

# The Intonation of Malagasy Declarative Sentences

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## **1. Introduction**

The purpose of this paper is to describe the intonational patterns of declarative sentences in Malagasy. Generally, the word order used in declaratives is VOS, yet it is possible for the subject to come before the object.

Analysis of the pitch contours present in each sentence will be done in an Autosegmental-Metrical (Bruce 1977, Pierrehumbert 1980, Beckman and Pierrehumbert 1986, Ladd 1996) framework. According to Ladd (1996), an AM framework tries to identify phonologically distinct elements in a prosodic contour so that when described they can provide a mapping back to the acoustic stream. Ladd further asserts that tonal structures are linear; pitch accents are distinct from stress, yet are linked to stressed syllables; pitch accents should be represented by level (high or low) tones; each pitch accent should account for the local trend of the contour, e.g. downstepping to account for declination.

This paper is structured in the following manner: first, simple declarative sentences are examined in order to obtain a basic understanding of the default intonation for declaratives; the second section examines complex declarative sentences in order to determine how the default patterns behave as the complexity of the sentence increases. Complex declarative sentences are divided into two groups: sentences that contain subordinate clauses and those with relative clauses; finally, the third section examines three of Malagasy's voices (active, passive, circumstantial) in order to determine if speakers distinguish each voice intonationally.

## 2. Simple Declaratives

Keenan and Ralalaoherivony (1998) state that one place predicates (P1) are marked with a rising intonation on the last main stress of the predicate. Although Keenan and Ralalaoherivony were only referring to one place predicates, as is seen in Figure 1, this generalization is also true for all predicates in Malagasy. Here we can see that the right edge of the predicate, at the end of *lulu*, is marked by a rising pitch accent (L+H\*). Since the peak of the pitch contour is anchored to the primary stressed syllable, a \* is placed on the H. Besides the predicate, the subject also seems to be marked by a rising contour tone (L+H\*) which is also anchored to the primary stressed syllable. The lowering of the second peak with relation to the first is assumed to be due to the normal declination of a person's pitch as time progresses. The right edge of the intonation phrase is marked by a low final boundary tone (L%).

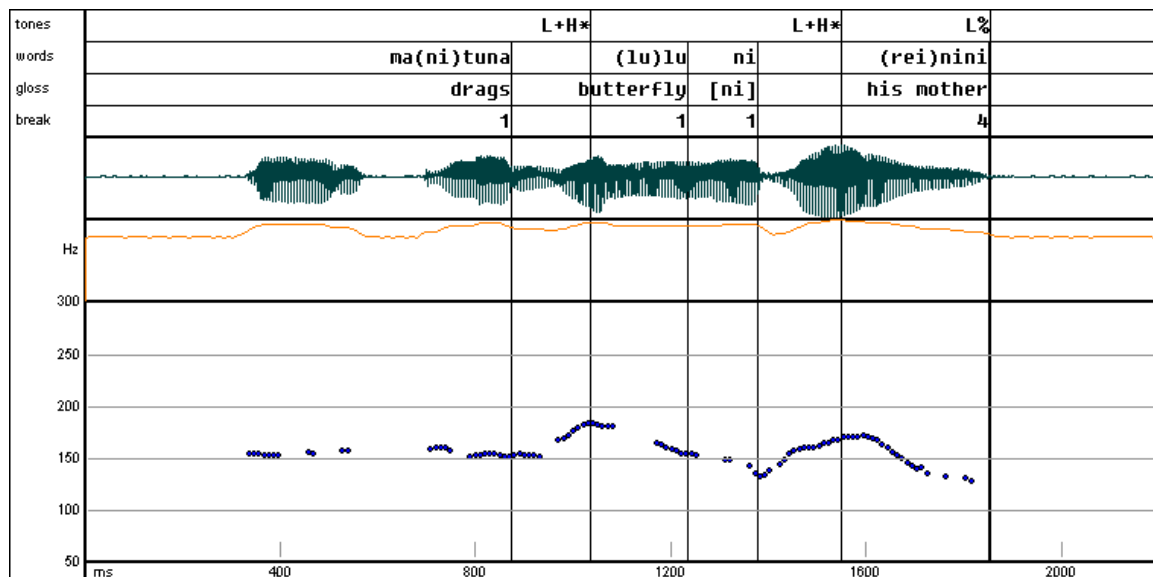


Figure 1. Simple declarative sentence demonstrating default intonation.  
*Manituna lulu ni reinini. His mother drags a butterfly.*

A striking feature of Figure 1 is the presence of a sustained low region near the bottom of the speaker's pitch range. From Figure 1, this represents the time between the beginning of the sentence until the pitch accented syllable. However, as can be seen from Figure 2, the sustained low is present between the two pitch accents. Thus, it seems that the L part of the pitch accent is spreading leftwards until either another pitch accent is encountered or the leftmost edge of the intonation phrase (the beginning of the sentence) is reached.

Before continuing, a note should be made of the break indices used in this project, located on the 'break' tier. There appear to be three degrees of disjuncture (see Figure 1 and Figure 2), not to be mistaken with the levels of prosodic hierarchy which to this point seem to be the word level and the intonation phrase level. The first break index is a '0'. Beckman and Hirschberg (1994) use this index for English to distinguish clitic groups. Thus, it is used when the disjuncture is smaller than a word, i.e. when resyllabification occurs between two words due to phonological reduction; as in Figure 2 with the loss of the [i] between *ni seza* resulting in [n'seza]. The second break index is a '1'. Beckman and Hirschberg use this index to represent the normal disjuncture present between two words. The third break index is a '4' which is used to mark the right edge of an intonation phrase.

Beckman and Pierrehumbert (1986) note that for English, the presence of an intonation phrase boundary tone coincide with phrase final lengthening which allows the tone to be realized and linked to the final syllable. However, in Malagasy, there does not appear to be signs of lengthening. As a result, if the stressed pitch accented syllable is immediately adjacent to the right edge of the intonational phrase, the pitch accent

prevents the low intonation phrase boundary tone from anchoring to the final syllable. Thus, the underlying phrasal boundary tone (L%) is undershot on the surface (i.e. the final portion of Figure 2). Since the L boundary tone does not surface the presence of an unrealized underlying boundary tone will be noted in parenthesis. The presence of the phrasal boundary tone can alternatively be noted by the use of the break index ‘4’.

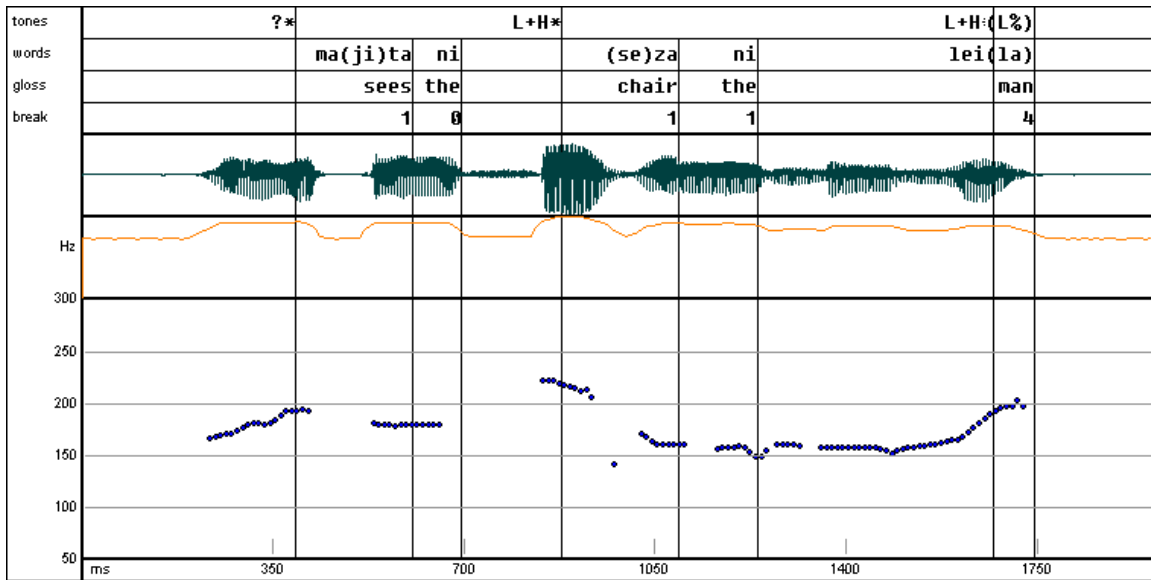


Figure 2. Example of a possible pitch accent existing on the verb as well as tonal crowding at the right edge of the intonation phrase. *Majita ni seza ni leila. The man sees the chair.*

Some sentences which were collected showed a rising contour into the verb as can be seen at the onset of *majita* in Figure 2. This could indicate that there could be a pitch accent on the verb. However, not every sentence shows a rise on the verb (cf. Figure 2 and Figure 3). Thus, it remains inconclusive as to whether a pitch accent is present (thus a ?\* is placed over the stressed syllable) and what exactly is causing the rise.

An undershooting of a low target is not restricted to intonation phrase boundary tones. The L of a rising pitch accent can also be undershot due to tonal crowding. In

Figure 3, the peak realized on the primary stress of *sifani* is realized too close to the peak of *andrabe*. As a result, there is an interpolation between two peaks (L+H\* and H\*) causing a high plateau. In general, crowding occurs when two stressed syllables are separated by less than two stressless syllables.

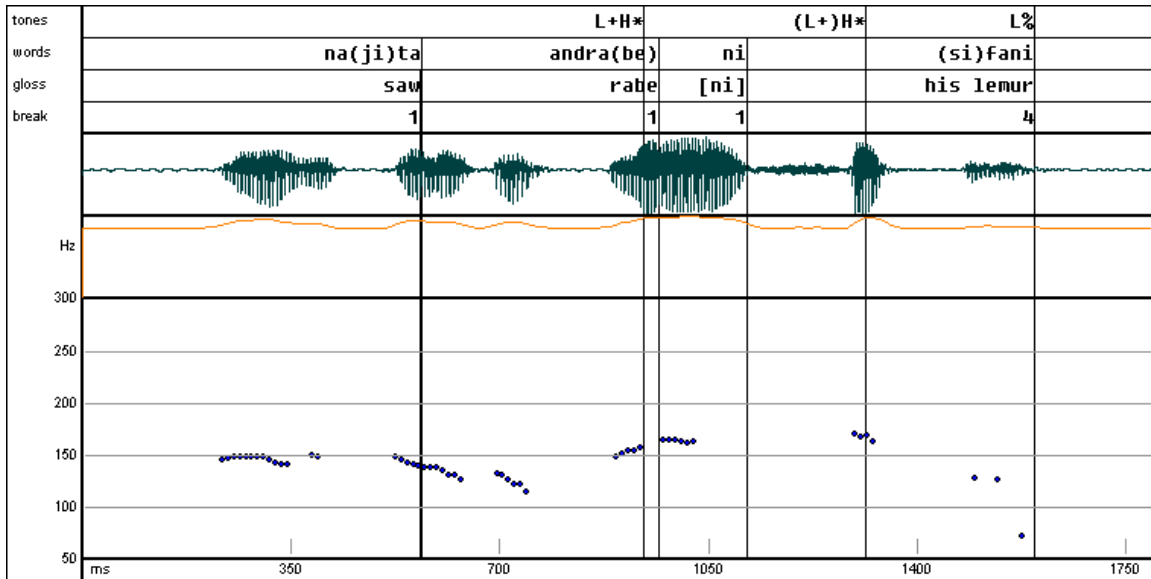


Figure 3. Example of tonal crowding between two pitch accents intonation phrase medially.  
Najita andrabe ni sifani. His lemur saw Rabe.

In summary, the basic prosodic pattern for simple declarative sentences appears to be that there are only two pitch accents within an intonation phrase, one on the last primary stressed syllable of the predicate and one on the last primary stress of the subject. Both of these pitch accents are rising contour tones, L+H\*. The intonation phrase is marked by a low boundary tone (L%) which surfaces if there are enough stressless syllables between the pitch accent on the subject and the edge of the intonation phrase. When less than two stressless syllables are present, then the low target of the boundary

tone, as well as pitch accents, is undershot. For more information on simple declarative sentences and how they differ depending on which voice is used, see Section 4.

### **3. Complex Declaratives**

As was mentioned in the introduction, complex declarative sentences are used to test the default prosodic patterns obtained from the simple declaratives and see if the patterns change depending on an increase of sentential complexity. The two types of complex declaratives examined in this section are subordinate clauses (Section 3.1) and complex noun phrases that contain relative clauses (Section 3.2).

#### **3.1. Subordinate Clauses**

The preferred word order of Malagasy sentences that contain a subordinate clause places the subject of the matrix clause next to the matrix verb rather than at the end of the sentence after the subordinate clause (see Figure 4).

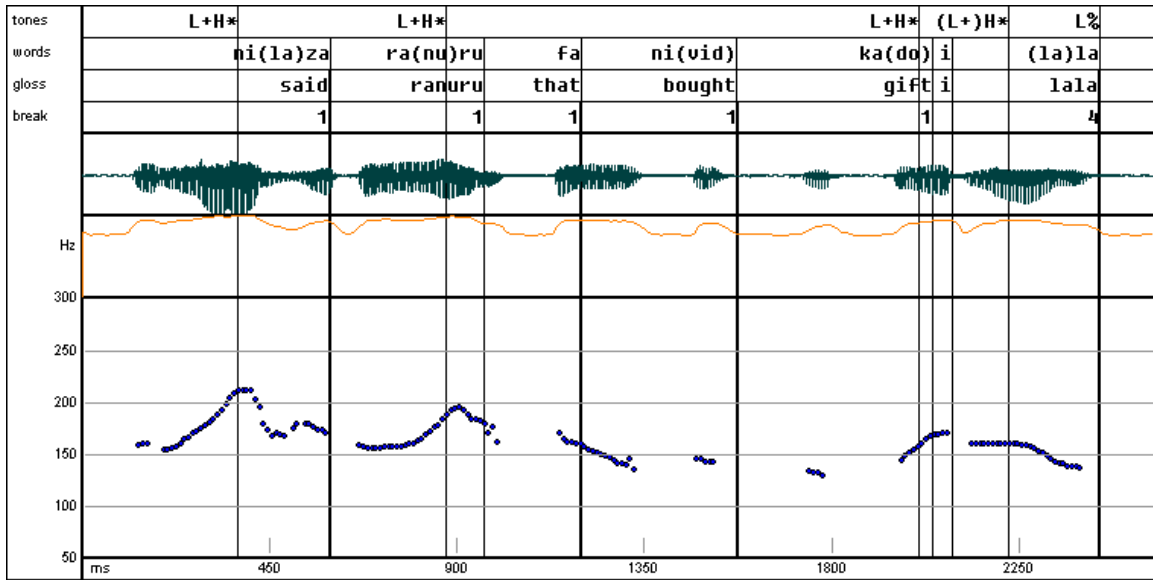


Figure 4. Example of a complex declarative sentence with a subordinate clause.  
*Nilaza Ranuru fa nivid kado i Lala. Ranuru said that Lala bought a gift.*

In this order, the prosody resembles two sets of simple declarative sentences. Namely, *nilaza ranuru* appear as one intonation phrase in which there is a rising contour on the stressed syllable of the verb, *nilaza*, and on the stressed syllable of the subject, *ranuru*. Likewise, in the subordinate clause, there is a rising contour on the stressed syllable of the rightmost word of the predicate, *kado*, and another on the subject, *lala*. There is a similar leftward spreading of a L tone from the rising tone on *kado* until the previous stressed syllable. There also exists a tonal crowding between *kado* and *lala* which causes an undershooting of the L and resulting in a H\* allotone to surface.

Sentences with the subject following the subordinate clause were not obtained for this project. However, future work on Malagasy intonation should examine these types of sentences to determine whether the intonation will be similar to that seen in Figure 4 or whether it would follow the default patterns of Figure 1, Figure 2, and Figure 3.

### 3.2. Relative Clauses

According to my speaker, the only way to produce a relative clause is to use the passive voice in the relative (for further discussion of passive intonation see Section 4.2).

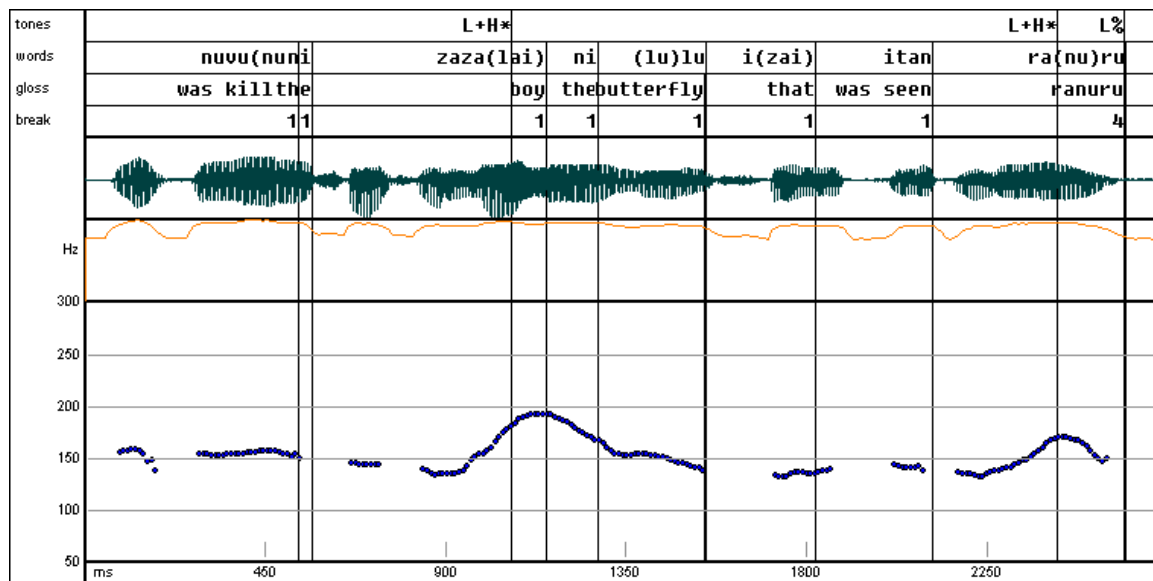


Figure 5. Example of a complex noun phrase with a relative clause.  
 Nuvunu ni zazalai ni lulu izai itan Ranuru. *The butterfly that Ranuru saw was killed by the boy.*

We can see from Figure 5 that when the object of an active construction, which contains the relative clause, is promoted to subject, the whole complex noun phrase appears as one large subject marked by a final rise on the primary stress of *ranuru*. Thus, the major difference between the subordinate clause construction in Figure 4 and the relative clause in Figure 5 is that there is no overt prosodic marker between the noun *lulu* and its complement *izai itan ranuru*; whereas the subordinate clause was marked by a rise on the subject of the matrix clause before the start of the subordinate clause.

Another place for further investigation is to compare the prosody of relative clauses of objects that were promoted to subjects, as in Figure 5, with those of objects

and subjects containing relative clauses that are not moving due to differences due to a voice change.

#### 4. Voices

##### 4.1. Active Voice

As was seen in Section 2, simple declarative sentences that are in the active voice are marked with a rising pitch accent on the last primary stressed syllable of the predicate and the last primary stressed syllable of the subject. This pattern is repeated below in Figure 6.

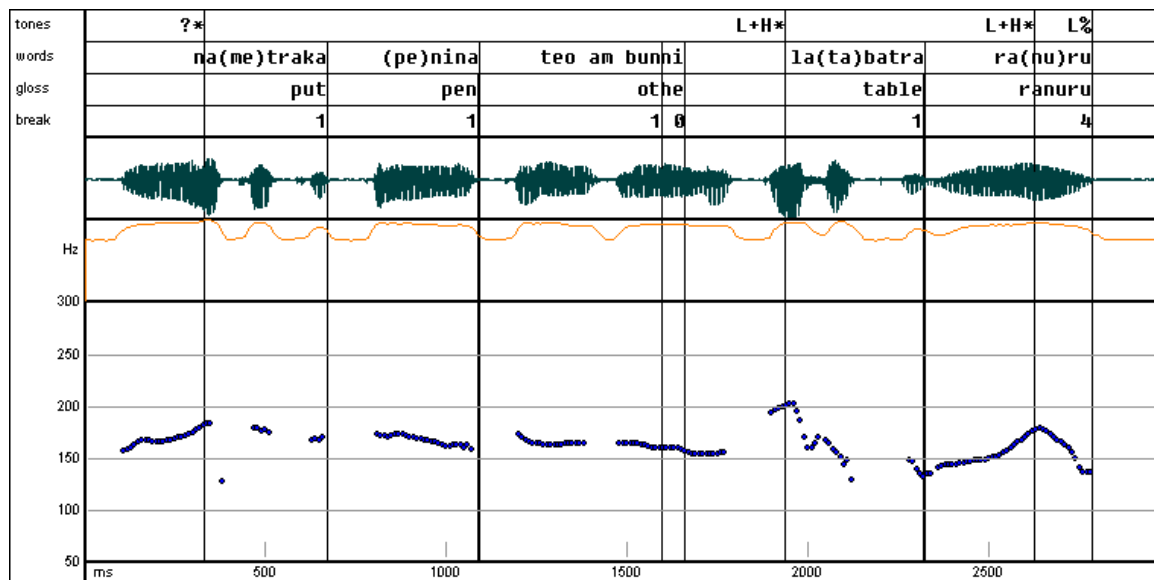


Figure 6. Active simple declarative sentence. Nametraka penina teo am bun ni latabatra Ranuru.  
*Ranuru put the pen on the table.*

In this figure, the presence of a prepositional phrase that is a complement to the verb is prosodically represented as part of one large predicate, *nametraka penina teo am bun ni latabatra*

*latabatra*. As expected, the subject, *ranuru*, is also marked with a rising pitch accent and the optional rise into the verb is also present and marked with a ?\*.

#### 4.2. Passive Voice

Syntactically, in passive sentences, the object is promoted from a lower position to a higher subject position and subject is acting as the object. If this is true then we should see this reflected in the intonation of passive sentences in Malagasy. Figure 7 shows that this is indeed what occurs.

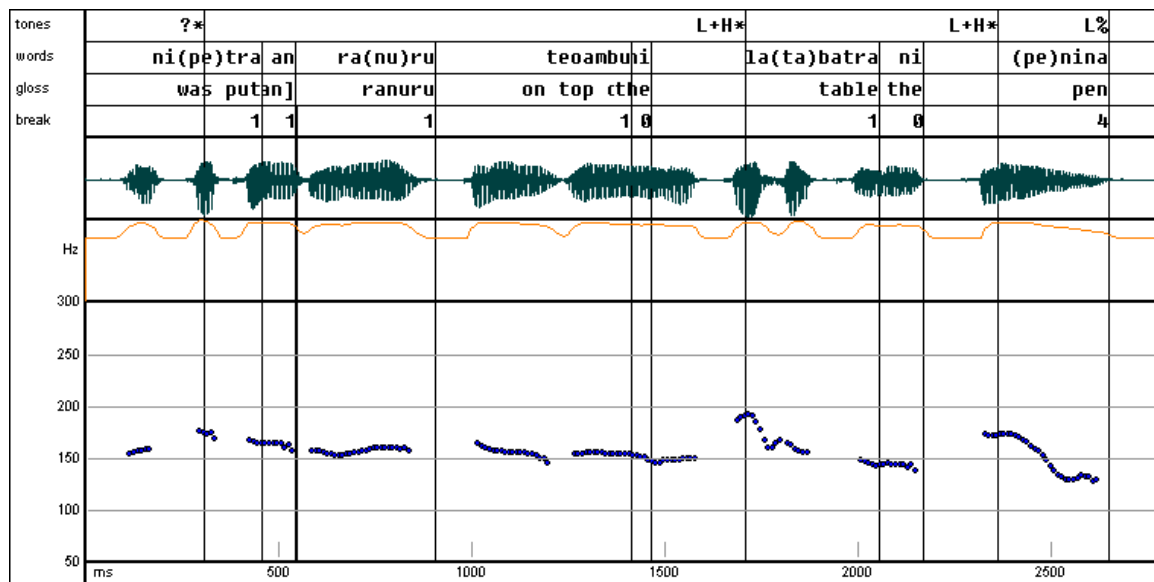


Figure 7. Passive form of "Ranuru put the pen on the table".

*Nipetra an Ranuru teo am bun ni latabatra ni penina. The pen was put on the table by Ranuru.*

The subject of the active form, *ranuru*, is seen adjacent to the verb *nipetra* and because the prosodic rise is not present until the primary stress of *latabatra*, which has been shown to be a part of the predicate, *ranuru* can indeed be taken as the object of the verb. Also, the raised object is seen receiving a rising pitch contour which is consistent

with it being interpreted as the subject. Thus, on the surface there appears to be no prosodic difference between active sentences and passive sentences.

### 4.3. Circumstantial Voice

The circumstantial voice is one in which the object of the preposition in the active form appears in the subject position and the subject of the active form appears as part of the predicate. If this is simply a matter of a different element being placed into a subject position then we would expect that the circumstantial should prosodically look similar to the active and passive voices. Figure 8 below confirms this theory.

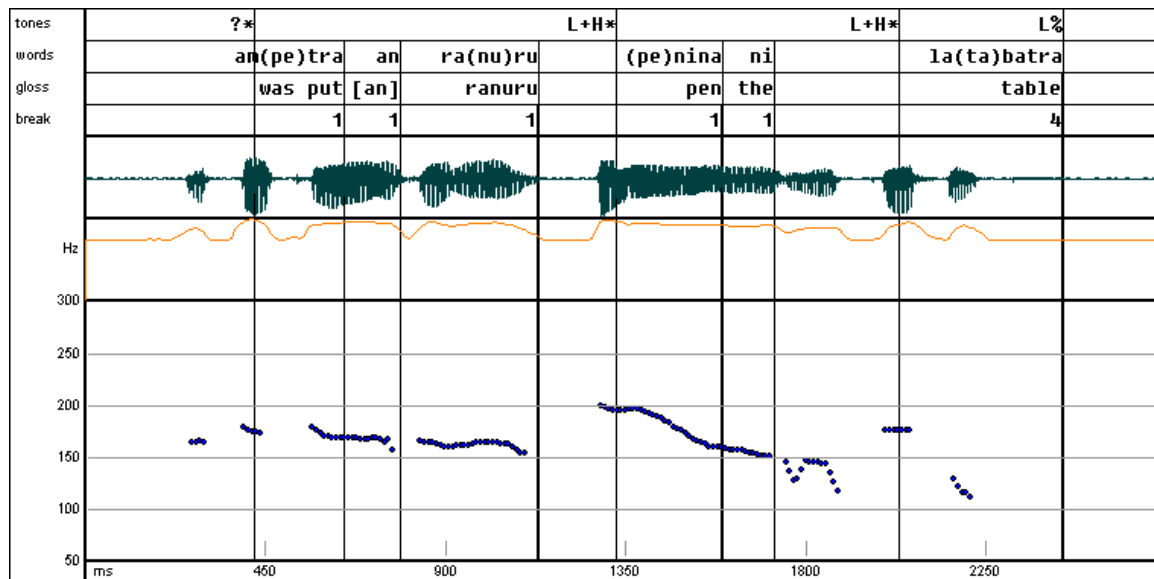


Figure 8. Circumstantial form of "Ranuru put the pen on the table."  
*Ampetra an Ranuru penina ni latabatra. It is on the table that the pen was put by Ranuru.*

Both the subject and the object of the active voice, *ranuru* and *penina* respectively, are part of the predicate. As a result, prosodically they form one unit with the rising

intonation being present on *penina* marking the end of the predicate as well as on *latabatra*, marking the end of the subject.

#### 4.4. Complex Declaratives and Voice

Combining the prosodic patterns that have been seen thus far, we should be able to predict the prosody of complex declaratives when they are passivized. In Figure 9, the matrix verb was produced in the passive voice while the subordinate clause was left in the active. The order of the words matches that of the preferred order in which the subject of the active voice is next to the verb and the subordinate clause follows it.

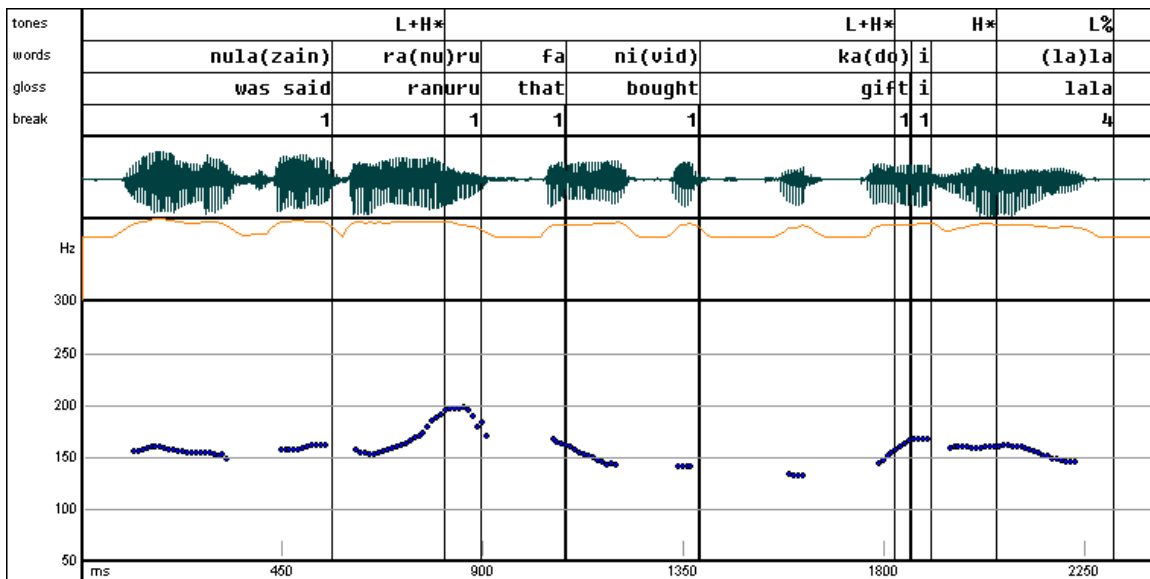


Figure 9. Example of a complex declarative with the matrix clause in the passive and the subordinate clause in the active. *Nulazain Ranuru fa nivid kado i Lala. That Lala bought a gift was said by Ranuru.*

However, according to the intonation pattern, even though the word order is the similar, they are not in the same locations. As was seen in Section 4.2, when the subject of the active voice becomes the object of the passive, it will be incorporated into the predicate.

This is seen in Figure 9 in that there is no longer a rising intonation immediately before the *ranuru* but instead we have the sustained low tonal spreading which is indicative of one predicate. The rise on *ranuru* marks the end of the predicate and the start of the subject, in this case *fa nivid kado i lala*. This being a regular active clause is subject to the default prosodic patterns described in Section 2.

Next, if we passivize both the matrix clause and the subordinate clause, we can see that a similar pattern emerges to the one described above.

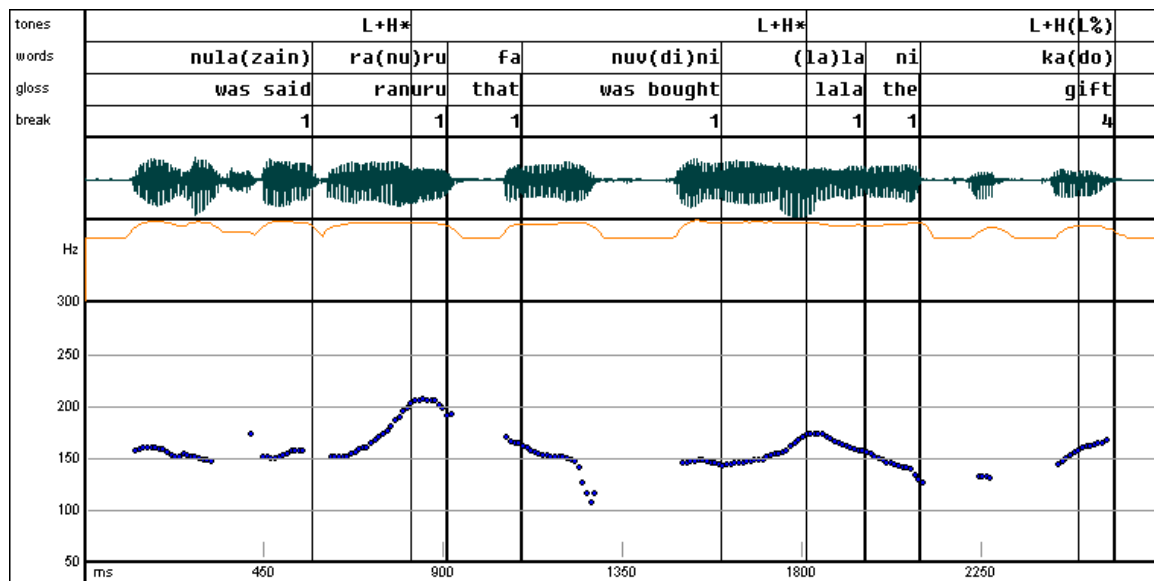


Figure 10. Example of a complex declarative where both the matrix and the subordinate clauses are passivized. *Nulazain Ranuru fa nuvudini Lala ni kado. That a gift was bought by Lala was said by Ranuru.*

## 5. Discussion and Conclusion

The data that was collected for this project shows that the intonation of Malagasy declarative sentences is highly reflective of the syntax and syntactic constituents. The default declarative intonation marks the right edge of predicates and subjects with a rising contour tone (L+H\*) anchored on the primary stress of the rightmost word of the

constituent. The L of the pitch accent seems to spread leftward from the point of the rise until either another pitch accent or the left edge of the intonation phrase is encountered. The right edge of the intonation phrase is generally marked by a low intonation phrase boundary tone anchored on the last syllable of the rightmost word.

However, if two pitch accent peaks or a pitch accent peak and the intonation phrase boundary tone are in close proximity, tonal crowding occurs and the L is undershot. The undershooting of the L of a pitch accent will cause the underlying L of the second pitch accent to be lost and surface as a simple H\*. In most cases, when a peak is present on the final stressed syllable of the rightmost word, the boundary tone will not be allowed to anchor to the final syllable and does not surface.

Sentences with subordinate clauses prosodically behave similarly to two simple declarative sentences; each having two peaks which correspond to a predicate and a subject boundary. Relative clauses on the other hand, behave very similarly to passive sentences.

Furthermore, there appears to be no prosodic difference between the three voices. They all closely resemble to the default pattern.

From these results, it appears that there are only two levels to the prosodic hierarchy, the word level and the intonation phrase level. However, it is possible that a third level exists; namely, that of the accentual phrase, AP. Usually languages that have only relatively few pitch accents have been described as being pitch accent languages instead of stress languages. The one that comes closest to Malagasy is French. According to Jun and Fougeron (1995, 2000, 2002), the domain of the AP in French is an underlying

/LHLH\*/ sequence in which the H\* marks the end of the AP. This appears similar to data presented here for Malagasy where the H\* marks a boundary.

Similarly, there is evidence from Farsi that syntactic constituents are marked intonationally. Arbisi-Kelm (2003) mentions that subordinate clauses are demarcated by high APs on either side with a low flat deaccented region between the two APs. This deaccented area appears similar to the lows seen between pitch accents in Malagasy.

Although the evidence collected for this project cannot conclusively prove the existence of an AP in Malagasy, further research should address the issue of the existence of APs.

## 6. References

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