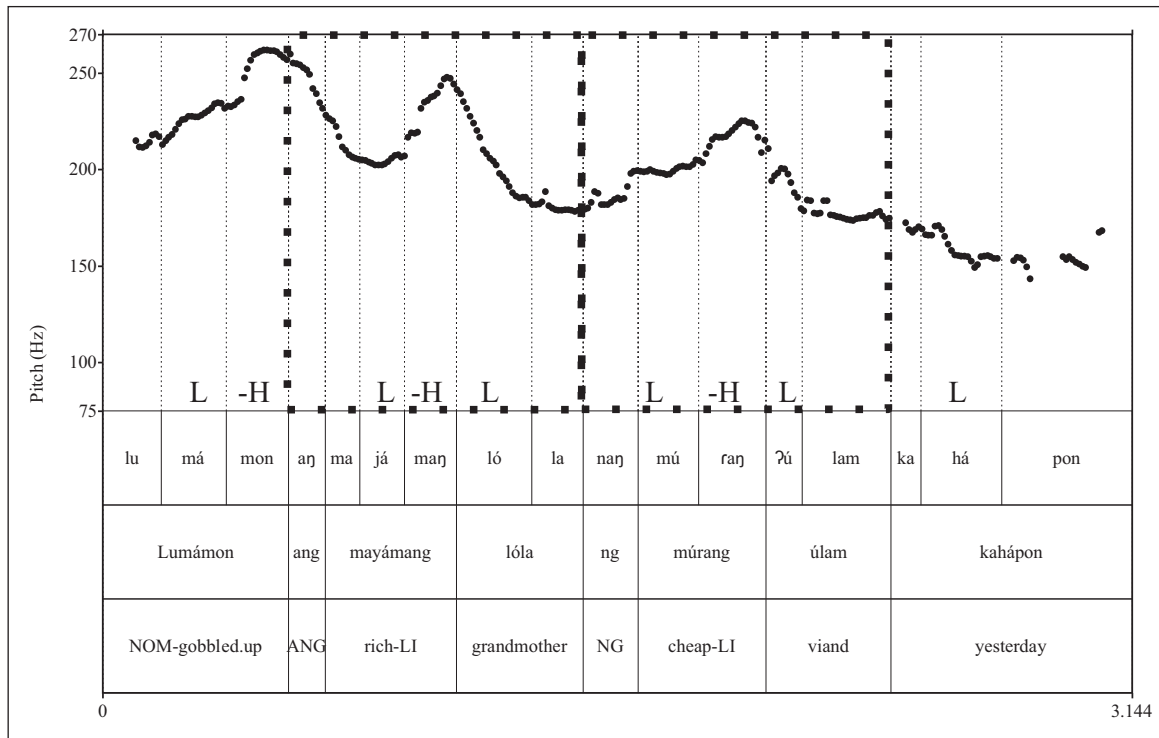


Figure 3: ‘The rich grandmother gobbled up the cheap viand yesterday’.

Tagalog often, though not always, exhibits a “pitch reset” between DPs. Figure 3 offers a good example of this; the noun *lóla* ‘grandmother’, which ends the first DP, ends at a particularly low pitch, and the subsequent DP *ng múrang úlam* ‘the cheap viand’ begins by jumping to a slightly higher pitch. I will not discuss pitch reset further below, but readers may want to bear it in mind as they interpret pitch tracks in what follows.

I will direct interested readers to Elfner (2012; 2015) for further discussion of Elfner’s account. In what follows I will assume that Elfner is essentially correct, for Tagalog as well as for Irish.

I will leave for future work the question of what, if anything, we should conclude from the fact that the prosodic systems of Tagalog and Irish resemble each other. As a helpful editor points out, we might imagine relating this fact to the fact that both languages are predicate-initial; on the other hand, as the same editor points out, prosodic work on other predicate-initial languages has uncovered different prosodic systems (see, for example, Clemens 2014 on Niuean; Calhoun this volume on Samoan). Then again, syntacticians working on predicate-initial languages seem to generally agree that the syntax of predicate-initiality may vary from language to language (see Potsdam 2009 for discussion and a review of some relevant literature). Further work on the prosodic systems of a variety of languages will hopefully make the overall picture clearer.

4 Rising and falling in Tagalog

In this section I will try to define a little more carefully the distribution and shape of pitch rises and falls in Tagalog. What we learn here will be useful in the next section, where we will turn to the interaction of prosody with scrambling. Section 4.1 will concentrate on the behavior of pitch rises; Section 4.2 will turn to pitch falls, which, as we will see, exhibit some cross-speaker variation. Section 4.3 will summarize.

4.1 Pitch rises

By far the most common way to realize pitch rises in Tagalog involves a rise that begins at a stressed syllable. The pitch rise then typically peaks at the end of the word. The example in Figure 3, repeated below as Figure 4, illustrates this general tendency.

The example in Figure 4 contains three pitch rises (circled), one on the verb and one on each of the adjectives modifying the two following DPs. Each pitch rise peaks in the syllable following a stressed syllable (which is, as it happens, the last syllable of the word in which the pitch peak begins). To make later discussion easier, I will begin labeling the speakers responsible for each utterance: the speaker responsible for the example in Figure 4 will be known as Speaker A.

The relevant notion of “word” will have to be one in which a linker is considered to be part of the word preceding it, for purposes of pitch peak distribution.⁴ Consider the examples in Figures 5 and 6.

Here, again, the pitch rises are circled (and I am continuing to ignore the effects of pitch reset between DPs, which happen to be particularly clear in these examples).⁵ The pitch rise of interest, in both examples, is the second one, appearing at the beginning

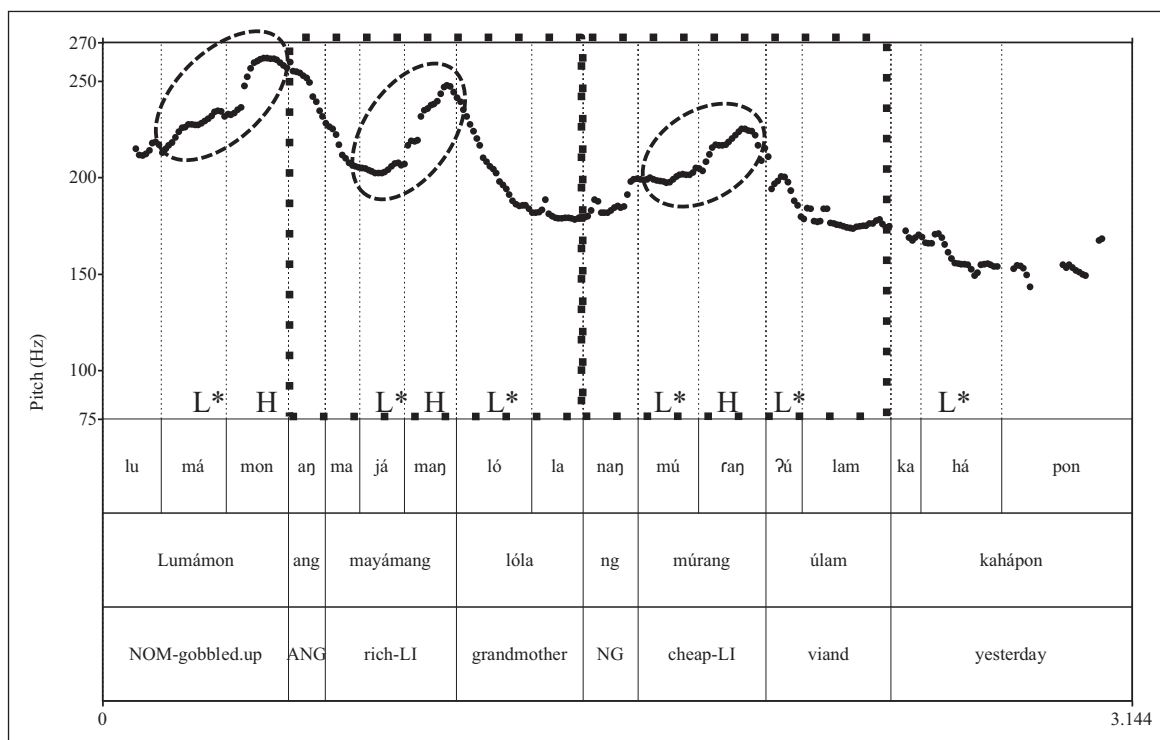


Figure 4: ‘The rich grandmother gobbled up the cheap viand yesterday’. [Speaker A]

⁴ An editor suggests, very plausibly, that the relevant notion would be “prosodic word”. I will leave for future work the question of whether linkers form prosodic words together with the words preceding them.

⁵ Note that pitch reset is clearly not simply another instance of a pitch rise, of the same type as the ones circled. In Figure 5, for example, the second DP *aŋ mga lolang mayayaman* ‘the rich grandmothers’ begins with a higher pitch than the last syllable of the immediately preceding adjective *mura* ‘cheap’. But this rise in pitch cannot be triggered by the stressed syllable of *mura*; if it were, then we would expect the pitch rise to begin on that stressed syllable and continue through the final syllable of *mura*. Compare the pitch rise on the preceding noun *ulam* ‘viand’, which does begin with the initial syllable of the noun. “Pitch reset” appears to be a distinct phenomenon.

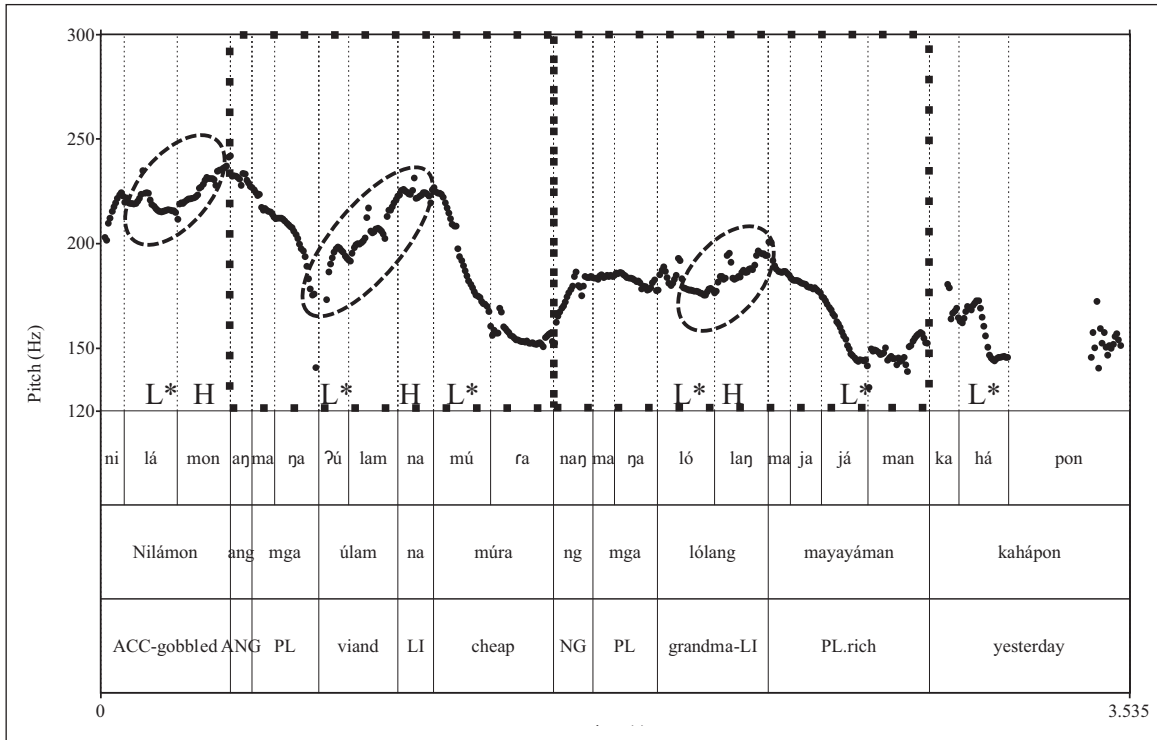


Figure 5: ‘The rich grandmothers gobbled up the cheap viands yesterday’. [Speaker A]

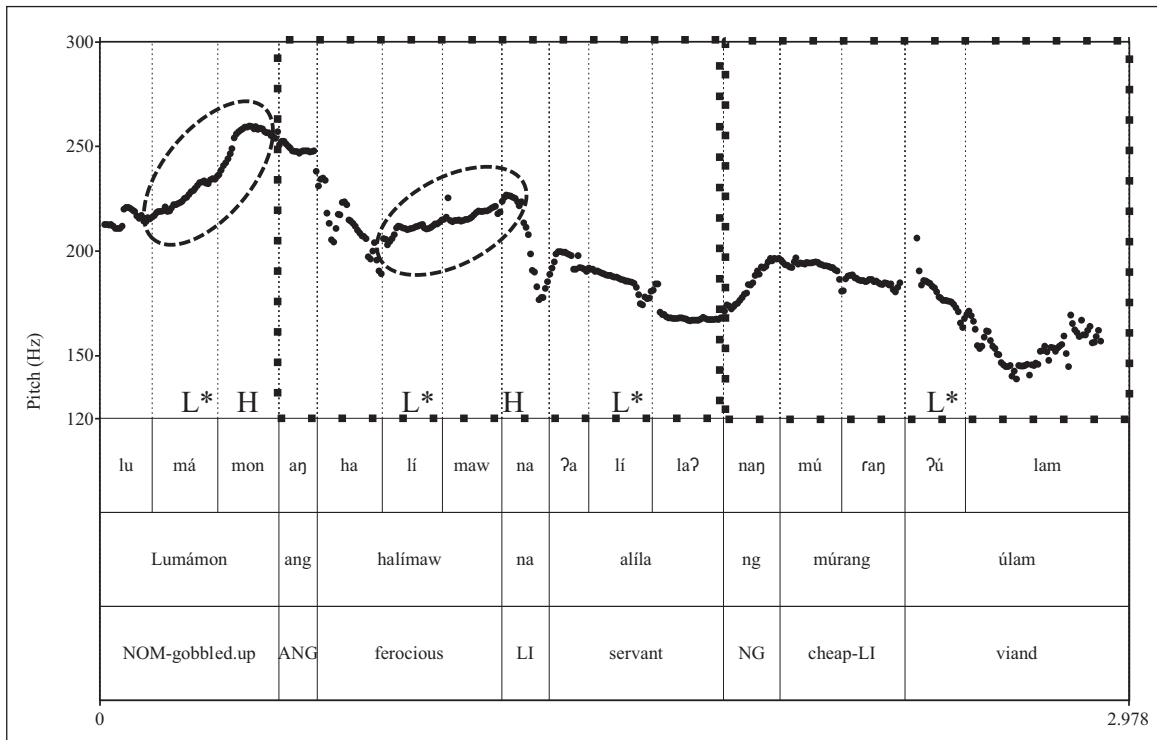


Figure 6: ‘The ferocious servant gobbled up the cheap viand’. [Speaker A]

of the first DP (*úlam na múra* ‘cheap viand’ in Figure 5, and *halímaw na alíla* ‘ferocious servant’ in Figure 6). Here the rise begins on the stressed syllable of the first word in the DP, and peaks on the linker *na*, which appears between the two words. As mentioned above, the linker has two allomorphs, one a velar nasal attaching to the preceding

word, and the other a free-standing syllable *na*. Apparently both allomorphs must be regarded as part of the preceding word, for purposes of determining the placement of pitch peaks.

In this regard, the linker differs from other functional material. Consider, in Figures 5 and 6, the placement of the first pitch peak, associated with the verb. This appears at the end of the verb itself, and is followed by a fall through functional morphemes beginning the DP (a case-marked determiner *ang*, and, in Figure 5, the bisyllabic plural morpheme *mga* /maŋa/). These morphemes do not participate in the verb’s pitch rise, in the way that the linker participates in the pitch rise in the first DP.

We also learn from examples like those in Figures 5 and 6 that pitch rises do not simply peak on the syllable after they begin (as they did in Figure 4 above). In both of Figures 5–6, the second pitch rise of the sentence begins at the penultimate syllable of a word, and passes through the word’s final syllable to peak at the linker.

Tagalog main word stress is generally either penultimate or final, which will make it difficult to observe pitch peaks any further from stressed syllables than those in Figures 5 and 6. Pitch peaks associated with final stress typically appear on the immediately following syllable, or sometimes at the transition between the stressed syllable and the following one.

The content words in Figures 7 and 8 generally have final stress, and their pitch rises therefore begin on their final syllables, and peak on the first syllable of the following word.

In general, then, pitch rises in Tagalog appear to involve an L* associated with the stressed syllable, followed by an H which appears at the end of the word (and linkers are associated tightly enough with the preceding word to count as part of it for this purpose). Just when the stressed syllable is itself at the end of the word, the associated H will often appear at the beginning of the next word.

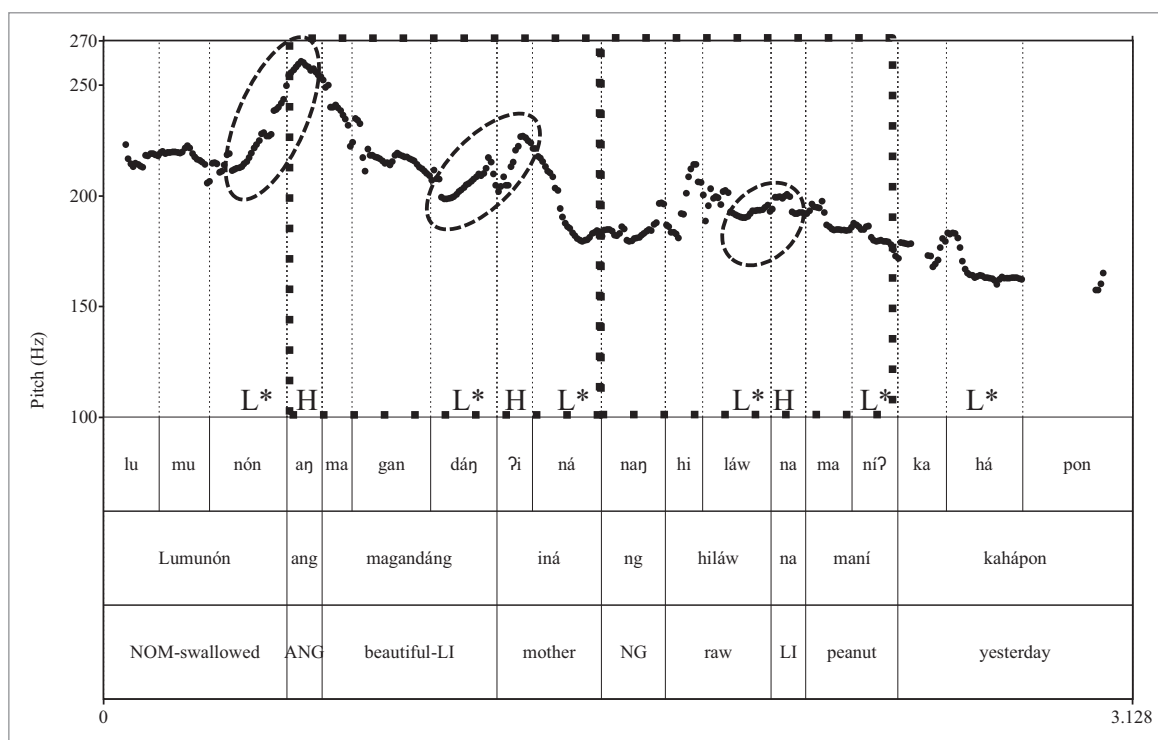


Figure 7: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker A]

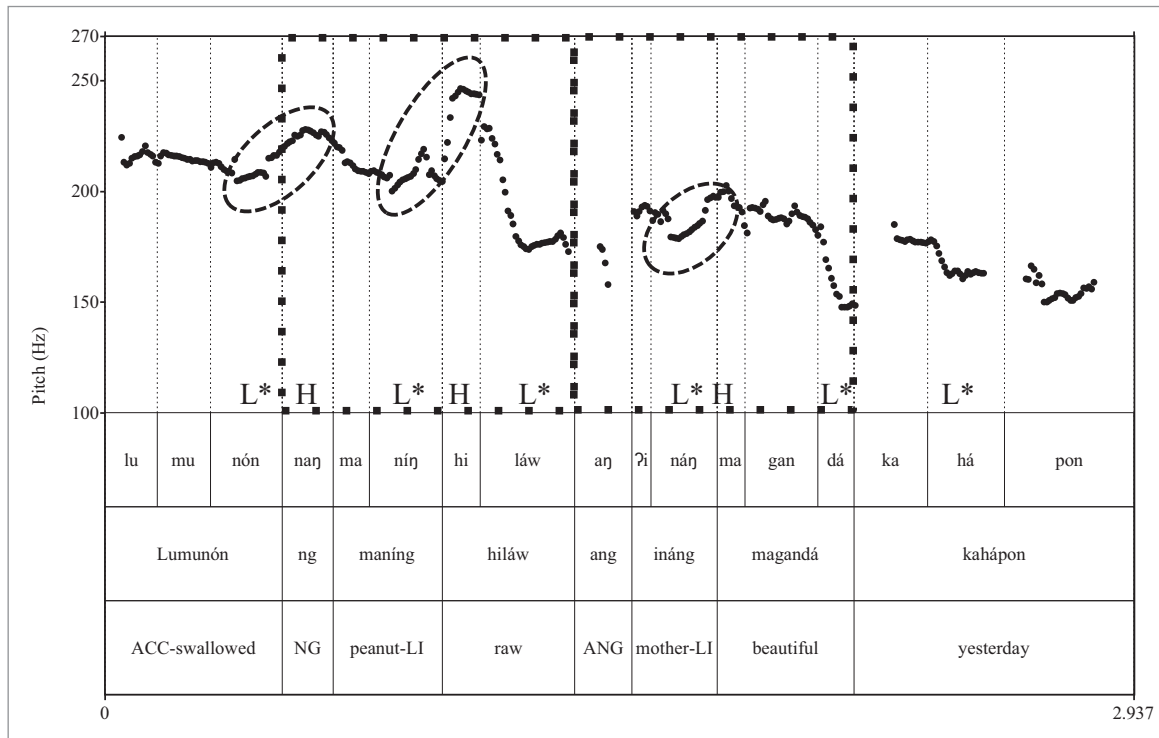


Figure 8: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker A]

4.2 Pitch falls

Pitch falls are realized differently by different speakers; I will suggest that for some speakers, a pitch fall is a simple L* on a stressed syllable, while for others, the L* is preceded by an H target.

For speakers like Speaker A in the previous section, pitch falls are comparatively simple; they involve a drop in pitch, starting at the pitch peak of the preceding rise, and ending at a stressed syllable. The pitch drop is often steepest on the stressed syllable itself, and comparatively gradual on preceding syllables. Material following the stressed syllable is typically either flat or continues a more gradual fall than the one on the stressed syllable. In this pattern, there is no evidence for a H target associated with the pitch fall; it is simply an L*.

Consider Figure 9, which contains a good example of a pitch fall spread over a large number of syllables.

In Figure 9, two pitch falls are circled. The first DP has a quick pitch rise which begins on the penultimate syllable of *alilang* ‘servant-LINKER’, and ends on its final syllable. The subsequent fall spans six syllables, running from the pitch peak at the final syllable of the noun to the stressed syllable of the following adjective *may-kapangyarihan* ‘powerful’.

In Figures 10 and 11, we see some additional evidence that the L involved in pitch falls is associated with the position of stress.

Consider, in particular, the properties of the second pitch fall, the one at the end of the first DP of each of these sentences. In both cases, the pitch fall ends on a stressed syllable; stress is final on the adjective *magagandá* ‘beautiful.PL’ in Figure 10, and penultimate on the adjective *mayayáman* ‘rich.PL’ in Figure 11. The examples illustrate the fact that pitch falls end at stressed syllables (rather than, for example, at the ends of words or phrases).

There is another well-attested way of implementing of pitch falls, which I will suggest represents association of phrase-final stress with a H L* accent, rather than the L* postulated for the speaker discussed above. Consider Figure 12, a pitch track for the sentence in Figure 10 above, as uttered by a different speaker, referred to hereafter as Speaker B.

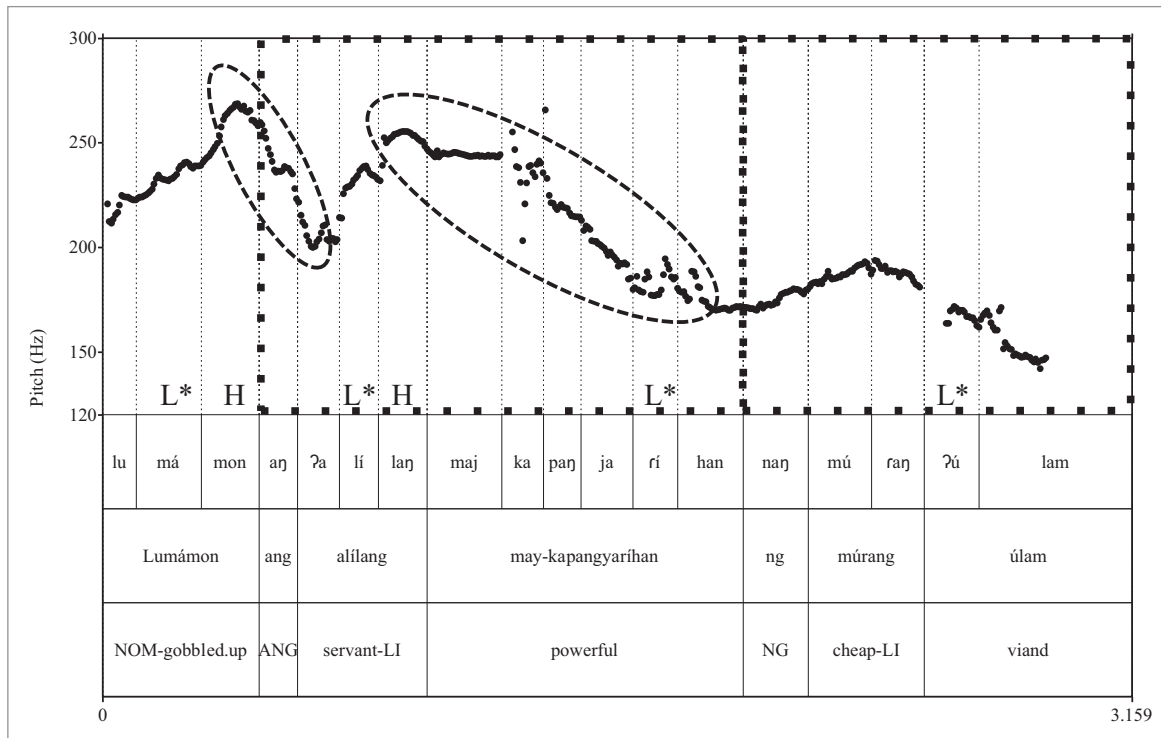


Figure 9: ‘The powerful servant gobbled up the cheap viand’. [Speaker A]

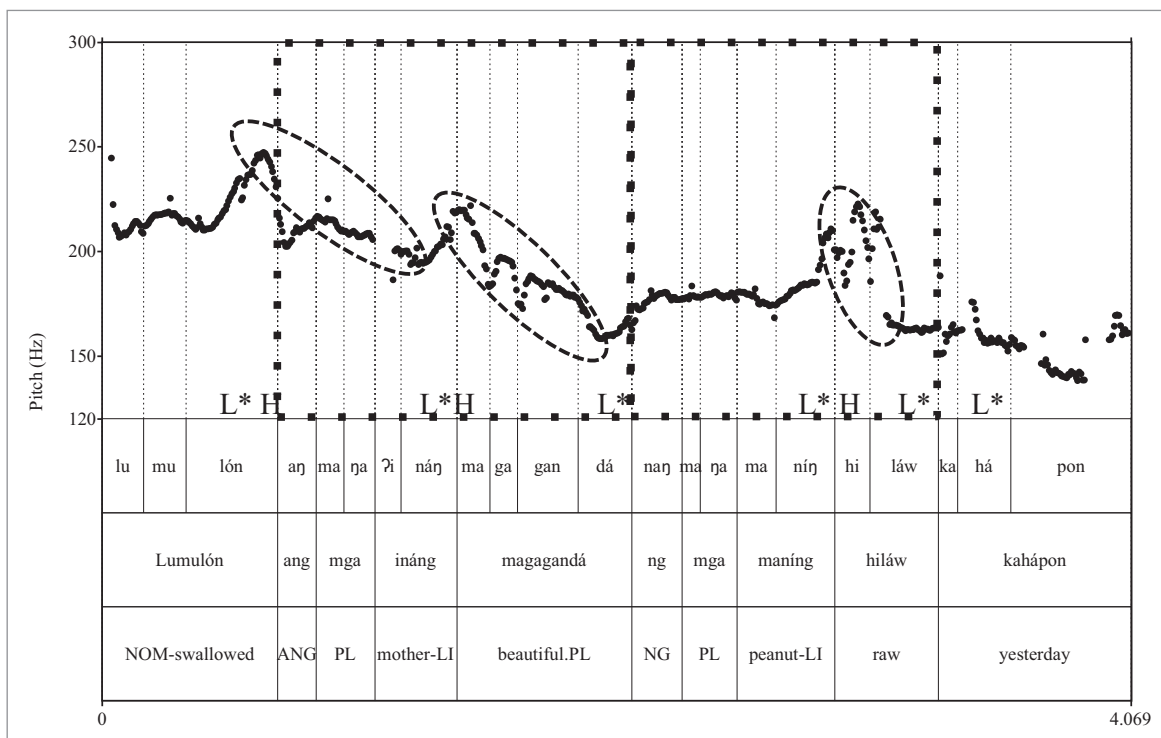


Figure 10: ‘The beautiful mothers swallowed raw peanuts yesterday’. [Speaker A]

Three pitch falls are circled in Figure 12, and the one of interest to us is the second one, on the DP *ang mga ináng magagandá* ‘the beautiful mothers’. For Speaker B, this fall is quite steep, contained almost entirely in the final syllable of the adjective. The steepness of the fall is puzzling on the model developed so far of Tagalog prosody, which would lead us to expect a pitch peak just after the first stressed syllable of the DP, with stress falling

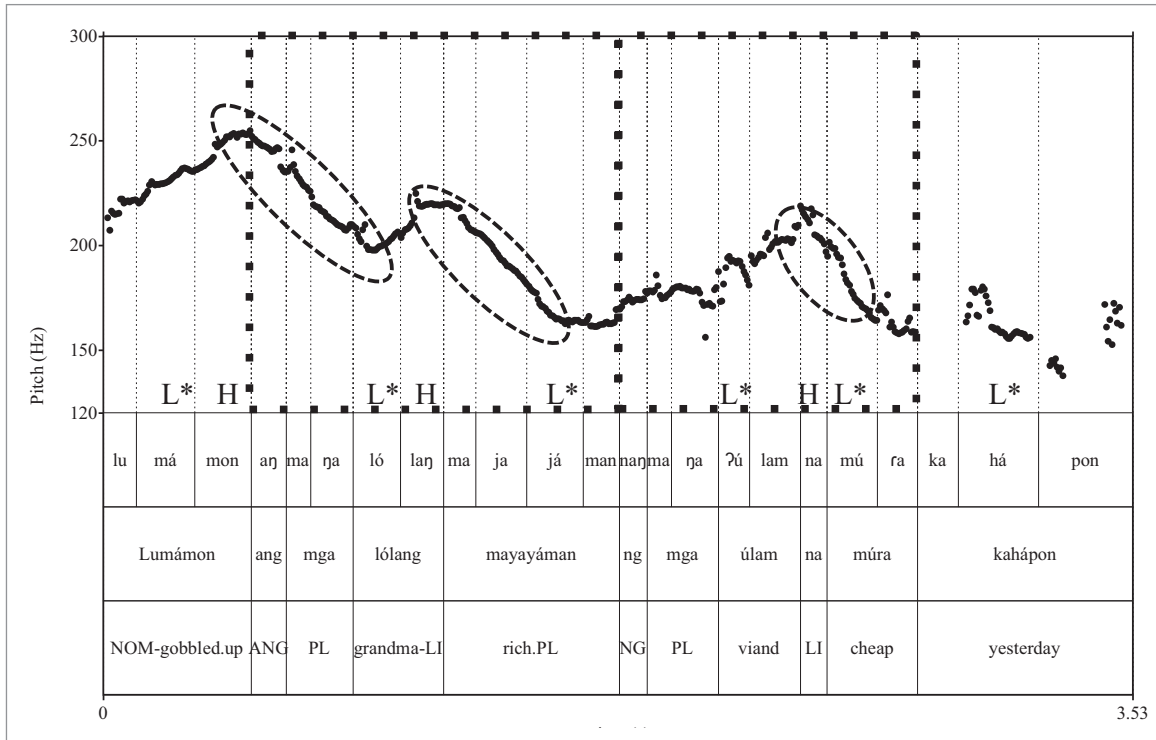


Figure 11: ‘The rich grandmothers gobbled up the cheap viands yesterday’. [Speaker A]

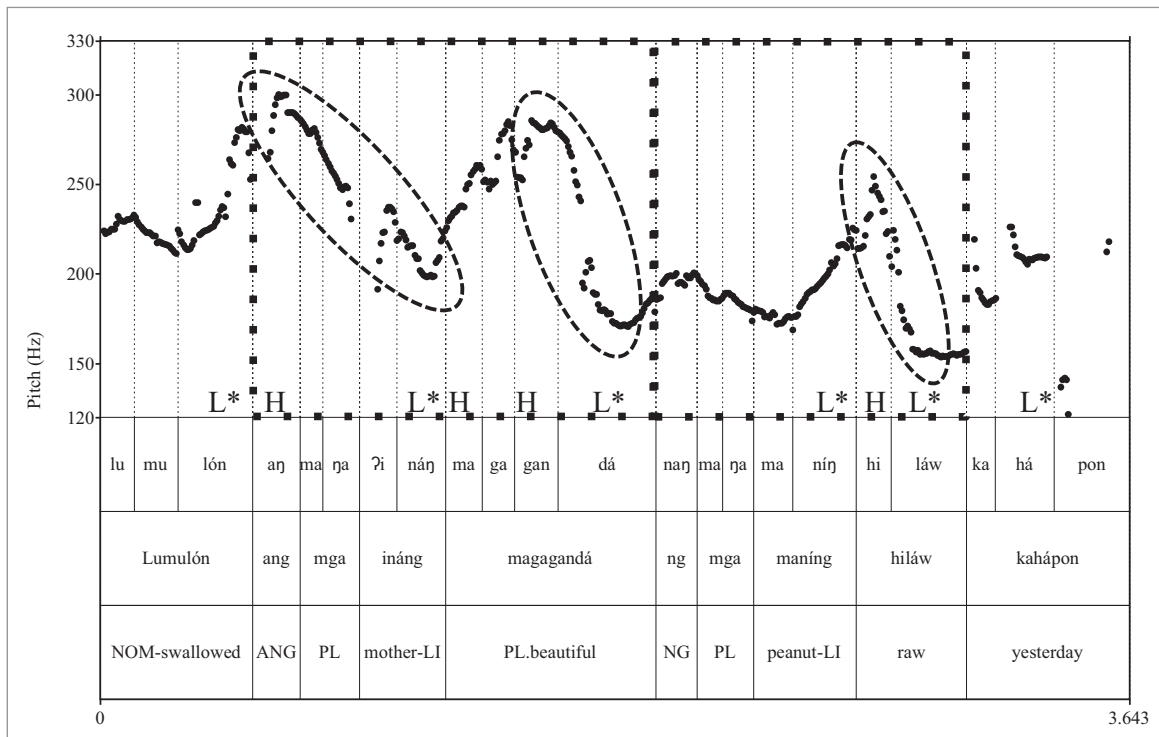


Figure 12: ‘The beautiful mothers swallowed raw peanuts yesterday’. [Speaker B]

gradually throughout the adjective, to its stressed final syllable. This was, in fact, the pattern that we saw in Figure 10 above, for Speaker A. Speaker B in Figure 12, however, has a different pattern. The difference is not simply a quirk of these particular examples; another pair of examples with the same property is shown in figures 13 and 14:

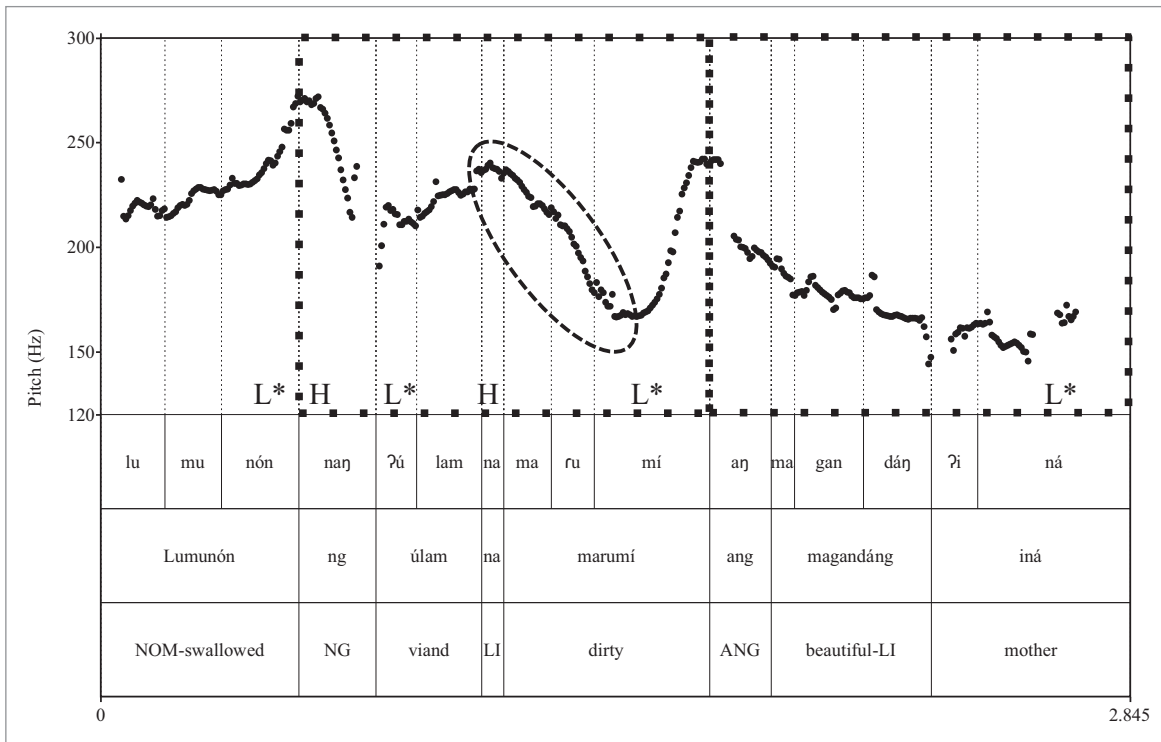


Figure 13: ‘The beautiful mother swallowed a dirty viand’. [Speaker A]

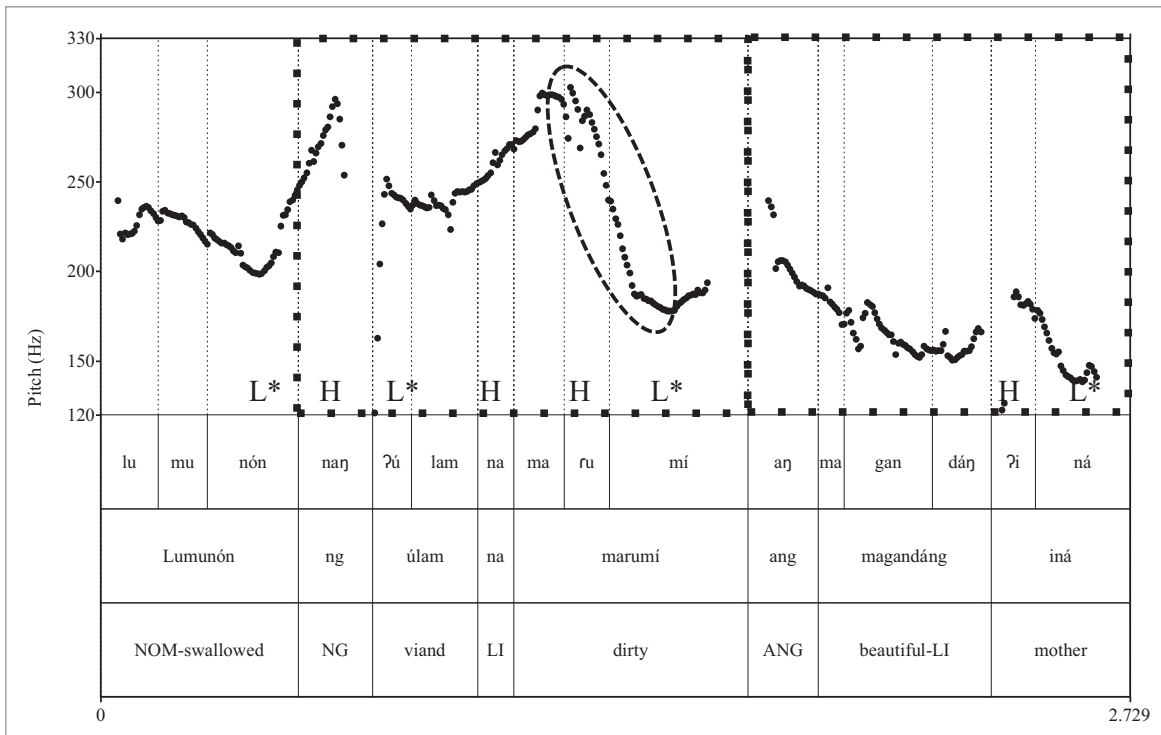


Figure 14: ‘The beautiful mother swallowed a dirty viand’. [Speaker B]

Here, again, the pitch fall in the first DP (circled) is steeper for Speaker B than for Speaker A. For Speaker A, pitch begins falling around the beginning of the adjective, after the pitch peak on the linker induced by the stressed syllable in the noun. For Speaker B, the pitch fall starts in the penultimate syllable of the adjective, just before the stressed final syllable.

The explanation for the difference should not be about different realizations of pitch rises more generally. We cannot, for example, say that Speaker B simply has a different implementation for pitch rises than Speaker A, one in which pitch rises until forced to fall by a stressed syllable. Such a description of pitch rises could account for the behavior of the second pitch peak in Figure 12, but not for the first pitch peak. The pitch peak on the verb is just where it should be in Figure 12, on the syllable after the stressed final syllable of the verb, and pitch after this peak drops comparatively gradually to the stressed syllable on the noun *ináng*, just as it would for Speaker A. And, again, this is a general feature of this speaker's pronunciation; Speakers A and B treat verbs in the same way, but differ in their treatment of DPs.

The best account of the difference between speakers, then, would need to account for a difference between two kinds of cases: one case in which a pitch rise is followed by another pitch rise (in this case, the rise on the verb, followed by the rise at the beginning of the DP), and another case in which a pitch rise is followed by a pitch fall (the case of the two pitch excursions associated with DP). For Speaker A, these two cases are identical; they involve a rise followed by an L* tone, which is either the beginning of a following rise (L* H) or a phrase-final fall (L*). For Speaker B, apparently, the situation is different. We can capture the difference between speakers by representing phrase-final falls for Speaker B as H L*. These falls therefore begin, not with an L*, but with an H, and consequently, the L* of the DP-final fall is always just preceded by an H; the fall is therefore not as gradual as it would be for Speaker A.

4.3 Summary

The general principles sketched above are summarized in (6).

- (6)
- a. A pitch rise (L* H) begins at a stressed syllable, and peaks at the end of the word (with linkers treated as part of the preceding word). If the stressed syllable is final, the peak is sometimes on the first syllable of the following word.
 - b. Pitch falls have at least two attested realizations.
 - i. For some speakers, a pitch fall begins at a pitch peak and proceeds to a stressed syllable; the pitch fall is either steepest on the stressed syllable, or reaches its lowest point there, or both. (L*)
 - ii. For other speakers, a pitch fall begins at the syllable before a stressed syllable, and ends on the stressed syllable. (H L*)

Consider the examples in Figures 15–18 below, which are renditions by four different speakers of the example previously given as Figure 7 (repeated here as Figure 15). I have annotated the pitch tracks with the pitch excursions predicted by the theory developed in this paper, and it seems to me that while the pitch tracks certainly vary, their shapes generally conform to expectations.

These pitch tracks are certainly not identical. For instance, the pitch peak associated with the final stressed syllable of *magandáng* 'beautiful-LINKER' appears on the first syllable of the following noun *iná* 'mother' in Figures 15, 16 and 18, but on the end of the adjective itself in Figure 17. Similarly, pitch reset at the beginning of the second nominal is much less pronounced in Figure 15 than it is for the other speakers. Still, the general distribution of tones, and their phonetic realizations, seem to me to roughly correspond to the generalizations outlined in the previous section, with differences largely having to do with the size of various pitch excursions, and some strategies for interpolation.

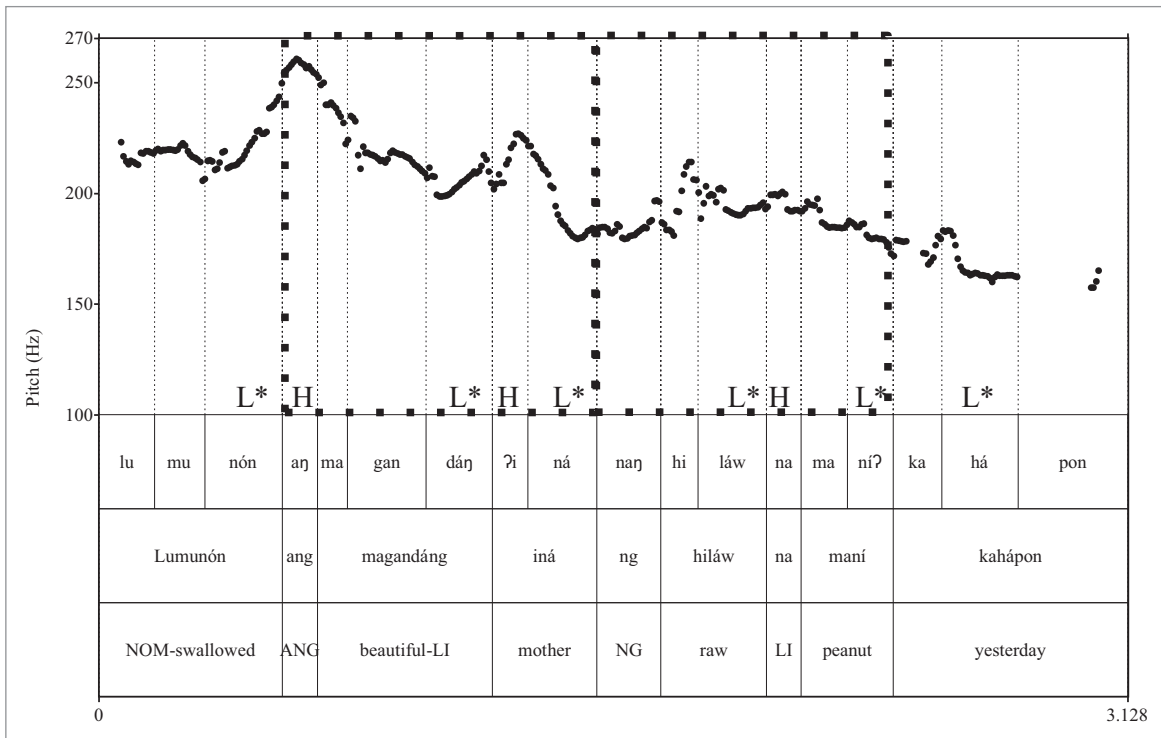


Figure 15: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker A]

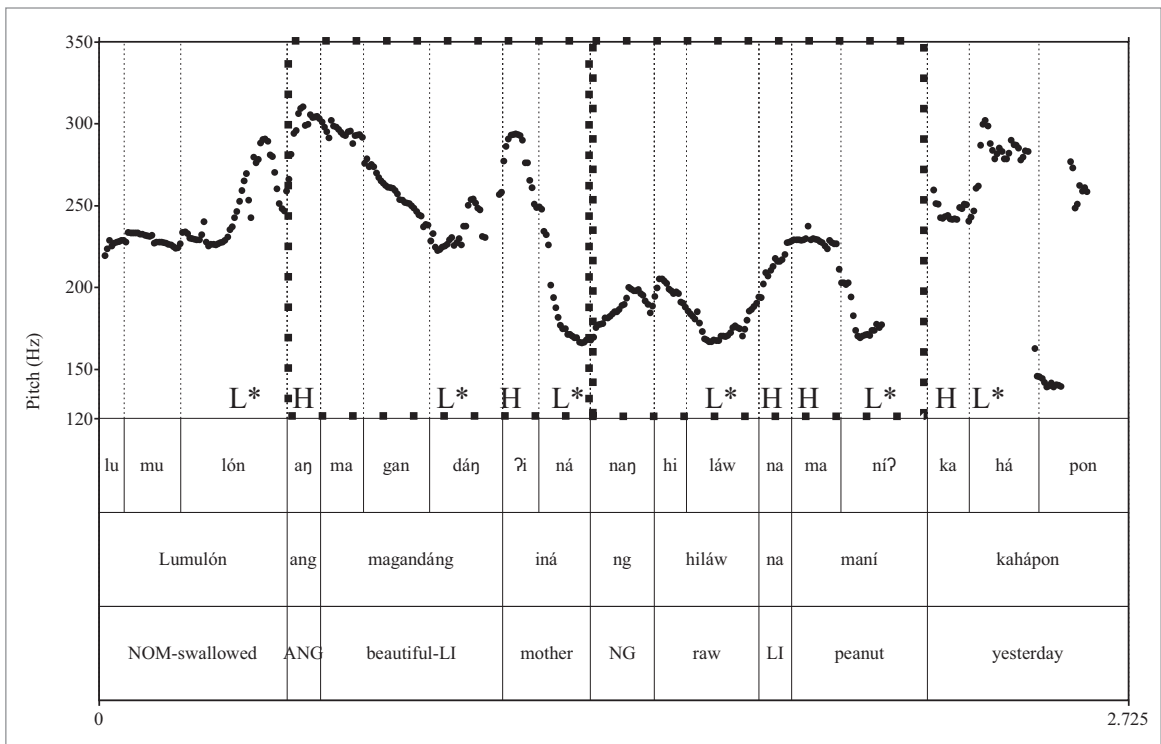


Figure 16: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker B]

We have seen one systematic difference between Speakers A and B, which I proposed had to do with a difference in the representation of phrase-final falls; for Speaker A, phrase-final falls are triggered by an L*, while for Speaker B they involve a H L* sequence. This does not exhaust the differences between speakers in the sample. One other difference

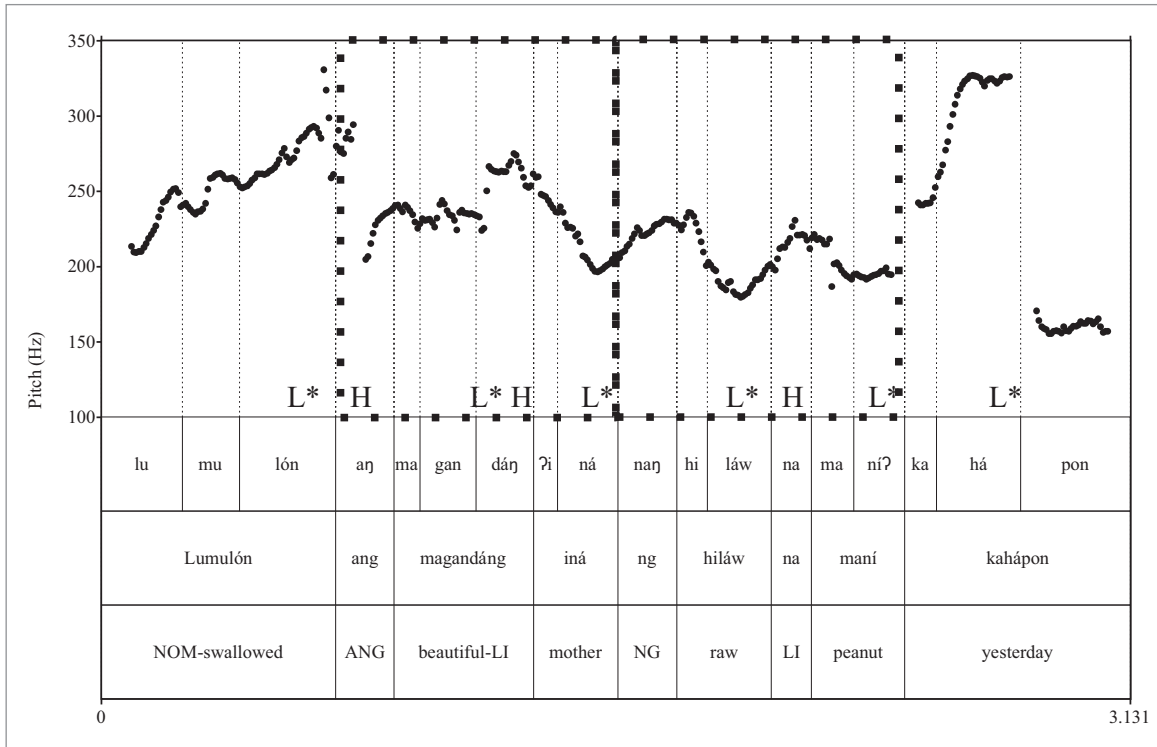


Figure 17: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker C]

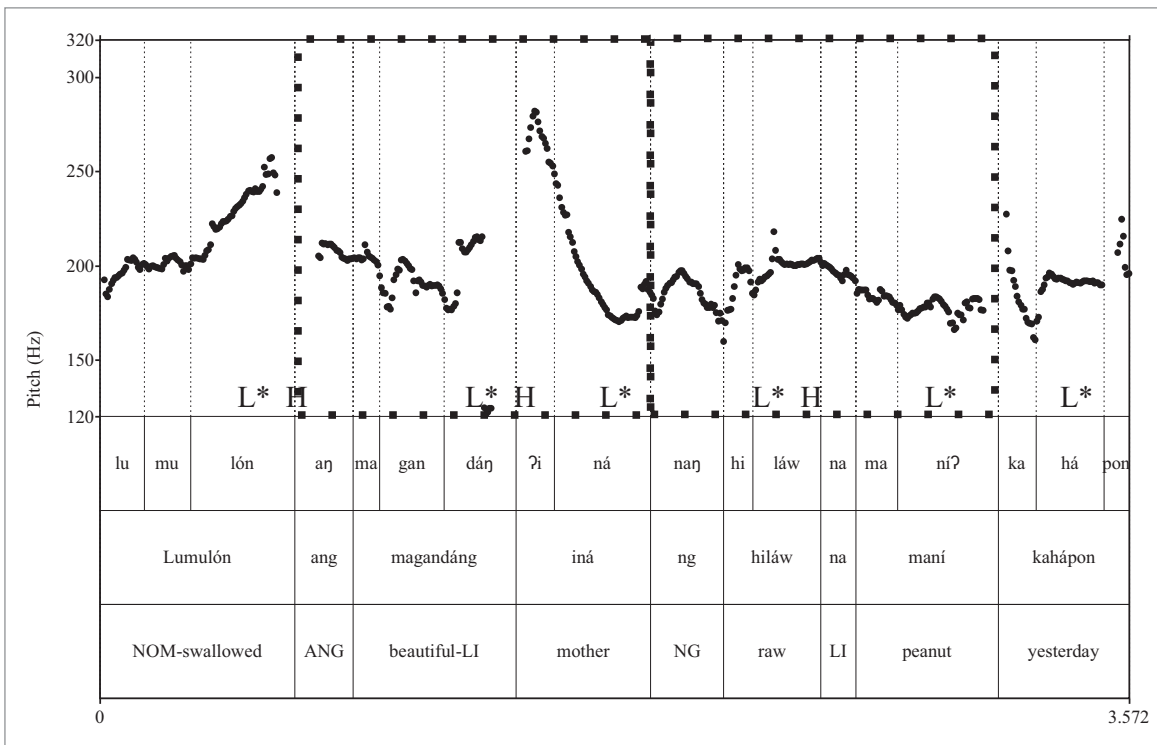


Figure 18: ‘The beautiful mother swallowed a raw peanut yesterday’. [Speaker D]

will be relevant for us in the next section: there are speakers who appear to at least have the option of representing stressed syllables as pitch peaks, centered just on the stressed syllable itself.

Consider Figure 19, Speaker C’s version of the sentence given in Figures 10 and 12 above for Speakers A and B.

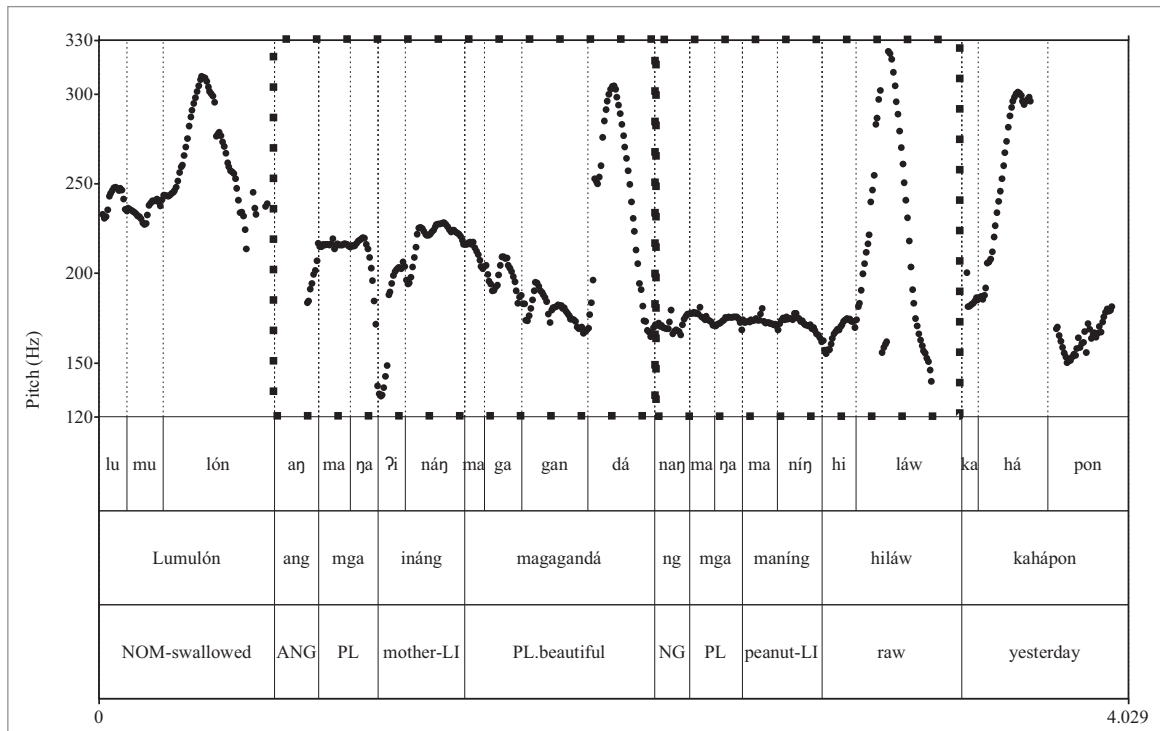


Figure 19: ‘The beautiful mothers swallowed raw peanuts yesterday’. [Speaker C]

Here Speaker C associates certain stressed syllables (in particular, phrase-final stressed syllables, which we would expect to bear pitch falls) with extremely high pitch peaks. This is not a general property of her speech; Figure 17 above, for example, lacks these high pitch peaks. I leave for future research the question of whether examples like the one in Figure 19 are possible in ordinary speech, perhaps under special information-structural circumstances.

5 Prosody and word order

Consider the examples in Figures 20–21.

The examples in these two figures are roughly synonymous, and differ in word order; both are verb-initial, but the subject precedes the object in Figure 20, while the reverse is true in Figure 21. The circled peak in Figure 21 emphasizes a prosodic difference between the two examples; when the object precedes the subject, its pitch peak is very high, much higher than the corresponding peak on the subject in Figure 20.

As we will see, this pair of examples is representative. In what follows, I will discuss the results of an experiment on the interaction of Tagalog prosody with Tagalog word order, the goal of which was to document the prosodic effects of Tagalog scrambling.

Four native speakers of Tagalog, all women from the Manila area now living in the Boston area, were presented with 24 transitive clauses, together with 50 fillers. The 24 clauses varied along three binary parameters and one ternary parameter. Their content words had either all penultimate or all final stress; the “voice” morphology on their verbs was either NOM or ACC; their word order was either VSO or VOS; and the nouns in the sentence were either unmodified or modified by either prenominal or postnominal adjectives. The sentences uniformly ended in the adverb *kahápon* ‘yesterday’, in order to avoid any prosodic effects of being clause-final. Two of the relevant examples, differing in placement of stress, were as follows:

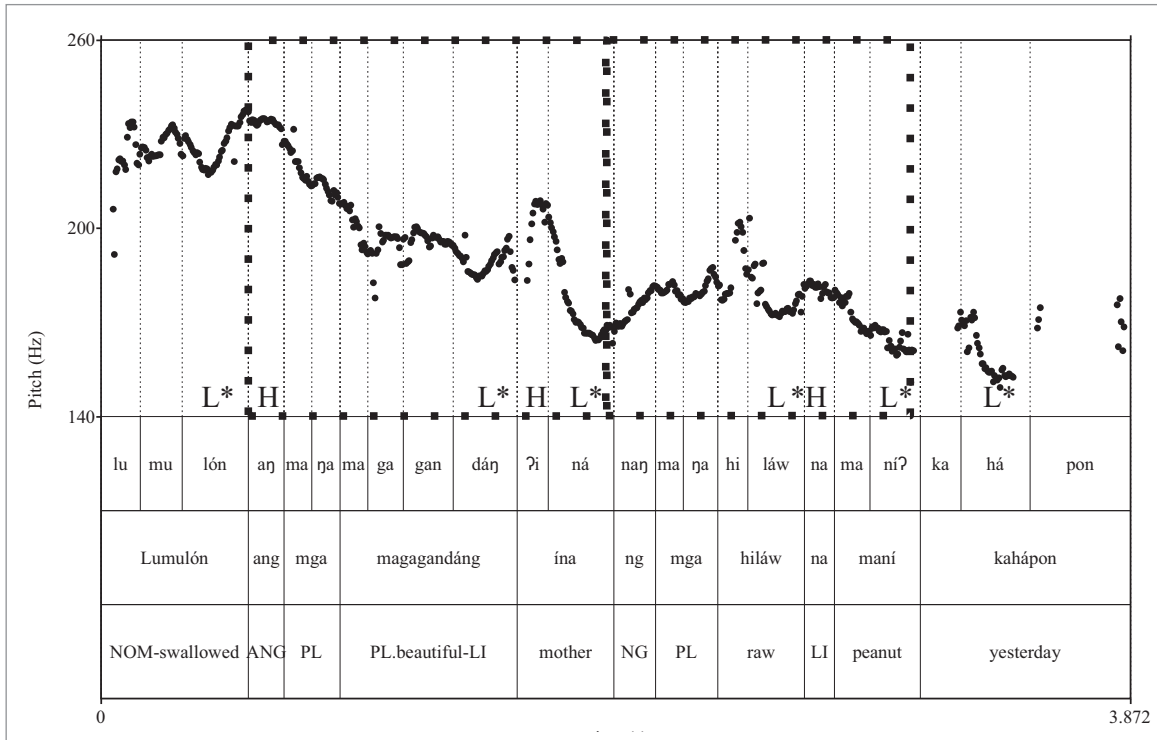


Figure 20: ‘The beautiful mothers swallowed the raw peanuts yesterday’. [Speaker A]

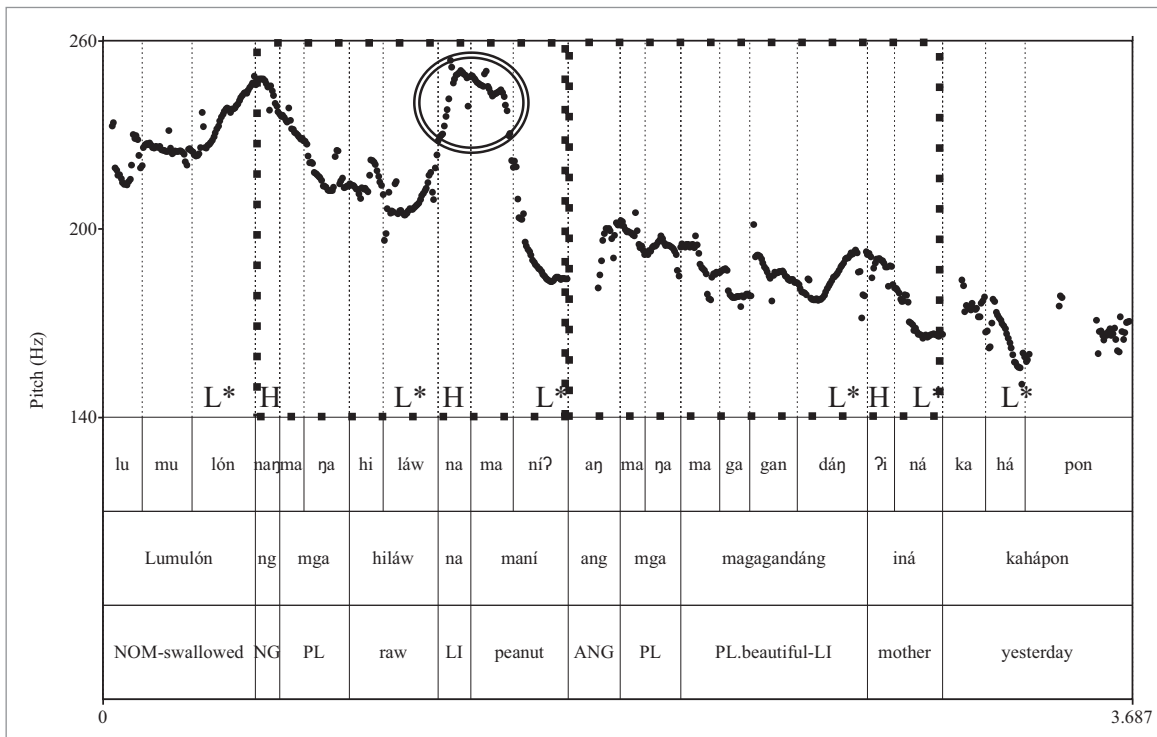


Figure 21: ‘The beautiful mothers swallowed the raw peanuts yesterday’. [Speaker A]

- (7) a. Lumulón ang magandang iná ng hilaw na maní kahápon.
 NOM.swallowed ANG beautiful-LI mother NG raw LI peanut yesterday
 ‘The beautiful mother swallowed a raw peanut yesterday’.

- b. Lumámon ang mayámang lóla ng múrang úlam kahápon.
 NOM.gobbled.up ANG rich-LI grandmother NG cheap-LI viand yesterday
 ‘The rich grandmother gobbled up the cheap viand yesterday’.

A subsequent study, performed with three of the four women from the first study, presented versions of the sentences in the first study in which all the nominals were plural. The study differed from the first one above in that all of the verbs were in the NOM voice, thus cutting the number of examples down to 12 per speaker.

In both studies, the speakers were asked to read the sentences at ordinary conversational speed, imagining that they represented the beginning of a conversation, as an answer to a question like ‘What happened?’. They were encouraged to repeat any sentences that they felt they had pronounced oddly, and to refuse to pronounce sentences that they felt were ungrammatical. They were recorded in a quiet room, using a Marantz PMD 670.

I used Praat to create pitch tracks of the resulting recordings, and to find the highest pitch points in the verb and in each of the DPs of the sentence (relying mainly on Praat’s automatic function for finding highest pitches). As the preceding sections have hopefully made clear, the highest point in the DP could have appeared in any of a number of places, with the most common position being one or two syllables after the first stressed syllable in the DP. I recorded the highest position anywhere in the DP, without confining myself to this window.

Combining the results of the two studies yielded a total of 132 recorded sentences. I fit a linear mixed effects model to these data, using R.⁶ The model predicted the highest pitch in the first DP of a given sentence from four factors: the pitch of the verb of the sentence in question, the placement of stress in all the content words of the sentence (penultimate vs. final), the voice morphology on the verb (NOM vs. ACC), and the order of the postverbal arguments (VSO vs. VOS), as well as the interaction of the last two terms. The model contained random slopes for both voice and word order for subjects. A likelihood ratio test revealed that the interaction of word order and voice was non-significant ($p = 0.41$), so this interaction was dropped and the model was refitted with only main effects (and with a random slope only for word order). Likelihood ratio tests on this model revealed that word order was significant ($p = 0.009$), but that choice of voice morphology was not ($p = 0.63$). Placement of stress was weakly significant ($p = 0.03$). Verb pitch was highly significant ($p < 0.00001$); this presumably means simply that speakers with higher voices will tend to have both higher-pitched verbs and higher-pitched DPs. The results of the model are summarized in Table 1.

I applied the same kind of model to predict the height of the pitch peak on the second DP, with similar results. Again, the interaction of voice and word order was not significant ($p = 0.75$); refitting the model to drop this interaction demonstrates that word order is significant ($p = 0.031$) and that voice is not ($p = 0.45$). Verb pitch is again highly significant, though not as much so as for the first DP ($p = 0.00015$), and in this case position of word-level stress is not significant ($p = 0.50$).⁷ The results of the model for the pitch of the second DP are summarized in Table 2.

⁶ I am profoundly grateful to Adam Albright for his patient help with R. He should not be held responsible for any of my mistakes.

⁷ We might understand this difference between the first and second DPs as following from the fact that the final stress on the verb is associated with an L*H sequence, while the final stress on a DP should be simply an L*. The high tone associated with final stress on the verb apparently has an effect on the pitch height of the first DP, which is absent for the second DP. Even for the first DP, a likelihood ratio test reveals that the pitch height of the verb and the placement of stress do not interact significantly ($p = 0.52$); in other words, high-pitched verbs do not boost the pitch of the first DP only when stress is final. Thanks to a reviewer for urging me to check this.

Predictor	Coefficient	Standard error	t value
Intercept	121.1401	28.7898	4.208
<i>word order</i> =VOS (vs. VSO)	9.2654	2.7657	3.35
<i>voice</i> =ACC (vs. NOM)	-1.4632	2.7714	-0.528
<i>verb pitch</i>	0.4386	0.1006	4.361
<i>stress placement</i> =final (vs. penultimate)	5.542	2.6347	2.103

Table 1: Predicting pitch peak height on the first DP.

Predictor	Coefficient	Standard error	t value
Intercept	115.53465	25.83219	4.473
<i>word order</i> =VOS (vs. VSO)	-6.14078	2.5375	-2.42
<i>voice</i> =ACC (vs. NOM)	-1.91878	2.43692	-0.787
<i>verb pitch</i>	0.36938	0.09008	4.101
<i>stress placement</i> =final (vs. penultimate)	-1.60039	2.31692	-0.691

Table 2: Predicting pitch peak height on the second DP.

Comparing the value of the *word order* coefficient in Tables 1 and 2, we see that the coefficient is positive in Table 1 and negative in Table 2. What this demonstrates is that VOS word order is associated with a comparatively higher pitch for the first DP (this is the positive coefficient in Table 1, the table for the pitch peak of the first DP), and with a lower pitch for the second DP (represented by the negative coefficient in Table 2), while for VSO word order the reverse is true. To put the same observation another way, the object generally has a higher pitch than the subject would in the same position; immediately postverbal objects are higher-pitched than immediately postverbal subjects, and the same is true for objects that are not immediately postverbal. Why should this be?

One possibility is that these differences in pitch are the expression in Tagalog of a general cross-linguistic tendency for internal arguments to receive greater stress than external arguments, a phenomenon known as “nuclear stress” (Chomsky and Halle 1968; Halle and Vergnaud 1987; Cinque 1993; Zubizarreta 1998; Arregi 2002; Kahnemuyipour 2009; and references cited there), represented here with small capitals.

(8) The woman bought a BOOK.

The most natural pronunciation of (8), in wide-focus contexts, involves main sentential stress on *book*, and not (for example) on the subject. Similarly, in Tagalog, in the wide-focus contexts in which the data discussed above were gathered, an object will have comparatively high pitch, compared to a subject in the same position.

We saw above that the special prosodic status of objects in Tagalog persists even when basic word order is altered by scrambling. Bresnan (1972) argues on the basis of facts like those in (9) that nuclear stress in English can apply prior to certain kinds of movement.

- (9) a. Mary liked the proposal that George LEAVE.
 b. Mary liked the PROPOSAL that George left.

In (9a), in which the clause following *proposal* is a complement clause denoting the content of the proposal, nuclear stress appears on the final verb. In (9b), by contrast, in which the clause following *proposal* is a relative clause, nuclear stress appears on the head noun of the relative clause. Bresnan suggests that nuclear stress in (9b) applies to *proposal* as the object of *left*, after which *proposal* moves to its pronounced position as part of the process of relativization. In (9a), by contrast, *proposal* is not the head of a relative clause, and nuclear stress therefore appears later in the sentence. Bresnan's account rests on the idea that assignment of nuclear stress can apply to a structure prior to certain kinds of movement operations, and that these movement operations then alter word order but not the distribution of stress. Tagalog scrambling, on this view, would have to be like the kinds of movement Bresnan discusses, and unlike, for example, Basque scrambling (Arregi 2002) or Persian object shift (Kahnemuyipour 2009), both of which have been argued to alter the distribution of nuclear stress.

Developing a theory of the assignment of nuclear stress is well beyond the scope of this paper. The approach sketched above would commit us to an approach to the interaction between syntax and phonology, like that of Bresnan (1972) and of Richards (2010; 2016), in which the narrow syntax is partly responsible for the creation of phonological representations. In particular, we would have to be willing to posit narrow-syntactic operations that assign degrees of sentential stress (or, at any rate, narrow-syntactic features that are interpreted by the phonological interface as stress).

The view of the Tagalog prosodic data outlined above has the virtue of placing Tagalog in a fairly familiar context; Tagalog is yet another language, apparently like every other language in which the facts have been carefully investigated, in which nuclear stress appears on objects rather than on subjects. Much of the Tagalog literature is focused on defining the notion of "subject" for this language, in a way that makes reference to its famous "voice" system. The nuclear stress facts, if that is what they are, seem to make reference to an entirely conventional argument structure, in which "subjects", for the relevant purposes, are simply the arguments that receive the highest theta-role in the clause.

6 Conclusions

This paper has been an attempt to describe the intonation of a language in which intonation has so far been fairly scantily described. After proposing that the distribution of pitch rises and falls in Tagalog may be captured by Elfner's (2012; 2015) account of the prosody of Irish, I went on to try to define with some precision the placement of rises and falls in Tagalog (noting certain instances of cross-speaker variation). I also discussed a difference between internal and external arguments in Tagalog; internal arguments very generally have higher pitch than subjects would in the same position, a difference I proposed to describe as an instance of the effects of nuclear stress. Much work on Tagalog intonation remains to be done, some of which I hope to be able to do in future.

Abbreviations

ACC = accusative voice, ANG = case marker for the nominal picked out by the voice system, LI = linker, NG = default case marker, NOM = nominative voice, PL = plural.

Acknowledgements

I am very grateful to Y-Chie S. Primo, Mervelina Saturno-Condon, Carmela Lao, Pearl Brault, and Karlyn Vito for everything they have taught me about their language. Joey Sabbagh deserves a special place in these acknowledgments; he and I made many of the same discoveries at the same time, and my work benefited enormously from the chance to discuss them with him. Thanks, too, to Kie Zuraw, Sun-Ah Jun, Henrison Hsieh, Adam

Albright, Edward Flemming, the reviewers and editors for this volume, and audiences at MIT and McGill University for further discussion. Any remaining mistakes are entirely my own responsibility.

Competing Interests

The author has no competing interests to declare.

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
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How to cite this article: Richards, Norvin. 2017. Some notes on Tagalog prosody and scrambling. *Glossa: a journal of general linguistics* 2(1): 21.1–23, DOI: <https://doi.org/10.5334/gjgl.252>

Published: 24 March 2017

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