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# Tone and Intonation in Shingazidja

**Abstract:** This chapter investigates the intonation system of Shingazidja, a Bantu (G44a) language of Comoros, and the way it interacts with lexical tones. The intonation of various sentence types, from complex declaratives to wh-questions, is investigated, and several prosodic features of the language are discussed, such as downstep. Special attention is paid to the way tone-intonation interaction varies in Shingazidja, depending on the dialect. I show that intonation tends to override the lexical High tones in some contexts. This is, for instance, the case for the L% and H% boundary tones that are associated with the end of Intonation Phrases. However, I also demonstrate that, on the contrary, tones dominate intonation in many contexts. For instance, the superhigh tone that signals polar questions is displaced when the final syllable of a sentence is high-toned.

**Keywords:** prosody, downstep, boundary tones, prosodic phrasing, focus, polar questions, Wh-questions, tone shift, Bantu, Comorian, alternative questions, biased questions

## 1 Introduction

This chapter describes the intonation of Shingazidja in the framework of the Autosegmental-Metrical model of intonation (Pierrehumbert 1980, Beckman & Pierrehumbert 1986, Ladd 1996). Shingazidja is a Bantu language, referenced as G44a in Guthrie's classification of the Bantu languages (Guthrie 1967–1971), which is spoken in Ngazidja (or Grande Comore), the largest island of Comoros. It is one of the four Comorian languages, along with Shindzuani (G44b, spoken in Ndzuwani – or Anjouan), Shimwali (G44c, spoken in Mwali – or Mohéli) and Shimaore (G44d, spoken in Maore – or Mayotte).[1]

The tonal system of Shingazidja has been described in great detail by various scholars (Tucker & Bryan 1970; Philippson 1988, 2005; Cassimjee & Kisseberth 1989, 1992, 1998; Jouannet 1989; Rey 1990; Patin 2007). Its intonation

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[1] Full (2006) adds Shikombani, a language also spoken in Mayotte, to this group.

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system, however, has never been addressed extensively, though certain aspects were briefly discussed in Cassimjee & Kisseberth (1989) and Patin (2007), for example. A notable exception is O'Connor & Patin (2015), which discusses the intonation of Intonation Phrases. While part of the analysis in the present chapter is based on early work from the author, most of the sections thus introduce new material.

Data for this chapter have been gathered from different speakers starting in 2006. These speakers use different varieties of Shinagzidja; the variety will be indicated in the examples and figures: Moroni refers to the capital of the country, Washili to an area in the center of the island, Mbeni to a city in the North of the island and Fumbuni to the South.

The structure of this chapter is as follows. Section 2 provides an overview of the tone system of the language, focusing on how the shift of high tones signals Phonological Phrase boundaries. Section 3 discusses various parameters that can be observed in a simple sentence, from downstep (Section 3.1) to the intonation of Phonological Phrases (Section 3.3), including a discussion of the H* accent that is inserted in Phonological Phrases lacking a lexical high tone (Section 3.2). Section 4 is devoted to the intonation of non-final Intonation Phrases. Section 5 discusses the intonation of yes-no questions (Section 5.1), biased questions (Section 5.2) and content questions (Section 5.3). Section 6 provides a brief conclusion.

As we shall see, tones and intonation interact in very various ways in Shingazidja. While intonation may prevail over lexical tones in many situations, there are numerous cases where the lexical tones have an influence on intonation.

## 2 Tone patterns

In this section, I provide a short description of tone rules of Shingazidja and discuss their importance for phrasing. Given space restrictions, I will not mention optional tone rules, such as tone spreading; some of these rules, however, will be briefly addressed in Section 2.

### 2.1 Tone rules

The major characteristics of the Shingazidja tone system are well known. The system has been extensively discussed in Tucker & Bryan (1970), Cassimjee & Kisseberth (1989, 1992, 1993, 1998), Philippson (1988, 2005) and Patin (2007, 2008, 2010).

Shingazidja has a 'privative' tone system in the sense of Hyman (2001), where /H/ contrasts with Ø (there is no phonemic low tone in Shingazidja). In this language, a high tone shifts to its right, unless an underlying tone blocks it (in this study, an underlying tone is underlined). In (1b), for instance, the tone of the noun *maβáha* 'cats'[2] shifts to the penult of the adjective *mailí* 'two'.

(1)  a.  i.  -ilí       'two'
         ii.  ma-βáha   'cats (6)'

     b.  ma-βaha    ma-íli
         6[3]-*cat*       6-*two*
         'two cats'

The shift of the tone leads to the deletion of every even-numbered underlying tone (e.g. the second tone, the fourth, the sixth, etc.), following the Obligatory Contour Principle. In (1b) for instance, the tone of the noun *maβáha* 'cats' shifts to the penult of the adjective *mailí* 'two', and the (even-numbered underlying) tone of the adjective is thus deleted. In (2), however, the odd-numbered tone of the adjective is free to appear, because the even-numbered tone of the noun has been deleted by the tone of the verb *tsiwóno* 'I saw' that has shifted from the penult of the verb to the first syllable of *maβáha* 'cats' (further rightward shift is blocked by the underlying tone of the noun).

(2)  tsi-(w)ono    má-βaha    ma-iˈlí
     1SG.PER-*see*   6-*cat*     6-*two*
     'I saw two cats.'

Note that the tone of the adjective is downstepped with respect to the first surface tone (see Section 2.1 for details on downstep).

A consequence of these rules is the surface neutralization of several underlying tonal oppositions. While the two words in (3) differ in their underlying tone patterns, both will surface with a single high tone on their penult.

(3)  a.  H Ø   /ndrúme/   ndrúme   'messenger'

     b.  H H   /ndróví/    ndróvi    'banana'

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**2** Words mentioned in the text are in their citation form, i.e. as they appear in isolation.

**3** In this chapter, numbers refer to noun classes. Other abbreviations are AG = augment, APP = applicative, FOC = focalizer, HAB = habitual, IMP = imperfective, OM = object marker, P = pronoun, PAS = passive, PAST = past, PER = perfective, REL = relative, SG = singular, Q = question marker.

For reasons that will be made explicit in Section 2.2, however, the surface realizations will differ slightly, with the rise of the $F_O$ associated with (3a) being sharper than the one associated with (3b) (see also Cassimjee & Kisseberth 1989).

## 2.2 Tone and phrasing

As in many other Eastern Bantu languages (Philippson 1991; Kisseberth & Odden 2003), the tone is not bounded in Shingazidja by the limits of the prosodic word. In (1b) and (2), for instance, the tones of the nouns and/or verbs are free to move to the following word(s). More precisely, in Shingazidja the tone shifts as far as possible toward the end of a 'maximal syntactic phrase' in the sense of Truckenbrodt (1999), i.e. 'the maximal projection of a lexical head' (Truckenbrodt 1999:233).

In (4), for example, the high tone of the verb shifts onto the first syllable of the direct object *mapésa* 'money' through the beneficiary *wándu* 'persons', which is underlyingly low[4] (/wandu/).

(4)  [ ( tsi-nika    wa-ndu    má-peˈsá )_Φ ]_I
     1SG.PER-*give*  2-*person*  6-*money*
     'I gave money to people.'                              [Mbeni]

However, a tone cannot cross the boundaries of phonological phrases. In (5a) – the symbol ')_Φ' signals the end of a phonological phrase, the symbol ']_I' signals the end of an Intonation phrase – the tone of the subject NP stops on the last syllable of the noun even though the first syllable of the verb *haréme* 'he beat' is not a tone-bearing unit and is thus a possible target (5b).

(5)  a.  [ ( m-limadjí )_Φ  ( ha-reˈmé   paha )_Φ ]_I
         1-*farmer*          1.PER-*beat*  5.*cat*
         'A farmer beat a cat.'

     b.  *( mlimadji háreme ˈpáha )_Φ                       [Moroni]

The shift of the tone is thus a reliable indicator of phonological phrase boundaries in Shingazidja. Following Selkirk's (1986) End-Base Theory, I will assume that the right boundary of a Phonological Phrase is aligned with the right boundary of a

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**4** The tone that appears on its penult in its citation form will be explained in Section 3.3.1.

maximal syntactic phrase in Shingazidja. A Phonological Phrase boundary also separates, for instance, a dislocated element from its host, or two coordinated NPs. Both the subject NP and the VP, however, belong to a single Intonation Phrase, as illustrated in (5); evidence for this fact, which is valid for all varieties, will be provided in Section 3.

It is important to note that a phonological phrase boundary is also associated with the so-called 'augment' (whose behavior is similar to that of the definite article in Romance languages). In (6b), as opposed to (6a), the tone of the verb cannot shift onto the object because the noun is preceded by an augment.[5] The boundary precedes the augment when it cliticises to a following noun (6b) in formal speech, and follows the augment when it cliticises to a preceding element (6c) in casual speech.

(6)  a.   [ ( ha-n̲i̲ka      ɲ-úŋg̲u̲    n-dzi̱ɾo )_Φ ]_I
          1.PER-*give*   9-*pot*     9-*heavy*
          'He gave a heavy cooking pot.'

  b.   [ ( ha-n̲i̲ká )_Φ   ( ye=ɲ-uŋg̲u̲    n-ˈdzíɾo )_Φ ]_I
       1.PER-*give*      AG₉=9-*pot*     9-*heavy*
       'He gave the heavy cooking pot *(formal speech)*.'

  c.   [ ( ha-n̲i̲k'=é )_Φ      ( ɲ-uŋg̲u̲    n-ˈdzíɾo )_Φ ]_I
       1.PER-*give*=AG₉      9-*pot*     9-*heavy*
       'He gave the heavy cooking pot *(casual speech)*.'          [Fumbuni]

Phrasing is also conditioned by focus in Shingazidja (Patin 2007, 2008), as it is in other African languages, such as Akan (Kügler, this volume). In (7b), for instance, a Phonological Phrase boundary follows the focused verb, while there is no such boundary in the all-focus sentence in (7a).

(7)  a.   [ ( ŋgam-a̲ndzo        tʃáy̲ )_Φ ]_I                    < /tʃaí/
          1.IMP-*like*          9.*tea*
          'I like tea.'

  b.   [ ( ŋgam-a̲ndzó )_Φ   ( tʃaˈí̱ )_Φ ]_I
       'I LIKE tea.'                                        [Moroni]

In (8a), the underlying tone stays on the penultimate syllable of the sentence. The tone does not shift, as might be expected, to the final syllable (8b). Moreover, the shift of a tone also stops on the penult – see (6b, 6c).

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**5** The boundary is optional in the present tense.

(8)  a.  [ ( ze=m-ɓuɗá     pia   za-vuˈndzíha )$_\Phi$ ]$_I$
          AG$_{10}$=10-*stick*  *all*   10.REL.PER-*break*
          'All the sticks that broke.'

     b.  *ze=mɓuɗá pia zavundzihá

This non-finality effect, i.e. the fact that a tone cannot shift to the final syllable of a sentence, has been said to be the clue for Intonational Phrases in Patin (2007, 2008, 2010), following Cassimjee & Kisseberth (1998). We will see in Section 4, building upon intonational evidence, that this analysis is debatable.

To conclude this section, I will briefly discuss stress in Shingazidja, since stress will be of notable importance for some aspects of this study (see Section 3.3.1). As in several closely related languages such as Swahili (Ashton (1944), among many others), stress falls regularly on the penult of words. However, stress also relates to the Phonological Phrase in the sense that it seems to be strengthened on the penult of prosodic phrases: in (7a), for instance, the penult of *tʃaí* 'tea' is longer and more intense than the penultimate syllable of the preceding verb.

To my knowledge, only one phonetic study has been conducted on stress in Shingazidja: Rey (1990). However, as interesting as it is, in particular the discussion of length as a phonetic correlate of stress (Rey 1990: 153, 165), Rey's analysis suffers from several issues, such as the fact that it is based on only one speaker, that make it difficult to exploit for the present research.

Thus, a detailed study of stress in Shingazidja still remains to be done. Such a study would have to determine the precise nature of the interactions between stress and tones. Indeed, numerous examples in my corpus indicate that stress and tones may or may not align according to parameters that still need to be identified

# 3 Intonation of simple declarative sentence

In this section, I focus on the intonation of simple sentences. In Section 3.1, I show that downstep operates in Shingazidja, though it may be suspended. Section 3.2 is dedicated to the L% boundary tone that signals the end of a declarative in Shingazidja. In Section 3.3, I discuss the intonation of Phonological Phrases: Section 3.3.1 introduces the H* accent that is inserted in Phonological Phrases that lack any lexical high tone; Section 3.3.2 briefly shows that there is no other intonation pattern that is associated with Phonological Phrases.

## 3.1 Downstep(s)

In a simple declarative sentence (but also in wh-questions – see Section 5.3), all high tones are downstepped with respect to the preceding high tone(s) – see for instance (9), illustrated in Figure 1, where each high tone appears at the end of a Phonological Phrase.

(9)   [ ( ye=m-limadjí )$_\Phi$   ( ha-niʹká )$_\Phi$   ( e=m-leʹví )$_\Phi$   ( e=ɲ-uʹmɓá )$_\Phi$ ]$_I$
    AG$_1$=1-*farmer*    1.PER-*give*    AG$_1$=1-*drunkard*    AG$_9$=9-*house*
    'The farmer gave the house to the drunkard.'          [Moroni]
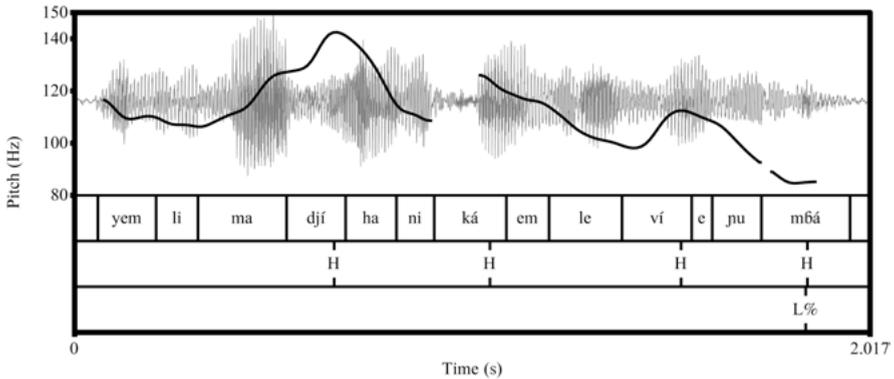


**Figure 1:** cf. (9) – [Moroni]

As can be observed in (9) and in Figure 1, the tone of the verb *haníka* 'he gave', which surfaces on the final syllable, is downstepped with respect to the tone of the subject. In addition, the tone of the beneficiary *mleví* 'drunkard' is down-stepped with respect to the tone of the verb (the tone of the final word is also downstepped, but the phenomenon is obscured by the presence of a L% tone – see Section 3.2).

However, in a (long) phonological phrase that contains several tones, especially in non-final positions, downstep may optionally be suspended – there is no evidence that the final tone is raised. Compare the two realizations of (10) that are provided in Figure 2.

(10)   [ ( ze=m-ɓudấ   n-djeu   m-ɓi$^{(!)}$lí )$_\Phi$   ( ʹzí-wu )$_\Phi$ ]$_I$
    AG$_{10}$=10-*stick*   10-*white*   10-*two*      10.PER-*fall*
    'Two white sticks fell.'          [Moroni]

In the first iteration, the final tone of the first Phonological Phrase is down-stepped with respect to the first high tone of the utterance. In the second version of the sentence, however, the final tone of the first Phonological Phrase is realized at the same level as the first tone of the sentence, leading to the formation of a plateau.
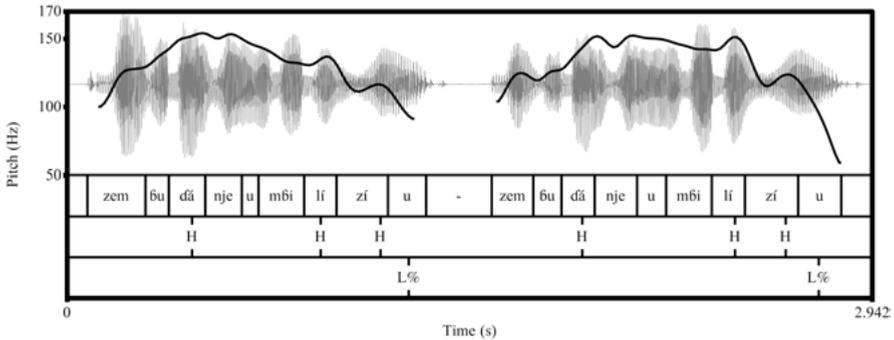


**Figure 2:** cf. (10) – [Moroni]

## 3.2 The L% boundary tone

In Figure 2, the $F_0$ falls dramatically at the end of the sentence, especially in the second realization. This final lowering, which is generally associated with a partial or complete devoicing of the final syllable, indicates that the end of a (simple) sentence is associated with an L% boundary tone. The presence of an L% tone at the end of a sentence is attested in other Bantu languages (e.g. Chimiini – Kisseberth *this volume* – or Tumbuka – Downing *this volume*), and widely observed among the languages of the world (Jun 2005, 2014). However, the way the L% boundary tone interacts with the lexical high tones in Shingazidja, as we shall now see, is uncommon.

As seen in Figure 1, the association of a lexical high tone and the L% boundary tone leads to a flat shape of the $F_0$. Such a realization is unsurprising. More interestingly, the L% tone extends its influence to a high tone that appears on the penultimate syllable,[6] as shown in (11a), illustrated in Figure 3. What is unusual here is the fact that the L% does not interact with a high tone on the penultimate syllable if the final syllable of the sentence is underlyingly high, as in (11b). In Figure 3, the tone that appears on the word *mleví* 'drunkard' is

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**6** F. Cassimjee and C. Kisseberth noted this difference in the realization of the tones on the penult in their seminal paper on Shingazidja tonology (Cassimjee & Kisseberth 1989: 46).

realized with a sharp rise of the F₀, in contrast with the tone that is associated with the word *ndóvu* 'elephant'.

(11)  a.  [ ( ha-w<u>o</u>no    n-ˈdóvu )<sub>Φ</sub> ]<sub>I</sub>
            1.PER-*see*   9-*elephant*
            'He saw an elephant.'

     b.  [ ( ha-w<u>o</u>no    m-lév<u>i</u> )<sub>Φ</sub> ]<sub>I</sub>
            1.PER-*see*   1-*drunkard*
            'He saw a drunkard.'                                    [Moroni]

Furthermore, there are some interesting dialectal differences in the relationship that links the high tones to the L%. In the variety of Fumbuni, in contrast with Moroni, the L% does not extend its influence to a tone that appears on the penult, even if there is no underlying tone associated with the final syllable. Compare the realizations of the sentences in (12) in Figure 4 with the realizations of (11) in Figure 3: in Fumbuni, the presence or absence of an underlying tone on the final syllable has no effect on the shape of the F₀.
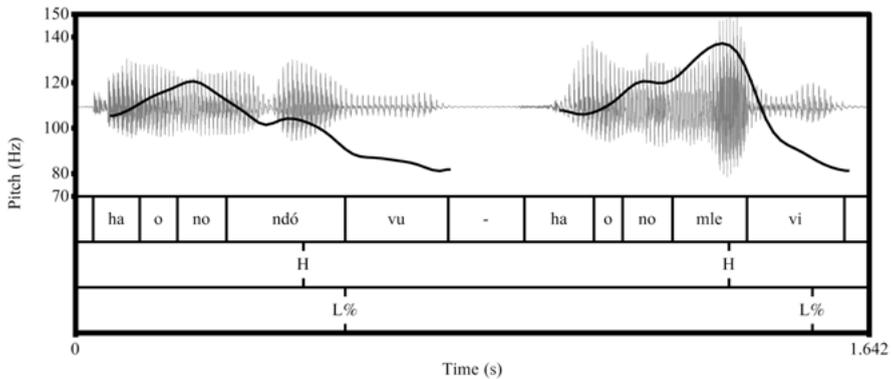


**Figure 3:** cf. (11) – [Moroni]

(12)  a.  [ ( ha-p<u>i</u>ha    ɲ-áma )<sub>Φ</sub> ]<sub>I</sub>
            1.PER-*cook*   9-*meat*
            'He cooked some meat.'

     b.  [ ( ha-p<u>i</u>ha    djándz<u>e</u> )<sub>Φ</sub> ]<sub>I</sub>
            1.PER-*see*   5.*crab*
            'He cooked some/a crab.'                                [Fumbuni]
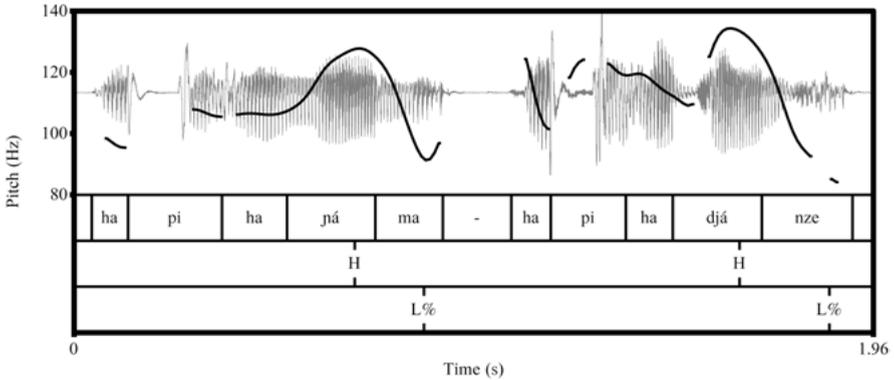
**Figure 4:** cf. (12) – [Fumbuni]

The peripheral dialects also differ from the dialects of the center of the island regarding the interaction of the L% boundary tone with lexical high tones. As previously mentioned, the association of L% with lexical high tones results in a flat shape of the $F_0$ in Moroni, which is also the case in Washili. In the peripheral varieties, i.e. in Mbeni or Fumbuni, there is no L% boundary tone on a syllable where a lexical high tone surfaces. See for instance Figure 5, which corresponds to (4): the final high tone, while downstepped, is realized as a sharp rise of the $F_0$.
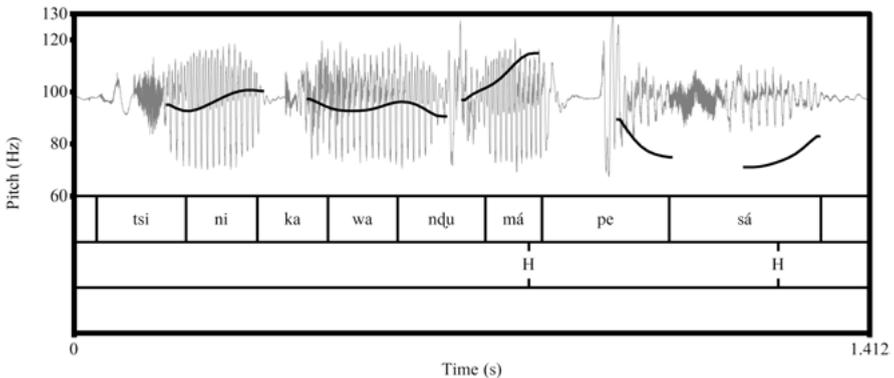


**Figure 5:** cf. (4) – [Mbeni]

At this point in my research, it is not clear if the L% boundary tone signals the end of a final Intonation Phrase or the end of a prosodic phrase at a higher level, e.g. a hypothetical Utterance Phrase level. Besides this boundary tone,

other prosodic clues for the end of a simple clause include non-finality (see Section 2), the lengthening of high-toned penultimate syllables in Mbeni, and an intensity peak on the penult in all varieties. As may be observed in the signal that is provided in several figures in this chapter, this intensity peak on the penult is not consistent in my data; understanding why is left for future research.

## 3.3 The intonation of phonological phrases

This section is dedicated to the Intonation of non-final Phonological Phrases. In 3.3.1, I discuss the H⋆ accent that is inserted in Phonological Phrases that lack a lexical high tone. In 3.3.2, I show that no other intoneme characterizes Phonological Phrases.

### 3.3.1 H* insertion

Examples (11a) and (12a) in Section 2.2 involve nouns that have no underlying tone. As noted by other researchers (Cassimjee & Kisseberth 1989, Philippson 2005), these nouns emerge with a default high tone on their penult when they are realized in isolation (13).

(13)  a.   /N-ama/   →   [ɲámạ]   'meat (9)'

      b.   /N-dovu/   →   [ndóvụ]   'elephant (9)'

Philippson (2005:204) claims: "[…] it must be assumed that no unaccented utterance is allowed in Shingazidja. If no element of the P[honological] P[hrase] can lexically supply an accent,[7] a default accent will appear on the penult of the phrase." As mentioned in Section 2.2, the penult of a phrase is the stressed syllable in a phrase.

It is not clear, however, if the tones in examples such as (13) should be considered H⋆ accents that are inserted at the Intonation level, or if the usually toneless words have high-toned allomorphs that are selected when the word is realized in isolation. There is independent evidence in favor of the existence of high-toned allomorphs of usually toneless words (see also Cassimjee & Kisseberth (1989)). In (14), for instance, the word 'elephant', which usually lacks

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7 Philippson uses the term 'accent' for what is here referred to as 'tone'.

a lexical high tone – see (11a), (13b), etc. – is associated with a lexical high tone that surfaces on its final syllable.

(14)   [ ( ze=n-d<u>o</u>vú        nf<u>u</u>ˈk<u>á</u>ɽe )<sub>Φ</sub> ]<sub>I</sub>
          AG<sub>10</sub>-10-*elephant    seven*
          'Seven elephants.'

The tone on the last syllable of *ndóvu* 'elephant' has to be underlyingly associated with the noun: not only does it appear on the final syllable of the word (contrary to the claim from Philippson that the default high tone appears on the penultimate syllable of the phrase – see also (13)), but it also triggers the deletion of the first underlying tone of *nfúk<u>a</u>ɽe* 'seven'.

     However, I will claim here that the default tone in (13) and similar examples is an intoneme. A first argument in favor of the insertion of H* comes from the comparison of sentences such as (15a), which involves a usually toneless (subject) noun, and (15b), which involves a usually toned (subject) noun. In the first case, the tone generally appears on the penult of the Phonological Phrase, whereas the tone surfaces at the end of the Phonological Phrase in the second (Figure 6).

(15)   a.   [ ( ze=n-dovu          n-dzíɽo )<sub>Φ</sub>   ( ˈzí-dj<u>a</u> )<sub>Φ</sub> ]<sub>I</sub>
                AG<sub>10</sub>-10-*elephant*   10-*heavy*      10.PER-*come*
                'The heavy elephants came.'

       b.   [ ( ze=m-ɓ<u>u</u>ɗa          n-dziɽó )<sub>Φ</sub>   ( ˈzí-w<u>u</u> )<sub>Φ</sub> ]<sub>I</sub>
                AG<sub>10</sub>-10-*stick*       10-*heavy*      10.PER-*fall*
                'The heavy sticks fell.'                                      [Moroni]
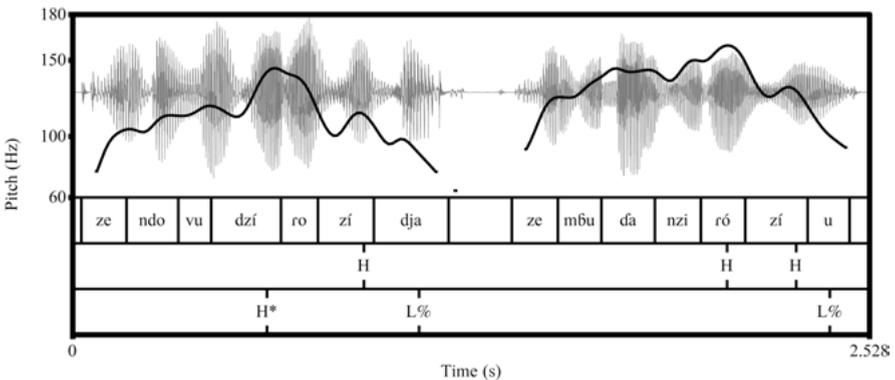


**Figure 6:** cf. (15) – [Moroni]

I consider the fact that the high tone does not shift to the final syllable of the first Phonological Phrase in (15a), in contrast to (15b), to be evidence that this tone is not a lexical high tone, but rather an H* accent.

Additional evidence comes from phrases such as (16) that contain three usually toneless words. In such a situation, a high appears on both the adjectives in the dialect of Moroni (16a). In Mbeni (16b), however, only one high tone emerges on the penult of the sentence. (In (16), the brackets, indicating the *phonetic* – rather than phonological – notation, do not refer to syntactic or prosodic structures.)

(16)     /ze=n-dovu        n-djema    n-dziro/    >
         AG$_{10}$-10-*elephant*    10-*nice*      10-*heavy*

    a.  [ze=ndovu    ndj**é**ma    ndz**í**ro]                    [Moroni]

    b.  [ze=ndovu    ndj**e**ma    ndz**í**ro]                    [Mbeni]
         'The nice heavy elephants.'

The association of a H* with both adjectives in (16a) may indicate that a prosodic level below the Phonological Phrase, defined as aligning a prosodic phrase with the syntactic phrase (instead of the maximal syntactic phrase, as defined in Section 2.2, as it is the case for Phonological Phrases), is relevant in the dialect of Moroni. I leave this point for further research, but see O'Connor & Patin (2015) for a brief discussion.

Rephrasing due to eurythmic constraints leads to another pattern in longer sentences. As shown in (17), a default tone is only inserted on the second adjective in Moroni, and no default tone is inserted in Mbeni, indicating that the insertion of a default high tone is a rule that operates at the Intonation Phrase level in this dialect.

(17)     /ze=n-dovu        n-djema    n-dziro        zí-djá/  >
         AG$_{10}$-10-*elephant*    10-*nice*      10-*heavy*        10.PER-*come*

    a.  [ze=ndovu    ndj**e**ma    ndz**í**ro    |    zídja]                    [Moroni]

    b.  [ze=ndovu    ndj**e**ma    ndz**i**ro    |    zídja]                    [Mbeni]
         'The nice heavy elephants came.'

This latter fact confirms that the default high tone is an intoneme, here represented as an H*. Surprisingly, this intoneme, as a lexical tone, triggers the downstep of a following lexical high tone (see Figure 6).

A final argument in favor of the existence of an H⋆ is the comparison of (4-Mbeni), illustrated in Figure 5, with a similar example from the dialect of Moroni (18), illustrated in Figure 7.

(18)  [ ( tsi-ni̱ka      m̩-ndu̱      má-pe̱ˈsá̱ )_Φ ]_I
        1SG.PER-*give*   1-*person*  6-*money*
        'I gave money to somebody.'                        [Moroni]
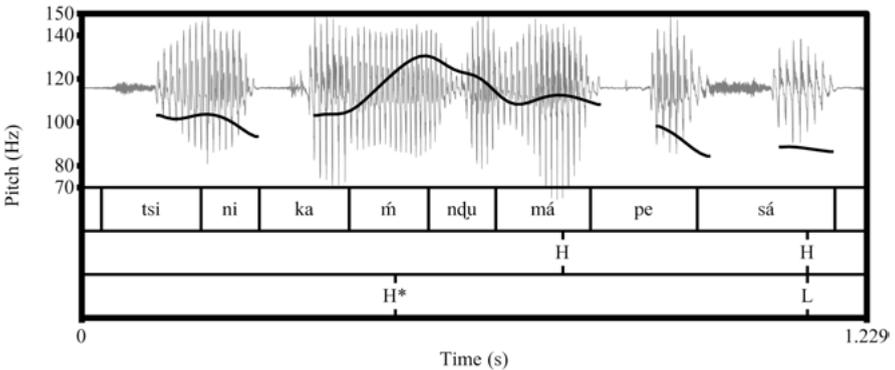


**Figure 7:** cf. (18) – [Moroni]

In Figure 5, which corresponds to the production of a speaker from Mbeni, no rising of the $F_0$ is observable on the beneficiary *wándu* 'persons'. In Figure 7, on the other hand, a sharp rise of the $F_0$ can be observed on the penult of *m̩ńdu* 'person'. This rise cannot be attributed to the lexical tone of the verb, since this tone shifts in (18) onto the first syllable of *mapé̱s̱a* 'money', as it did in (4). As a consequence, it must be explained by the presence of the H⋆ that emerges on the penult of phrases in the dialect of Moroni.

### 3.3.2 The right edge of the Phonological Phrase

When there is a lexical high tone in a Phonological Phrase, no H⋆ is inserted on the penult, even if the final two syllables of the Phrase lack any surface tone. Moreover, no intoneme appears on the final syllable of a non-final Phonological Phrase. See for instance (19), where the word *ndóvu* 'elephant' lacks any tone, either underlyingly or on the surface.

(19)  [ ( e=mw-i̱dz[i]   yá-i̱ɓa              n-dovu )_Φ   ( ha-ʈ̚ˈá̱wa )_Φ ]_I
        AG₁=1-*thief*   1.REL.PER-*steal*   9-*elephant*   1.PER-*run away*
        'The thief who stole an elephant ran away.'
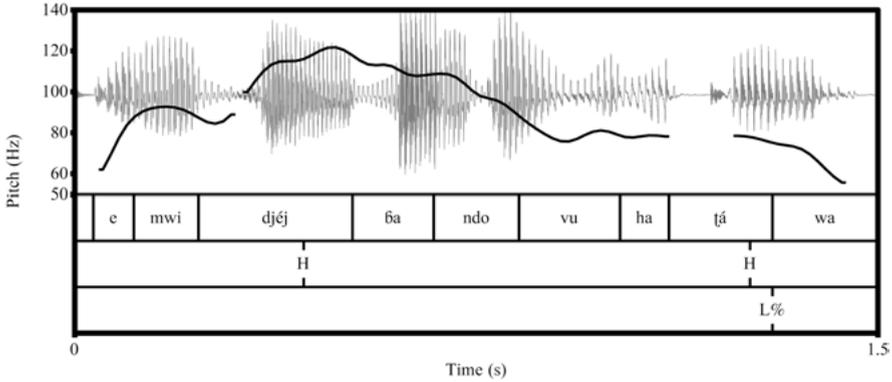
**Figure 8:** cf. (19) – [Moroni]

However, examples where no tone appears on the final syllables of a Phonological Phrase, such as (19), are extremely rare in my data. Since the shift of a tone stops on the final syllable of a Phonological Phrase, most of Phonological Phrases end with a high tone (see for instance (9)). Moreover, several rules seem to conspire to increase the number of H-final Phonological Phrases. For example, one of the underlying tones of the verb, either the tone of the object marker or the tone of the root, is deleted in (20b),[8] leading to a surface realization where a high tone emerges at the end of the Phonological Phrase, whereas the form *hazíṉika* would have been expected.

(20)  a.  [ ( ha-ṉiká )$_\Phi$  ( ze=ˈsíɾ[i] )$_\Phi$ ]$_\mathrm{I}$
         1.PER-*give*        AG$_{10}$=10.*pants*
         'He gave the pants.'

     b.  [ ( ha-zi-ṉiká )$_\Phi$  ( ze=ˈsíɾ[i] )$_\Phi$ ]$_\mathrm{I}$
         1.PER-OM$_{10}$-*give*   AG$_{10}$=10.*pants*
         'He gave them, the pants.'                              [Washili]

The realization in (20b) is representative of a general tendency in the language to avoid Phonological Phrases where no tone appears on the final two syllables of the prosodic group. I consider this an indication that the language is evolving towards a pitch-accent system; due to space restrictions, I cannot explore this analysis here.

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**8** Note that the phrase boundary that prosodically separates the verb from the object in (20a) is due to the presence of the augment (see the end of Section 2 for a discussion).

# 4 Intonation of complex declarative sentences

This section focuses on the intonation of non-final Intonational Phrases. In Section 4.1, I present data supporting the existence of an H% boundary tone, which is here considered to be the main cue for (non-final) Intonation Phrases. In Section 4.2, I discuss a LH*!H contour that is associated with contrastive topics in Shingazidja.

## 4.1 The H% boundary tone

In Shingazidja, a sharp rise of the $F_0$, here referred to as an H% boundary tone and frequently accompanied by a short pause, is associated with the end of a non-final clause. In O'Connor & Patin (2015), just such an H% was observed at the end of non-restrictive appositives, at the end of non-restrictive relatives (building upon Patin (2010)), and at the end of the first part of two coordinated clauses. In (21), illustrated in Figure 9, an H% is also observable at the end of the first clause, on the final syllable of the word *mizíki* 'music'.

(21)  [ ( ha-k<u>a</u>-u-ʃîl<u>i</u>a       miz<u>i</u>kí )<sub>Φ</sub> ]<sub>I</sub>  [ ( βo     na-k<u>a</u>-u-f<u>a</u>nyá     h<u>a</u>zi )<sub>Φ</sub> ]<sub>I</sub>
      1.PER-PAST-15-*listen*  9.*music*      *while* 1SG.PER-PAST-15-*do*  9.*job*
      'He was listening music while I was working.'          [Washili]
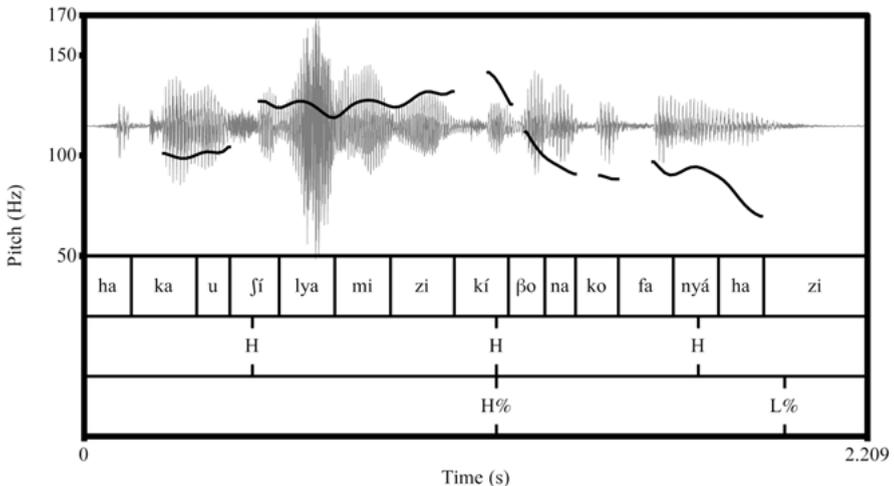


**Figure 9:** cf. (21) – [Washili]

Note that the rising of the $F_0$ in Figure 9 cannot be attributed to the lexical tone. As was shown in O'Connor & Patin (2015), the rise is observable even when no surface tone emerges on the final syllables of the Intonation phrase – (22), illustrated in Figure 10.

(22)  [ ( ye=m-lim<u>a</u>djí )$_\Phi$     ( [h]a-[h]ul<u>u</u>      ɲ-úŋ[g]<u>u</u>      n-jeu )$_\Phi$ ]$_I$
       AG$_1$=1-*farmer*          1.PER-*buy*          9-*cooking pot*   9-*white*

   [ ( ʃ[<u>a</u>]=y<u>e</u>=fúndi )$_\Phi$     ( ŋ[g]w-[y]i-w<u>o</u>nó   <u>ã</u>l<u>i</u> )$_\Phi$ ]$_I$
    *but*=AG$_1$=1.*teacher*          1.PER-OM$_9$-*see*     *expensive*

   'The farmer bought a white cooking pot, but the teacher thinks it is expensive.'                                                                    [Washili]
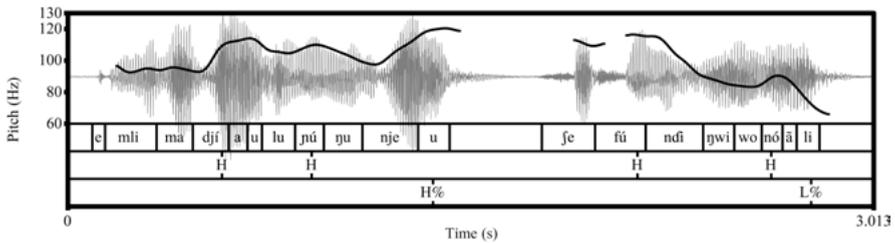


**Figure 10:** cf. (22) – [Washili]

When several clauses are stacked, an H% appears at the end of all non-final clauses (the final clause being associated with a L%). In Figure 11, illustrating (23), all the tones are downstepped with respect to the preceding tones, except the tones at the end of the clauses, which are significantly raised.

(23)  [ ( yek[<u>a</u>]=[y]é )$_\Phi$   ( ma-si'hú )$_\Phi$   ( y<u>a</u>-'djá )$_\Phi$ ]$_I$   [ ( ye'k<u>á</u> )$_\Phi$   ( m-ndru )$_\Phi$
     *if*=AG$_4$              4-*night*          4.PER-*come*        *if*              1-*person*

   ( ha-w<u>o</u>'nó )$_\Phi$   ( ze=ɲ-<u>o</u>ra   z-a=mw-<u>a</u>nɗó )$_\Phi$ ]$_I$   [ ( ze=<u>m</u>-'ɓé )$_\Phi$
   1.PER-*see*          10-*star*          10-*of*=3-*first*                    AG$_{10}$=10-*cow*

   ( zo-u-ndj<u>i</u>[h]='hó )$_\Phi$     ( pa'ʃ<u>é</u>=ni )$_\Phi$ ]$_I$
   10.HAB-15-*enter*=AG$_{17}$    9.*kraal*=*in*

   'When the night comes, when one sees the first stars, the cows come back to the kraal.'                                                          [Washili]
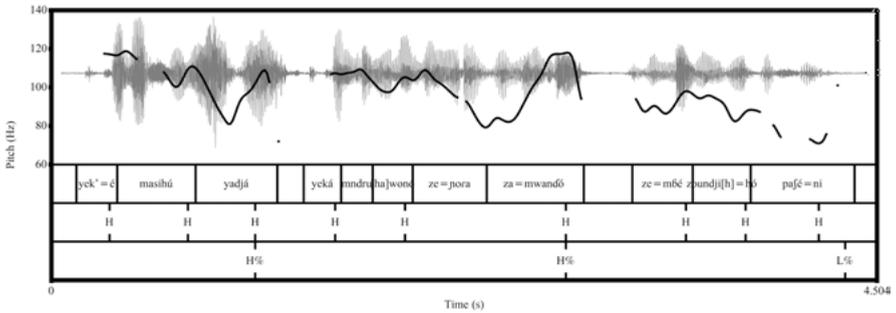
**Figure 11:** cf. (23) – [Washili]

When the second clause is embedded in a first clause, however, as is the case in (24), no H% is in general observable (see Figure 12).[9]

(24)   [ ( ye=mw-aná )$_\Phi$   ( ha-leme꞉wá )$_\Phi$      ( ha[ta]   ha-siuʃi[a]=꞉[h]ó )$_\Phi$
          AG$_1$=1-*child*             1.PER-*being tired*     *until*     1.PER-*fell asleep*.APP=AG$_{17}$

( ga꞉rí=ni )$_\Phi$ ]$_I$
9.*car=in*

'The child was so tired that he fell asleep in the car.'                [Washili]
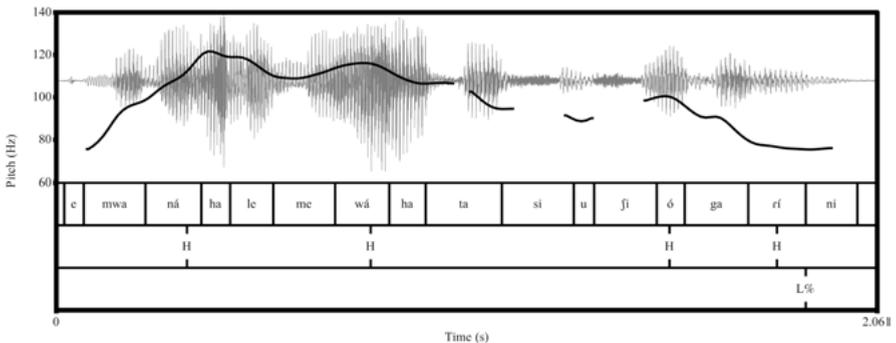


**Figure 12:** cf. (24) – [Washili]

However, the H% may also emerge in these situations, depending on parameters such as speech rate or idiolectal variation. More generally, an H% can appear at the end of – or before – any non-final clause. In (25), for instance, an H% associated with a short pause follows the relative.

**9** I have no evidence here that an Intonation Phrase is embedded in another, as could be expected.

(25)  [ [ ( wa-dj<u>e</u>ni    wa-wá-n<u>i</u>ka          ma-ɓamɓú )_Φ ]_I  ( w<u>a</u>-ˈdjíɓiwa )_Φ ]_I
      2-*visitors*   2.REL.PER-OM₂-*give*   6-*present*       2.PER-*please*.PAS
      'The visitors to whom they gave gifts are pleased.'          [Moroni]
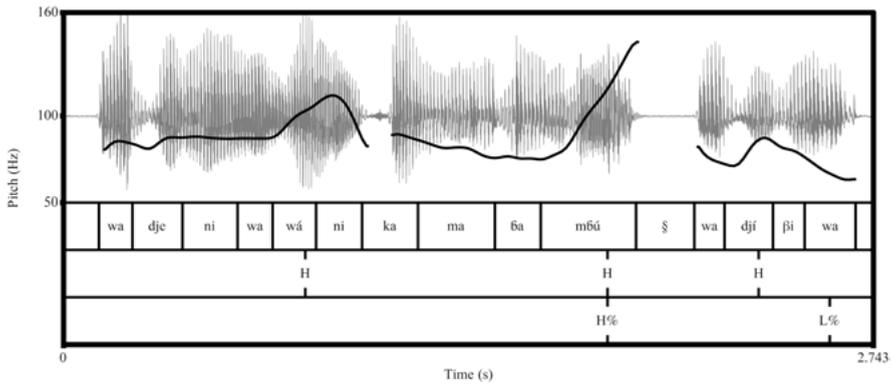


**Figure 13:** cf. (25) – [Moroni]

    Note that the insertion of an Intonation Phrase boundary in (25), signaled by an H%, must be linked to the length of the sentence and idiolectal variation, since it has previously been shown that not all relatives are followed by an H% (cf. (19) in Section 3.3.2, and Patin (2010)).

## 4.2 The LH*!H% contour

As demonstrated in (26a) and Figure 14, the H% boundary tone can appear in contexts other than the end of (or before) a clause. In (26a), the fronted dislocated object is followed by an Intonation Phrase boundary; evidence for this boundary comes from the pause that separates the dislocated NP from the matrix.

(26)  a.  [ [ ( ʃe=i-t̪<u>a</u>nd̪ǎ )_Φ ]_I  ( tsi-ʃi-ˈréŋge )_Φ ]_I
        AG₇=7-*bed*       1SG.PER-OM₇-*take*
        'The bed, I took it.'

    b.  [ [ ( ʃe=it̪<u>á</u>nd̪ā )_Φ ]_I  ( tsiʃi<u>i</u>réŋg<u>e</u> )_Φ ]_I
        'THE BED (= not the chair), I took it.'          [Moroni]

    Interestingly, a contrastive topic is associated with a specific contour composed of a LH* bitonal tone associated with the penult of the dislocated element and a downstepped H% boundary tone, which is, as expected, associated with

the final syllable of the Intonation Phrase: compare (26a) with (26b), which exhibits this contour, in Figure 14. As we shall see later (see Section 5.2), this contour is also associated with specific types of questions that involve emphasis: surprise and echo questions.
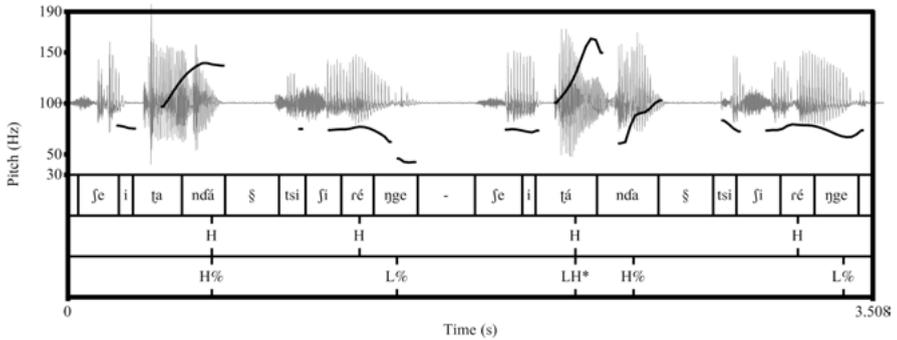


**Figure 14:** cf. (26) – [Moroni]

If the lexical high tone at the end of the contrastive topic is underlyingly associated with the final syllable, this syllable is lengthened in order for the contour to emerge – see (27), illustrated in Figure 15.

(27)  [ [ ( leóō̱ )_Φ ]_I  ( ha-liᵢmí̱ )_Φ ]_I                    < /leó/
        *today*        1.PER-*cultivate*
        'TODAY (= not yesterday), I have cultivated.'
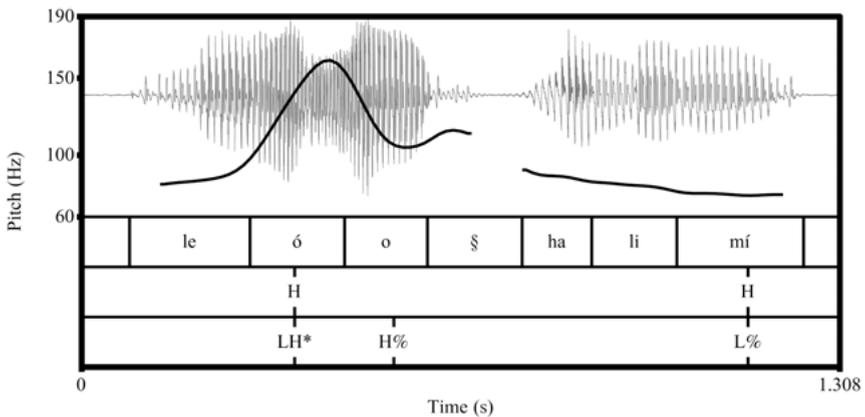


**Figure 15:** cf. (27) – [Moroni]

# 5 Question intonation

This section is dedicated to the prosody of questions in Shingazidja. In Section 5.1, I discuss yes-no questions extensively, especially the interesting tone-intonation relationship exemplified by these questions. In Section 5.2, I briefly introduce biased questions. Finally, Section 5.3 is dedicated to content questions.

## 5.1 Yes-no questions

In this section, I will discuss the prosody of yes-no questions in Shingazidja in detail. The results come from the analysis of an experiment where 100 questions were produced by four different speakers from various dialectal backgrounds. All the examples and $F_0$ curves in this section correspond to the realizations of the speaker from Moroni.

### 5.1.1 The superhigh tone

In Shingazidja, as in many other Bantu languages, polar questions do not differ from their declarative counterparts in their morphology or word order. Rather, polar questions are marked by prosody, and optionally by the question particle *yé*. As noted in Cassimjee & Kisseberth (*in prep.*), the distinctive feature of polar questions is a 'superhigh tone' that appears on the penultimate syllable of the utterance, i.e. the last stressed syllable. In (28), for instance, the polar question differs from its declarative counterpart by the presence of a superhigh tone on its penultimate syllable (28b), as opposed to a downstepped high tone (28a).

(28)  a.  [ ( ha-wo̱nó )_Φ   ( le=ˈpá̱ha )_Φ ]_I
          1.PER-*see*        AG₅=5.*cat*
          'He saw the cat.'

      b.  [ ( hawo̱nó )_Φ   ( lé=pa̋ha )_Φ ]_I
          'Did he see the cat?'                          [Moroni]

The insertion of a (super)high tone or a rising intonation pattern is a widely observed strategy in yes-no questions in Bantu languages, though the pattern is more frequently associated with the last syllable of the utterance (e.g. Ekoti – Schadeberg & Mucanheia 2000; Herero – Möhlig et al. 2002; Kinyarwanda – Kimenyi 1980) than with the penult (but see for instance Chichewa, Chitumbuka – Downing 2004, Downing *this volume* –, Chimiini – Kisseberth *this volume*).

Recordings of the utterances in (28)[10] show that there is no clear observable difference in the average fundamental frequency of the word *hawóno* 'he saw' when it occurs in the declarative or the polar question. On the other hand, the $F_0$ of the penultimate syllables of theses utterances – i.e. the first syllable of the word *páha* 'cat' in both cases – differs radically depending on the status of the clause. This difference is illustrated in Figure 16. Generally, the superhigh tone is realized as a sharp $F_0$ rise, though it is also regularly realized as a rising-falling $F_0$ movement. In Figure 16 and subsequent figures, the superhigh tone is represented as a bitonal pitch accent LH* linked to the stressed syllable of the utterance. This bitonal accent forms a contour with the boundary L% tone that is also attested in yes-no questions.
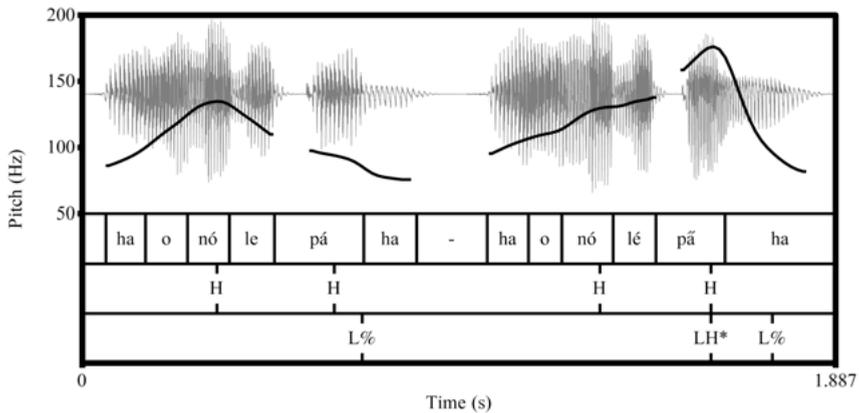


**Figure 16:** cf. (28) – [Moroni]

When more than two high tones surface in the utterance, the yes-no question differs from the declarative in that the downstep is suspended: in (29b), for example, the tone of the word *uká(ya)* 'that'[11] is not downstepped with respect to the tone of *ŋgudjúo* 'he knows', while it is downstepped in the statement in (29a).

(29)　a.　[ ( ŋgu-dju̱-ó )_Φ 　　( uˈká )_Φ 　( ŋge-ˈn̠á-o )_Φ ]_I
　　　　　　1.IMP-*know*-IMP 　　 *that* 　　9.IMP-*rain*-IMP
　　　　　　'He knows that it (= the rain) is raining.'

　　　b.　[ ( ŋgudju̱ó )_Φ ( uká )_Φ 　( ŋgén̠á̱-o )_Φ ]_I
　　　　　　'Does he know that it (the rain) is raining?'　　　　　　　[Moroni]

---

**10** Six to ten repetitions of each sentence were recorded.
**11** *uká(ya)* 'that' comes from the verb *ukáya* 'to be, live, stay'.

In (28b) and (29b), the syllables that immediately precede the superhigh tone are high, whereas they are low in the corresponding declaratives (28a, 29a). Generally, the syllables that separate the superhigh tone from the preceding high tone in the declarative are raised, independently of the number of syllables that separates the former from the latter. In (30) for instance, the three syllables that precede the superhigh tone are realized at the same level as the tone of the last syllable of the verb.

(30)  a.  [ ( ha-ni̱ká )$_\Phi$  ( e=ɲ-uŋgu   n-ˈdzíro )$_\Phi$ ]$_I$
           1.PER-*give*      AG$_9$=9-*pot*   9-*heavy*
           'He gave the heavy cooking-pot.'

   b.  [ ( hani̱ká )$_\Phi$  ( é=ɲúŋgú    ndzî́ro )$_\Phi$ ]$_I$
       'Did he give the heavy cooking-pot?'                    [Moroni]

The high plateau (or tone bridge) that links the superhigh tone from a preceding high tone is illustrated in Figure 17, which corresponds to (30). This figure also illustrates the fact that there is no systematic peak of intensity on the penult of yes-no questions.
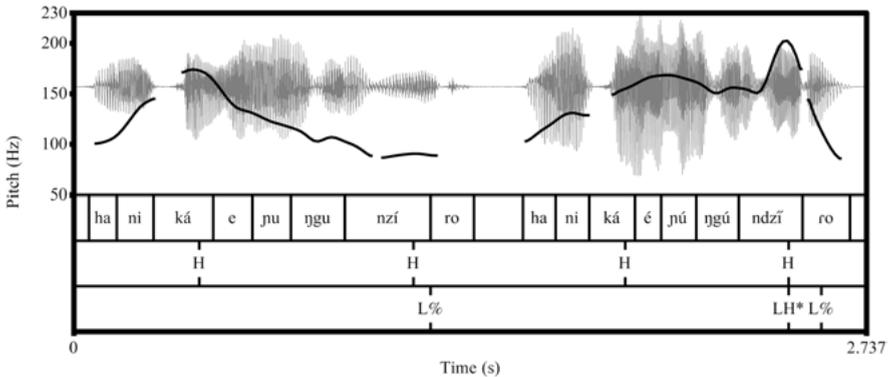


**Figure 17:** cf. (30) – [Moroni]

It is important to note that the Phonological Phrase boundaries are maintained in yes-no questions, at least in the dialect of Moroni (the situation is less clear in northern and southern varieties). In (30b), for instance, the plateau starts on the last syllable of the verb, whereas one might expect the beginning of the bridge to occur on the first syllable of the noun if there were no prosodic

break before the augment. Thus, we can conclude that the tone bridge rule occurs at the Intonation Phrase level.

Since the superhigh tone that marks polar questions overlaps a high tone in (28)–(30), one may wonder if the marker of polar questions is a superhigh tone or a rising of the last tone of a sentence, a strategy that has been identified in some Bantu languages (e.g. Ganda, Dzamba – see Rialland 2007; Chimiini – Kisseberth *this volume*). As pointed out in Cassimjee & Kisseberth (*in prep.*), the latter hypothesis is ruled out by examples such as (31b). In this example, a superhigh tone appears on the penultimate syllable of the sentence, while there is no tone on the penultimate syllable of the corresponding declarative (31a).

(31)  a.  [ ( ha-n̲i̲ka      ɲ-úŋgu̲   n-dziro )_Φ ]_I
            1.PER-*give*   9-*pot*    9-*heavy*
            'He gave a heavy cooking-pot.'

      b.  [ ( han̲i̲ka      ɲúŋgú    ndz̋íro )_Φ ]_I
            'Did he give a heavy cooking-pot?'                    [Moroni]

### 5.1.2 A case of tone-intonation interaction: surperhigh tone retraction

Hyman & Monaka (2008) distinguish three main tone-intonation strategies: (a) 'Accommodation ('peaceful coexistence'), whereby the terrain is divided up somehow such that the lexical and intonational tones minimally interact'; (b) 'Submission ('surrender'), whereby the intonational tones invade and override the lexical tones'; (c) Avoidance ('blockade') [. . .]: intonation is minimized'. While Shingazidja mostly belongs to the second type (Submission), there are situations in which the lexical tones influence intonation – e.g. the L% tone that cannot be associated with high tones in peripheral dialects. Such a situation arises in yes-no questions.

Indeed, there is a set of polar questions that does not follow the pattern that has been sketched up to this point: the superhigh tone is not associated with the penultimate syllable of yes-no questions that correspond to declaratives with a high tone on their last syllable. In such cases, the superhigh tone appears instead on the *ante*penultimate syllable. In (32b), for instance, illustrated in Figure 18, the superhigh tone appears on the augment,[12] while it might have been expected on the penult (32c).

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12 In such a sentence, the presence of the superhigh tone on the vowel [e] of the augment or on the (nasal) prefix of the noun (then syllabic: [m̩]) varies depending on speech rate. In any case, it cannot appear on the penult.

(32)  a.  [ ( ha-wo̱nó )_Φ  ( ye=m-le'ví )_Φ ]_I
           1.PER-*see*      AG₁=1-*drunkard*
           'He saw the cat.'

      b.  [ ( hawo̱nó )_Φ  ( yé̋=mle'ví )_Φ ]_I
           'Did he see the cat?'

      c.  *[ ( hawo̱nó )_Φ  ( yé=ḿlé̋'ví )_Φ ]_I          [Moroni]
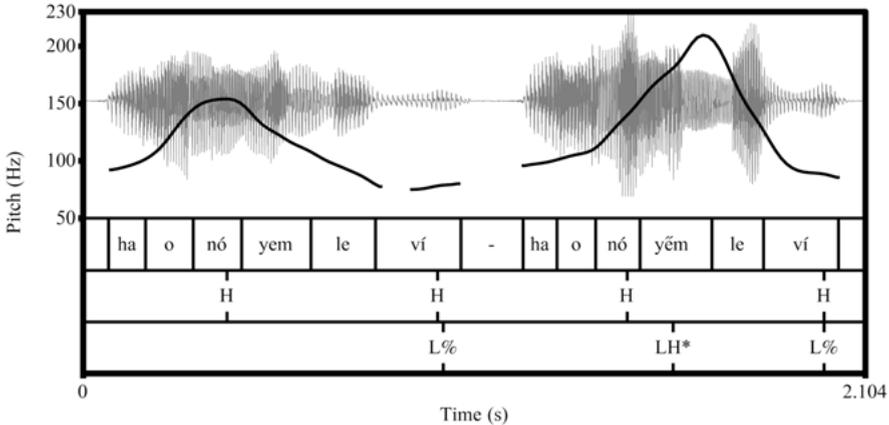


**Figure 18:** cf. (32) – [Moroni]

It must be noted that this category of polar questions also constitutes an exception in Cassimjee & Kisseberth (*in prep.*). However, their data do not correspond to mine on this point. According to F. Cassimjee and C. Kisseberth, the superhigh tone does not appear in this situation, either on the penult or the antepenult, and the final high tone is deleted. The deletion of the final tone, while infrequent, is also observable in my data; the presence of the superhigh tone, however, is mandatory.

Importantly, no displacement of the superhigh tone occurs when the lexical tone appears on the antepenult, as in (33). It is only when a lexical high emerges on the final syllable that the superhigh tone is retracted.

(33)  a.  [ ( ha-wo̱nó  pa̱ha )_Φ ]_I
           1.PER-*see*  5.*cat*
           'He saw a cat.'

      b.  [ ( ha-wo̱nó  pa̋ha )_Φ ]_I
           'Did he see a cat?'                           [Moroni]

When both the antepenult and the final syllable are associated with a high tone, the superhigh still appears on the antepenult, which is then raised – (34).

(34)  a.  [ ( ha-w<u>o</u>nó    m-pi<sup>ꞌ</sup>r<u>á</u> )<sub>Φ</sub> ]<sub>I</sub>
           1.PER-*see*    3-*ball*
           'He saw a ball.'

     b.  [ ( ha-w<u>o</u>nő    mpi<sup>ꞌ</sup>rá )<sub>Φ</sub> ]<sub>I</sub>
           'Did he see a ball?'                                        [Moroni]
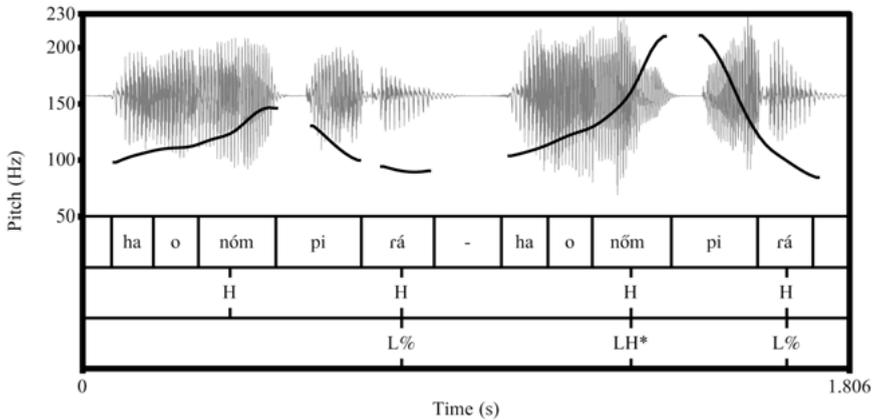


**Figure 19:** cf. (34) – [Moroni]

### 5.1.3 Alternative questions

Alternative questions in Shingazidja share many features with polar questions. Like the latter, they do not differ syntactically from their declarative counterparts – i.e. the alternative statements – and they are not associated with an obligatory morpheme (like other types of questions in Shingazidja, however, they may be associated with the question particle *yé*).

A superhigh tone is also associated with alternative questions, where it appears on the penultimate syllable of the first conjunct. The superhigh tone cannot appear only on the second part of the alternative. While some speakers claim that the raising of both the first and the second elements of the alternative is possible, such a realization has not been observed for any speaker, whether the expected answer is 'A(/B)' or 'yes(/no)' (e.g. 'coffee(/tea)' or 'yes(/no)' when the question is 'Do you want tea or coffee?'). This pattern supports the idea that,

prosodically speaking, a polar question in Shingazidja corresponds to the first part of an alternative question.[13]

(35b) illustrates the placement of the superhigh tone on the penultimate syllable of the first element of the alternative, i.e. the NP *le=páha* 'the cat'. Note that while there is a high tone on the last syllable of the first element in the declarative (due to the shift of the tone – (35a)), the superhigh tone is still associated with the penult (in other words, there is no tone retraction) in the alternative question. This indicates (i) that the high tone that triggers the retraction of the superhigh has to be underlyingly associated with the final syllable of the first segment; and (ii) that the alternative question is composed of two distinct Intonational Phrases, as opposed to its declarative counterpart. As for the second point, it is important to note that the end of the first part of the alternative is not associated with an H%, but with an L%.

(35)  a.  [ ( ha-w<u>o</u>nó )$_\Phi$   ( le=p<u>a</u>ˈhá )$_\Phi$   ( haˈw<u>ú</u> )$_\Phi$   ( ye=m-ˈɓw<u>á</u> )$_\Phi$ ]$_I$
        1.PER-*see*      AG$_5$=5.*cat*     *or*      AG$_9$=9-*dog*
        'He saw the cat or the dog.'

    b.  [ ( ha-w<u>o</u>nó )$_\Phi$   ( lé=p<u>ǎ</u>ha )$_\Phi$ ]$_I$   [ ( haˈw<u>ú</u> )$_\Phi$   ( ye=m-ˈɓw<u>á</u> )$_\Phi$ ]$_I$
        'Did he see the cat or the dog?'               [Moroni]

The 'tone bridge' phenomenon that characterizes polar questions also arises in alternative questions, including alternative questions corresponding to declaratives that have a 'lexical' high tone on the last syllable (i.e. a tone that does not come from shifting) of the first member of the alternative. In (36), the antepenult – not the penult – of the first element of the alternation bears the superhigh tone.

(36)  [ ( ha-w<u>o</u>no   má-β<u>á</u>há   m<u>ǎ</u>-iˈl<u>í</u> )$_\Phi$ ]$_I$   [ ( haˈw<u>ú</u> )$_\Phi$   ( m-ɓw<u>a</u>   m-ˈɓíl<u>i</u> )$_\Phi$ ]$_I$
      1.PER-*see*  6-*cat*   6-*two*       *or*     9-*dog*   9-*two*
      'Did he see two cats or two dogs?'          [Moroni]

Example (36) is illustrated in Figure 20. Alongside the position of the superhigh tone, special attention must be paid to the register of the second conjunct of the alternative, which is considerably reduced with respect to the register of the first part.

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**13** Whether a polar question should or should not be considered an alternative question with an ellipsis has been extensively discussed in the literature – cf. for instance the seminal work of Bolinger (1978).
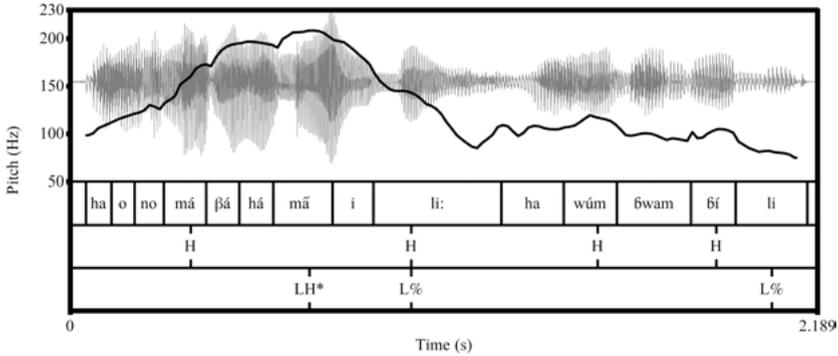
**Figure 20:** cf. (36) – [Moroni]

## 5.2 Biased questions

Biased questions in Bantu languages have received very little attention so far (but see for instance Schadeberg & Mucanheia (2000: 27): 'a surprised question is marked by a downstepped Hi on the final syllable'). In this section, I shall briefly discuss some features of biased questions in Shingazidja, building upon readings of sentences by a speaker from Washili. Due to the lack of corpora of natural speech, and since only one speaker has been tested for biased questions, this analysis should be considered tentative and will have to be confirmed by further research.

Rhetorical questions share some prosodic properties with yes-no questions, including the presence of a superhigh tone on the penult. However, they differ from polar questions in terms of pitch range: the superhigh tone is much higher in rhetorical questions than in yes-no questions. The difference between yes-no questions and rhetorical questions is illustrated in Figure 21, which corresponds to (37).

(37)  a.  [ ( ŋga-we        na=nafa̱sí )$_\Phi^{14}$    ( máűɗu )$_\Phi$ ]$_I$
            1.IMP-P2SG    *with=9.space*       *tomorrow*
            'Are you free tomorrow?'

      b.  [ ( ŋga-mi        na=nafa̱sí )$_\Phi$    ( má̱↑űɗu )$_\Phi$ ]$_I$
            1.IMP-P1SG    *with=9.space*       *tomorrow*
            'Am I free tomorrow??'                                          [Washili]

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**14** Several adverbs, such as *má̱uɗu* 'tomorrow', are preceded by Phonological Phrase boundaries.
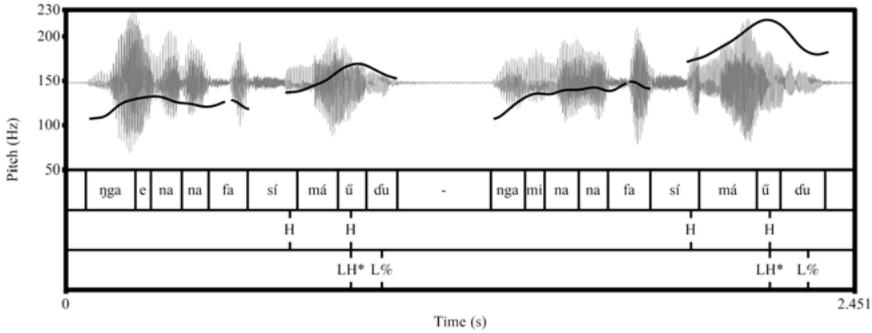
**Figure 21:** cf. (37) – [Washili]

The overall expansion of the pitch range of the sentence, along with a relative reduction in the intensity of the syllables that precede the penult or an increase of the delivery, has also been observed, but none of these cues seem to be obligatory.

Echo questions have the same segmental and syntactic properties as partial questions (see Section 5.3), but they differ from the latter in terms of prosody. Echo questions are minimally signaled by a LH*ᴵH% contour on a lengthened final syllable, a pattern that recalls contrastive topics (Section 4.2). The second 'mora' of this lengthened syllable is regularly devoiced. Compare in Figure 22 the $F_0$ shape and the length of the final syllable of a simple wh-question (38a) with the same parameters in the corresponding echo question (38b).

(38)  a.   [ ( ha-wọno )_Φ   ( nḓọ́ )_Φ ]_I
           1.PER-*see*        *who*
           'Who did he see?'

      b.   [ ( ha-wọno )_Φ   ( nḓọ̈ḭ́ọ́ )_Φ ]_I
           'WHO did he see? [Echo]'                          [Washili]
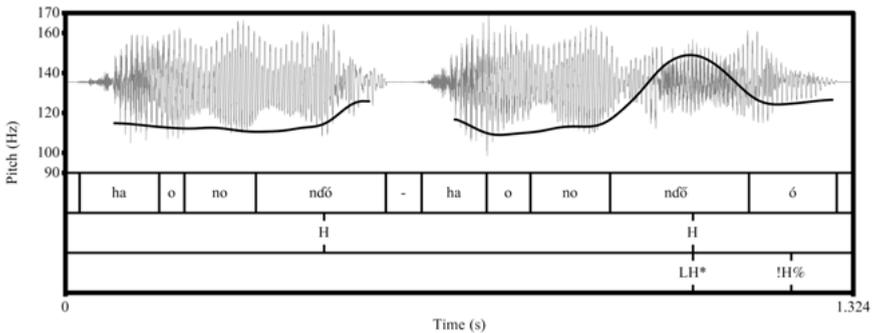


**Figure 22:** cf. (38) – [Washili]

A plateau optionally links the final LH\*!H% 'contour' to the preceding tone(s), and the overall register of the echo question is regularly louder or raised, though Figure 22 demonstrates that this expansion of the register is not obligatory.

Surprise questions, insofar as prosody is concerned, have much in common with echo questions. Indeed, surprise questions are also signaled by a LH\*!H% contour on a lengthened final syllable, but the register of the contour is clearly and systematically higher than that of the contour in Echo questions – see Figure 23, corresponding to (39). The remnant portion of the question is de-accented and the tones are frequently delinked.

(39)   [ ( hu-ɾe↑ndếé!é )_Φ ]_I
       2SG.PER-*do s.t.*
       'You did [what]?? [Surprise – after, e.g., 'I won the lottery']'     [Washili]
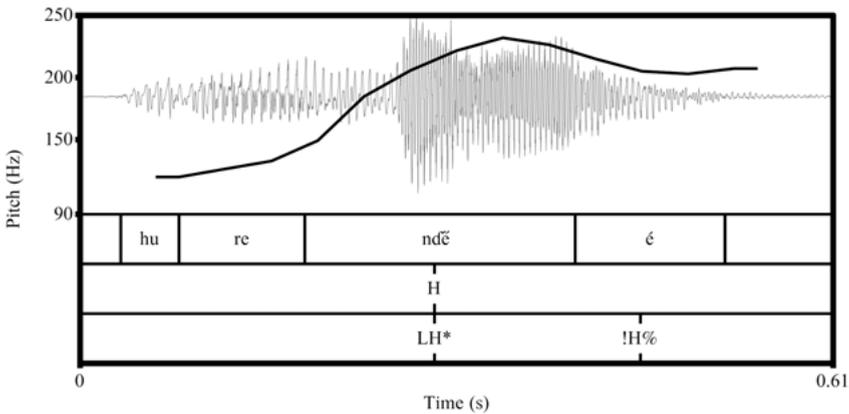


**Figure 23:** cf. (39) – [Washili]

Importantly, the LH\*!H% contour is also observable when the last lexical high tone is on the penult (40), rather than on the final syllable – as compared to what has been observed for contrastive topics (Section 4.3).

(40)   [ ( hu-fáɲ↑ắ!á )_Φ ]_I
       2SG.PER-*do s.t.*
       'You did [what]?? [Surprise – after, e.g., 'I won the lottery']'    [Washili]

The properties of polar and biased questions are summarized in Table 1. All types of questions are associated with the superhigh LH\* tone that also characterizes yes-no questions, but the expansion of the register (rhetorical, surprise) and the LH\*!H% contour on a lengthened syllable (echo, surprise) are each associated with two types of questions, which raises the possibility that they form natural classes.

**Table 1:** Biased questions features

|  | Superhigh tone (LH*) | Register expansion | Lengthening + !H% |
|---|---|---|---|
| POLAR | ✓ | | |
| RHETORICAL | ✓ | ✓ | |
| SURPRISE | ✓ | ✓ | ✓ |
| ECHO | ✓ | | ✓ |

## 5.3 Content questions (and answers)

A content question, or Wh-question, in Shingazidja is primarily identified by an interrogative phrase or pronoun. No intoneme or superhigh tone is associated with the wh-word or the whole clause and, at first glance, the prosody of a wh-question does not seem to differ from that of a statement. In (41), illustrated in Figure 24, for instance, the tone of the wh-word is downsptepped with respect to the preceding tone(s),[15] and there is no expansion of the register of the utterance.

(41)   a.   [ ( [y]é̠ )$_\Phi$   ( ya-re̠ˈmá )$_\Phi$    ( nɗo=ˈβí )$_\Phi$ ]$_I$
             Q            1.REL.PER-*hit*      who=FOC
             'Which one did hit?'

       b.   [ ( ya̠re̠má )$_\Phi$   ( nɗo=βˈí )$_\Phi$ ]$_I$
             'Which one did hit?'                                         [Moroni]
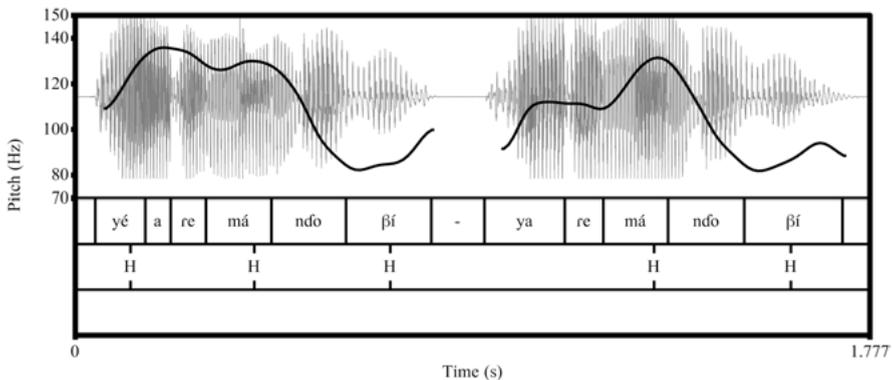


**Figure 24:** cf. (41) – [Moroni]

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**15** The verb appears in the relative form when the subject is questioned, as in many other Bantu languages – e.g. in Nguni languages, where questioning the subject leads to Cleft formation (Sabel & Zeller 2006, Zerbian 2006).

The lexical tone of a wh-word can even be deleted due to the OCP, as in (42), though it is regularly maintained.

(42)  [ ( [y]ḗ )_Φ   ( ya-r<u>e</u>ˈmá )_Φ    ( nd<u>o</u> )_Φ ]_I
      Q            1.REL.PER-*hit*    *who*
      'Who did hit?'                                    [Moroni]

However, a content question differs from a statement in that it does not exhibit the L% boundary tone that characterizes the latter. In Figure 24, for instance, the final high tones of the questions are realized as a shallow rise of the $F_0$, while the final tone of the statement has a flat shape (see Section 2).

The absence of L% is even clearer in the dialect of Washili,[16] which also exhibits a L% in statements. While the tone of the wh-word is downstepped in (43) with respect to the preceding tones of the utterance, it is associated with a significant, sharp rise of the $F_0$ (see Figure 25).

(43)  [ ( [y]<u>e</u> )_Φ   ( n-ts[ih]<u>u</u>   [y]-á[17]   [y]<u>i</u>di )_Φ   ( Djuˈmw<u>á</u> )_Φ
      Q             9-*day*        9-*of*    *Eid*          *Juma*

      ( [h]a-[h]und<u>u</u> )_Φ   ( [h]iˈnd<u>í</u> )_Φ]_I
      1.PER-*obtain*          *what*

      'What did Juma get for Eid?' (lit. = [for] Eid Juma get what?)   [Washili]
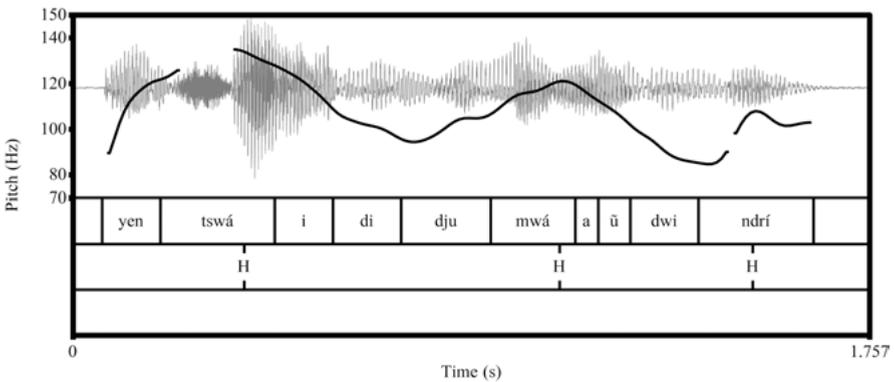


**Figure 25:** cf. (43) – [Washili]

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16 Unfortunately, I do not have data on wh-questions from northern and southern speakers.
17 The tone that appears on this vowel comes from the initial question marker *yé* due to a rule that shifts an utterance initial high tone (a high tone cannot be aligned with the left edge of an utterance in the dialect of Washili). The rule also applies in (45).

Interestingly, the L% boundary tone emerges when the wh-word is dislocated. In (44), illustrated in Figure 26, the last syllables of the question are associated with a L%, indicating that the fronted wh-word is followed by an IP boundary.

(44)   [ [$^{18}$ ( hiˈndí )$_Φ$ ]$_I$   ( ha-ˈréme )$_Φ$ ]$_I$
         *what*          1.PER-*hit*
         'What did he hit?'                                   [Moroni]
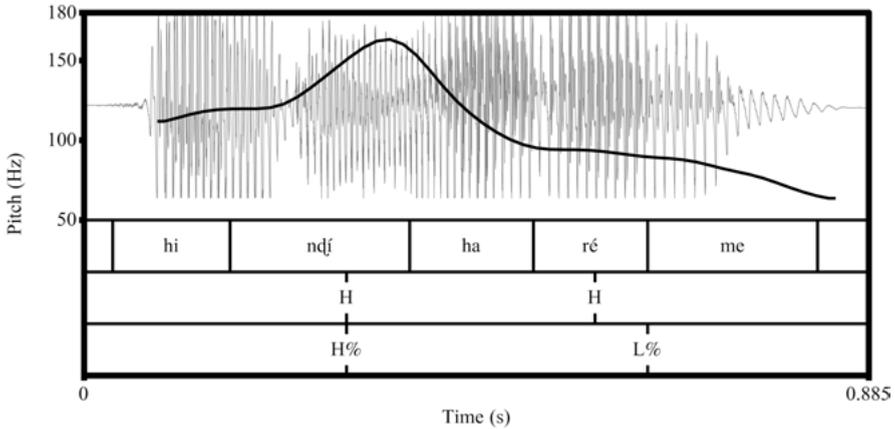


**Figure 26:** cf. (44) – [Moroni]

No prosodic difference has been observed between statements and answers of content questions. In (45), no intoneme is linked to the focalized subject *Alí̱*, and a L% boundary tone is associated with the final syllables of the answer.

(45)   a.   [ ( [y]e̱ )$_Φ$   ( yá-wo̱na         ˈDjúmwa̱ )$_Φ$   ( ˈndó̱ )$_Φ$ ]$_I$
              Q             1.REL.PER-*see*  *Juma*            *who*
              'Who saw Juma?'

       b.   [ ( Alí̱ )$_Φ$    ( ha-m-ˈm$^{19}$ó̱no )$_Φ$ ]$_I$
              Ali           1.PER-OM$_1$-*see*
              'Ali saw him.'                                   [Washili]

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**18** It is not clear at this point in my research if the IP that corresponds to the fronted wh-word is embedded in another IP (the hypothesis I adopt in this example), or if the two IPs are distinct.

**19** /w/ assimilates to [m] after another [m].

# 6 Conclusion

In this chapter, I have presented an analysis of intonation in Shingazidja, a Bantu language of Comoros, focusing on the interaction of intonation with lexical high tones. As is the case for the H% boundary tone that signals the end of non-final Intonation Phrases, intonation tends to override the lexical high tones in several situations, indicating that Shingazidja may be assumed to belong to the 'submission' type in the typology of tone-intonation interface introduced in Hyman & Monaka (2008). However, I also discussed several cases where tones, on the contrary, dominate intonation. The position of the super-high tone of yes-no questions on the penult or the antepenult of utterances, for instance, depends on the presence or absence of a high tone on the last syllable. Moreover, the L% tone that signals the end of a final Intonation Phrase is excluded from content questions that end with a high tone in the varieties of Moroni or Washili, and from any sentence that has a high tone on its final syllable in the peripheral dialects (Mbeni, Fumbuni). This mixed system in the tone-intonation interface reflects the prosody of the language, which exhibits characteristics of both a tone language (e.g. the shift of the tone) and a pitch-accent language (e.g. the insertion of a default tone on a toneless phrase, discussed in Section 3.3.1).

While progress has been made these last years in the understanding of the non-tonal prosody of Shingazidja, there are still many unresolved issues and challenges for future research. Indeed, several structures or features discussed in this chapter deserve a closer look. This is for example the case for H* insertion in the variety of Moroni, whose conditions of emergence are not properly defined, or biased questions, which need to be studied in context, using a dedicated corpus of natural speech. In particular, it would be highly interesting to compare the results sketched in this chapter with a closer examination of the parameters that do not involve $F_0$. These parameters include segment reduction (which is considerable in Shingazidja), and most importantly intensity and vowel length, which are related to stress.

# Acknowledgements

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