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# An Outline of Ìgáṣi Tone System

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**Abstract**
Igasi and other related speech forms of North-west Akoko are critically endangered and studies of their phonologies are rare. This article reports that Ìgáṣí operates a terraced-level system with three-tones, L, M, and H. The three tones of Igasi downdrift after L, but consonant voicing interacts with downdrift such that it is only attested when the intervening consonant is voiced; downdrift is not attested when there is a voiceless consonant between the L and the following tone. The language also has two phonetic contour tones, H͡L falling, which is an allotone of L after H; and L͡H rising, which is an allotone of H after L. While the falling contour tone is formed without inhibition, the rising contour is only formed when the L and H are directly adjacent to each other or when a voiced pre-vocalic consonant separates them. Consonant voicing interacts with L͡H rising contour such that the rising is blocked when a pre-vocalic voiceless consonant intervenes between the L and H. Findings are supported with acoustic proofs.

**Keywords**: terraced-level system; acoustic proof; downdrift; contour tone; consonant voicing.

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## 1. Introduction

Igasi is one of the understudied mutually exclusive speech forms spoken in Akoko North-west area of Ondo State, Nigeria. According to Olumuyiwa and Oshodi (2012), these speech forms are 10, namely Arigidi, Erúsú, Oyín, Ùrò Ọ̀jọ̀ and Ìgaṣí (spoken in and around Àjọwá) and Àjè, Àfá, Ùdò, and Ọgè (spoken in Òkè-Àgbè quarters). Although the 10 speech forms are considered dialects of the same language, the name of the language itself is yet to be determined (Olumuyiwa and Oshodi 2012). In terms of classification, however, it has been established that the speech forms belong to neither Yoruboid nor Edoid, which are the other West Benue-Congo (WBC) languages that surround them (Olumuyiwa and Oshodi 2012; Olaogun 2016). Rather they belong to the Akokoid branch of YEAI language group. Works on the languages in this Akokoid group include Akinyemi (2002) on Northern Akokoid, Salffner (2009) on Ukaan, Olaogun (2016) and a few others mostly unpublished undergraduate long essays such as Adewusi (2008) on Uro, Talabi (2016) and Bhadmus (2016) on Igasi. The phonologies and other aspects of the structures of these dialects therefore need to be studied to bring them at par with some of the other better studied WBC languages. Since the speech forms in this group are also at different critical stages of endangerment, studying them translates to efforts at preserving them. An investigation of Igasi tone system is therefore a necessary contribution in this regard.

In the remainder of this article, I present a justification of my method of data presentation in section 2 and outline the basic tonemes of Igasi in section 3. In section 4, I discuss the behaviour of the basic tones in different phonetic and phonological environments. Consonant-tone interaction, and the absence of downtrends are further discussed in section 5, and the article is concluded in section 6.

## 2. Data presentation

Igasi has 24 consonant and 12 vowel phonemes respectively (Bhadmus 2016), although it lacks a standard orthography. In fact I am not aware of any of the other nine mutually exclusive

dialects having a standard writing system. This has lead to a proliferation in the writing of the speech forms as different researchers on the different dialects have adopted varied writing methods[1]. This has left the curious reader with the problem of matching graphemes with sounds in a consistent manner. Since it is always better to present data orthographically than using phonetic symbols because orthographic data is more accessible, I have decided to present my data orthographically. In order to avoid leaving a gap between my orthographic symbols and the actual sounds, I present in Tables 1a-b the phonemic correspondence of the orthographic symbols used in this article. The orthographic symbols are placed in parentheses in front of each corresponding sound. My choice of symbols rely largely on the orthographies of Yoruba and neighbouring Edoid languages as well as Olaogun (2016) which contains a comparative wordlist of the nine of the mutually exclusive speech forms of North-West Akoko with Yoruba.

Table 1a: Grapheme-phoneme correspondence: consonants

| | **Labial** | **Alveolar** | **Palatal** | **Velar** | **Glottal** |
|---|---|---|---|---|---|
| **Nasal stops** | m (m) | n (n) | | | |
| **Oral stops** | p (p)<br>b (b) | t (t)<br>d (d) | tʃ (ch)<br>dʒ (j) | k (k)<br>k$^{w}$ (kw)<br>k͡p (kp)<br>g (g)<br>g$^{w}$ (gw)<br>g͡b (gb) | |
| **Non-stops** | ɸ (fw)<br>f (f)<br>v (v) | s (s)<br>l (l)<br>r (r) | ʃ (sh)<br>j (y) | w (w) | h (h) |

[1] The variation in this sense is not so wildly apart since the researchers simply adopt the Yoruba writing system. But the difference becomes apparent in the writing of those phonemes not attested in Yoruba.

Table 1b: Grapheme-phoneme correspondence: vowels

| | Front | Central | Back |
|---|---|---|---|
| Close | i (i)<br>ĩ (in) | | u (u)<br>ũ (un) |
| Close-mid | e (e) | | o (o) |
| Open-mid | ɛ (ẹ)<br>ɛ̃ (ẹn) | | ɔ (ọ)<br>ɔ̃ (ọn) |
| Open | | a (a)<br>ã (an) | |

**3. Tone contrasts**

Three tone levels, High ("H" [˝]), Mid ("M" unmarked) and Low ("L" [ˋ]) tones can be contrasted in Igasi. This three-way contrast is shown in the monosyllabic verbs in examples (1a-c).

Examples 1 (a-c)

| | | |
|---|---|---|
| A | fwẹ́ | enter |
| B | fwẹ | collect |
| c | fwẹ̀ | take |

Although minimal sets of the three tones containing the same segmental materials are rare, it is easy to demonstrate that they also contrast in disyllabic nouns. Considering nearness within the tone phrase, it is necessary to be able to contrast H and M, and M and L using minimal pairs. This will be proof that H and M are independent of each other and M and L are also independent of each other, hence there are three contrastive tones in the language. This is done in examples (2a-b) which contain a minimal pair contrasting H and M after initial H, whereas (2c-d) are a minimal pair contrasting M and L after initial L. Also examples (3a-c) contain a near minimal set of H, M and L in Igasi. Here we see the syllable [-gà] preceded by syllabic nasal [ŋ], on which the three tones contrast, in the three lexical items. It needs to be pointed out that although the nasal is

preceded by initial vowels is (3a) and (3c), speakers often omit the vowels in the words. In such cases, we are left with sequences ŋ́gà, ŋgà, and ŋ̀gà.

Examples 2 (a-d)

| | | |
|---|---|---|
| a | úgọ́ | scratched |
| b | úgọ | strong |
| c | ǹsẹ | Song |
| d | ǹsẹ̀ | River |

Examples 3(a-c)

| | | |
|---|---|---|
| a | íńgà | Nail |
| B | ngà | Hoe |
| C | ùǹgà | Waist |

Minimal sets contrasting the three tones of Igasi are also gotten by using sequences such as in (4a-c), where some items may be considered to be phrases. This cannot be considered counterintuitive since the adjacent tones in the three utterances are articulated together in the flow of speech and the fact that the three-way contrast is maintained in the same phonological environment validates their use in establishing tonal contrast.

Examples 4 (a-c)

| | | |
|---|---|---|
| a | Úwọ́ | (he) pulled |
| b | Úwọ | Crooked/not straight |
| c | Úwọ̀ | (he) cried |

Ghotuo is a related WBC language in which a minimal set of tones containing the same segmental materials are not found, and as a result the language had been analysed to be a two-tone language prior to Elugbe (1985). But Elugbe (1985) convincingly demonstrated a three-way contrast using the utterances in (5a-c). Notice that the H in (5c) is not preceded by

L as in (5a-b), but this does not make his submission less convincing.

5 (a) *ọ̀pkà* (LL) "cock"
(b) *ọ̀kpa* (LM) "one"
(c) *ọkpá* (MH) "lamp"

In what can be an advancement on this, Elugbe (1995: 70-71) uses the items *ọ̀pkà* "cock", *ọ̀kpa* "one", and *ọ̀kpá* "which one", the last of which may be regarded to be rather a phrase in contrast to the others that are lexical items. This is similar to the method used in examples (4a-c) above.

**4. Tonemes and their phonetic variants**

In most of the WBC tone systems that have been extensively studied, tones exert influences on one another. The same is true of Igasi. These influences, as will be shown in this section, are mostly assimilatory in nature.

**4.1. The low tone (L)**

The Low tone is realised as a level tone in initial position (6a). When in non-final position, L is realised as a level tone after another L (6b) and after M (6c). In addition, example (6c) shows that L is equally realised as a level tone before M. These natures of L are summarised by Fig. 1 showing level L in initial position, after another L and before M.

Examples 6 (a-c)

| | | |
|---|---|---|
| a | Àǹsa | Egg |
| b | Ìvève | Food |
| c | Ikpùkpu | sand/moulded clay |

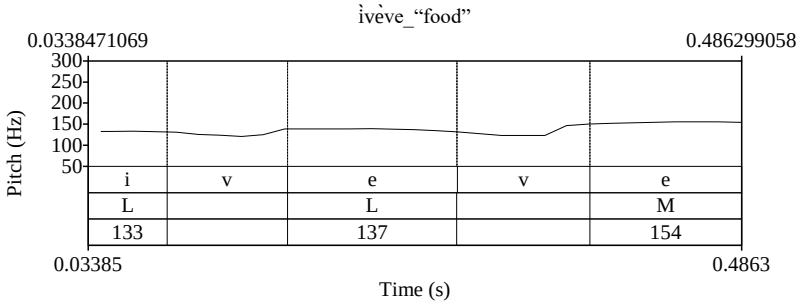


Fig 1: Pitch track of *ìvève* "food" showing level L in different positions

When L occurs after H, it is realised as HL falling contour that falls from the level of the H to that of L (4c; 7a-d). This is clearly shown in Fig. 2 where the tone on the final tone-bearing unit (TBU) glides from initial 175Hz down to 142Hz. The difference between these two points is 33Hz which is perceptually acute.

Examples 7 (a-d)

| | | |
|---|---|---|
| a | ìgírígọ̀ | Knee |
| b | íjù | Eye |
| c | úrọ̀ | dream |
| d | únwẹ̀ndọ̀ | younger sister |

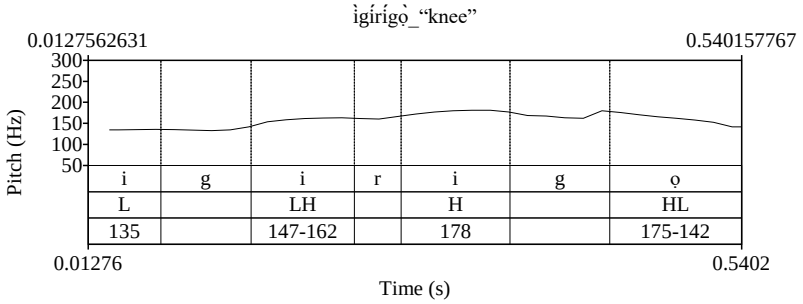


Fig. 2: Pitch track of *ìgǐrígɔ̂* "knee" showing HL falling contour

Downdrift affects successive Ls in Igasi (8a-b). In Fig. 3a where there are three successive Ls with no voiceless consonant intervening between them, we see the first realised at 144Hz, the second at 138Hz and the final one at 120Hz, which is clear evidence of downdrift. But when there is a voiceless consonant between the Ls, downdrift is neither perceived nor acoustically seen (8c-e). This is evidenced in Fig 3b containing three successive Ls all of which are realised within the same range as a result of the voicelessness of the consonants between them. The inference that can be drawn from the comparison of Fig. 3a and Fig. 3b is that voiceless consonants block downdrift in Igasi.

Examples 8 (a-e)

| | | |
|---|---|---|
| a | ègìdì | north |
| b | òn̄dù | load |
| c | àchìchò | pocket |
| d | ẹmẹ̀ǹtẹ̀ | monkey |
| e | ògòlòmàn̄chí | pawpaw |

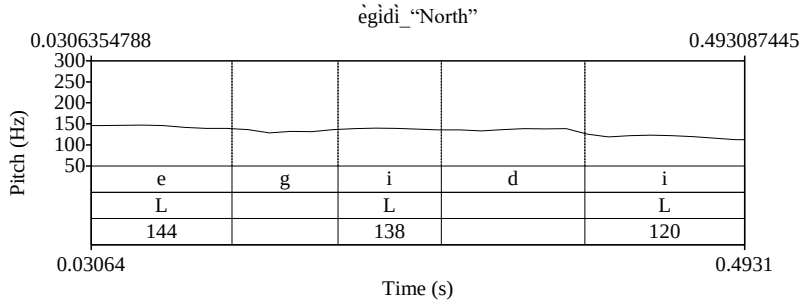


Fig. 3a: Pitch track of *ègìdì* "north" showing downdrifting of Ls

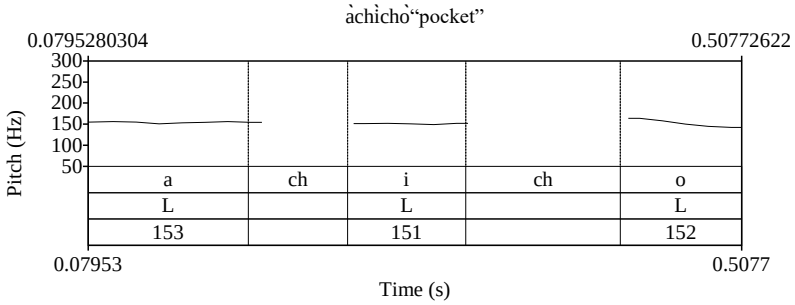


Fig. 3b: Pitch track of *àchìchò* "pocket" showing non-downdrifting of Ls when voiceless consonants intervene

In word-final position, L usually glides upwards when it is preceded by M or H. The term upglide is adopted in this article because rather than exhibit the natural phonetic effect of gliding downwards due to its adjacency to silence or reduced sub-glottal pressure, the low tone glides upwards. This upgliding is usually perceived as if it is a L͡M contour. But the duration of the M is too short for it to be regarded as an independent vowel. For ease of referencing, this upglided portion is represented as an independent M after the Ls in question in examples (9a-e) and in Figs 4a-b. Notice especially that in Fig. 4a-b, we see instances of apparently acute rises that usually begin from a very low level and then rise to somewhere around the level of the mid tone. The final L in Fig. 4a glides upwards by 9Hz, which is perceptually evident. The final L in Fig. 4b is itself phonetically H͡L, which means it is not as low as the normal L perceptually; in spite of this, the L still glides upward by 7Hz.

Examples 9 (a-e)

| | | |
|---|---|---|
| a | gbigíritìi | endurance |
| b | ingùu | okra |
| c | ọngộ̀ọ | stick |
| d | Ítàa | stone |
| e | úkpẹ̀rẹ̀ẹ | Disappointment |

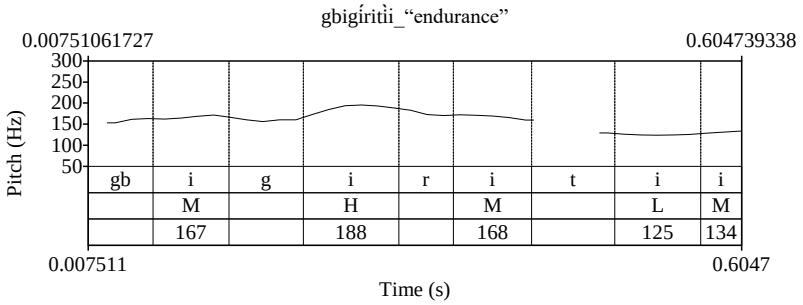


Fig. 4a: Pitch track of *gbigíritìi* "endurance" showing upgliding of final L

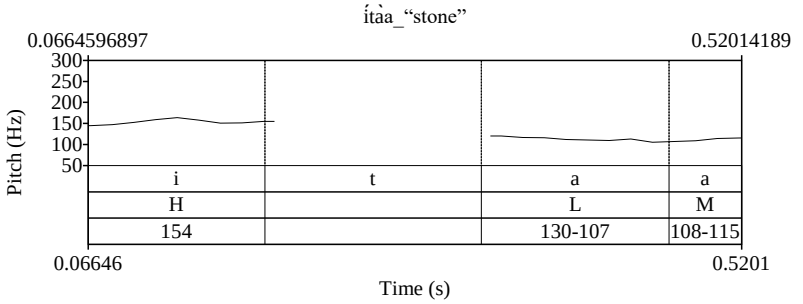


Fig. 4b: Pitch track of *ítàa* "stone" showing upgliding of final L

Since the upglided L is restricted to a specific phonetic environment, it is only a variant of the level L in its environment. Reinforcing this is the fact that it is in free variation with level L in the environment. Native speakers affirm that both the version with final upglided L and that with a level L are acceptable. It should however be emphasised that the level L version mostly occur in that position in careful speech.

### 4.2. The mid tone (M)

The M is realised as a level tone in word-initial and word-final positions (10a-b), after another M (10b) and after H (10a, c-d).

Examples 10 (a-d)

| | | |
|---|---|---|
| a | egéro | there |
| b | Uka | rope |
| c | ígọ́gọ | old |
| d | íkúku | corpse |

Downdrift affects M after L, but this is only when there is no intervening voiceless consonant (11a-c). Observe that Fig 5a which corresponds to example (11c) has a MLM sequence with the second M preceded by a voiced pre-vocalic stop. Notice that that second M is 16Hz lower than the first. Conversely, Fig. 5b has a similar sequence of MLM, but with a voiceless pre-vocalic consonant preceding the second M. Notice that here, the M occurring after L is even higher than the initial one, indicating that voiceless consonants block downdrift in the language.

Example 11 (a-d)

| | | |
|---|---|---|
| a | ìvève | food |
| b | àdòdo | flower |
| c | yẹ̀nda | memory |
| d | ikpùkpu | sand |

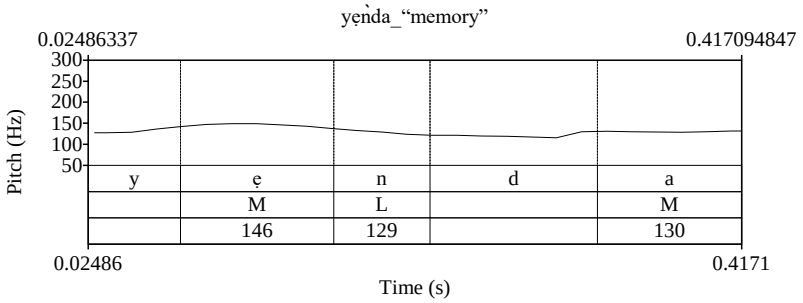


Fig. 5a: pitch track of *yẹ̀nda* "memory" showing downdrifting of M

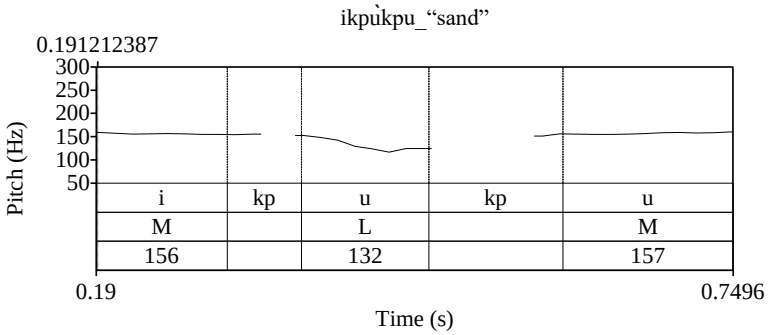


Fig. 5b: Pitch track of *ikpùkpu* "sand" showing non-downdrifting of M after voiceless consonants

There is a faint indication of declination in successive Ms in Igasi (12a-d). As reflected in the third of the three successive M in Fig 6a, successive Ms tend to decline beginning from the third one only when voiced consonants intervene. But Fig. 6b shows that on the other hand, successive Ms are rather raised when voiceless consonants intervene between them.

Examples (12a-d)

| | | |
|---|---|---|
| a | ọgọgọ | tortoise |
| b | ẹngbẹ | word |
| c | otinti | darkness |
| d | awanwan | armpit |

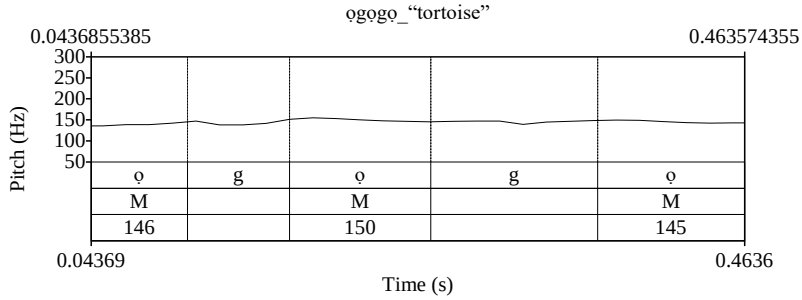


Fig. 6a: Pitch track of *ɔgɔgɔ* "tortoise" showing declination in successive Ms

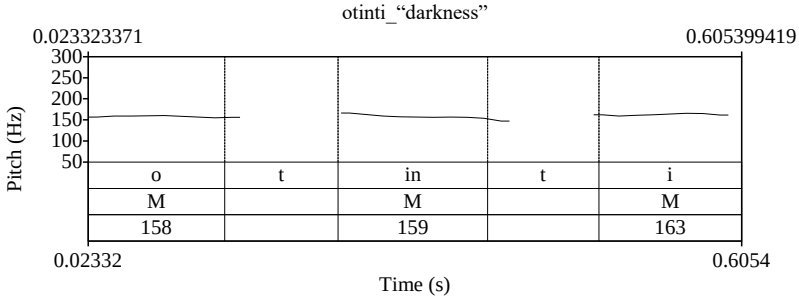


Fig. 6b: pitch track *otinti* "darkness" showing raising rather than declination in successive Ms involving voiceless consonants

### 4.3. The high tone (H)

The H is realised as a level tone in word-initial position (4a-c), after another H (10c-d) and after M (10a). It is realised as a rising tone after L (13a-b). Fig. 7 is a good example of how acute the rise of H can be after L; beginning from 132Hz and terminating at 170Hz, the LH̄ rising contour spans 38Hz within the TBU[2]. It is important to note that where H is realised as a rising contour tone, it does not rise to the usual level of H; rather the rise stops just above the level of the M. As a result, the rising tone in Igasi may be confused with M in fast speech where the rise is prone to levelling. But in careful speech, the distinguishing property is mainly that a typical M is realised as a level tone after L, whereas the rising of the H is perceptible in this environment.

Examples 13 (a-b)

| | | |
|---|---|---|
| a | ìhọ́nẹ̀re | expensive |
| b | odòrún | mouth |

[2] It should be noted that the 3Hz difference between the final two Ms is too small to be significant. Besides, the height of the first is apparently attributable to the H preceding it.

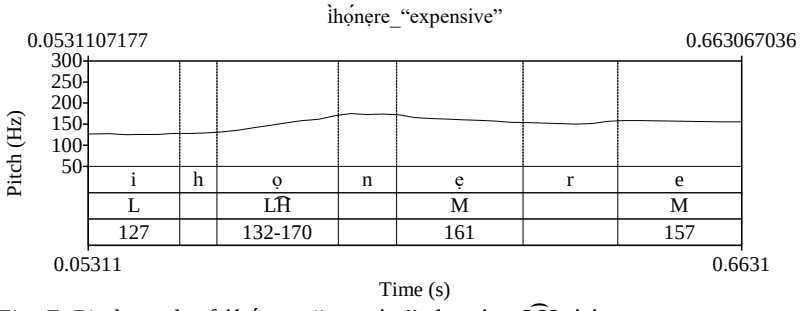


Fig. 7: Pitch track of *ìhọ́nẹ̀re* "scarcity" showing L͡H rising contour

Successive Hs do not decline in Igasi (14a-d). Representative of this is Fig. 8 where at 173, 171, and 170 Hz respectively, the lowering recorded in the pitch levels of three successive Hs is too marginal to be considered as declination.

Examples 14(a-b)

| | | |
|---|---|---|
| a | Ọ́ńdọ́ | ashes |
| b | Ǹswọ́ńgọ | Bark of tree |
| c | íńgá | nail |

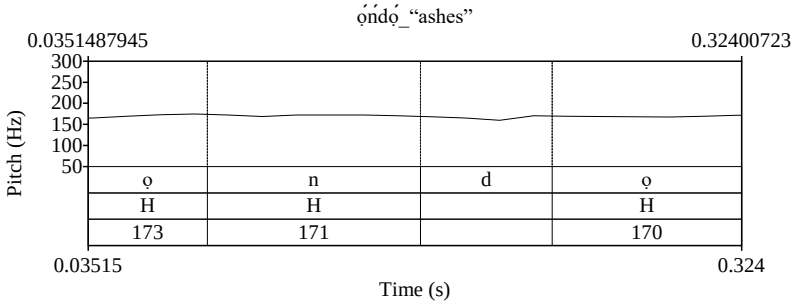


Fig. 8: Pitch track of *ọ́ńdọ́* "ashes" showing marginal declination in successive Hs

## 5. Further discussion

Beyond outlining the basic tones and their phonetic variants, there are some facts of Igasi tone system that require further discussion. These are consonant-tone interaction and downtrends. These are discussed one after the other in this section.

### 5.1. Consonant-tone interaction

Two contour tones have been identified so far: the HĿ falling and LĦ rising contours. These are results of assimilatory spreading between the two extreme tones (L and H) in the system. By this, every time L follows H, the L is realised as HĿ falling contour, regardless of the type of pre-vocalic consonant[3] involved (15a-d).

Examples 15 (a-d)

| | | |
|---|---|---|
| a | ípọ̀ | Breast |
| b | ńkẹ̀ | Fat |
| c | ógbè | companion |
| d | íjù | Eye |

The realisation of the LĦ rising contour is however not as straightforward. Whereas it was noted in section 3 that H is realised as LĦ rising contour tone after L, this is only true of situations where the H is in a TBU with a voiced pre-vocalic consonant (7a; 13a-b). The rise is neither auditorily perceptible nor acoustically visible when the pre-vocalic consonant is voiceless. This is because the spreading of L to the following H in Igasi interacts with consonant voicing in such a way that spreading is blocked by voiceless consonants. There is no rising contour in example (16) in spite of the fulfilment of the structural condition for it. This is because of the voiceless consonant /tʃ/ intervening between the L and H. This is

[3]Pre-vocalic consonant refers to the consonant at the syllable onset position of the TBU hosting the second of two adjacent tones.

illustrated in Fig 9 where the final H in the utterance contains neither perceptible nor acoustic rise. The blocking effect of voiceless consonants on the realisation of rising tone becomes apparent when Fig. 8 is compared with Figs 2 and 7 containing pre-vocalic voiced consonants between the L and the H and the H is realised as a rising tone.

Example (16)

| | |
|---|---|
| ògòlòmàǹchí | pawpaw |

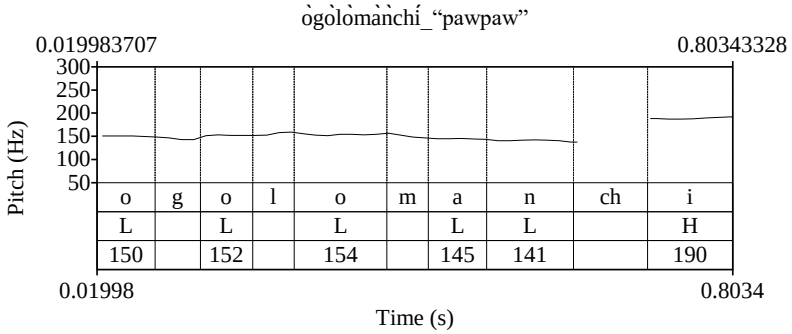


Fig. 9: Pitch track of *ògòlòmàǹchí* "pawpaw" showing the blocking of LH contour by voiceless consonant

Although not a common process in WBC, it is not unusual for consonant voicing to interact with tonal processes in this manner. In Nupe, a three-tone language spoken in North-central Nigeria, the spreading of L to H and of H to L is blocked every time there is a voiceless consonant between the hosts of the two tones (George 1970; Adeniyi 2014, 2015). The interaction of consonant voicing with tonal processes sometimes goes beyond this; Adeniyi (2015) provides a catalogue of three-tone languages of WBC where voicelessness of intervening consonants blocks downstep. The unusual fact of Igasi is mainly that while voicelessness blocks the realisation of LH rising contour, it permits that of HL falling contour tones.

**5.2. Downtrends**

Downtrend refers to the phenomenon of pitch lowering during the course of an entire utterance (Strik and Boves 1995). According to Connell (2001) the phenomenon grouped together under the caption of downtrends in African languages are downdrift, downstep, declination, and final lowering. Up to this point, it has been demonstrated that, in Igasi, successive Ls and Ms only decline when there is no intervening voiceless consonants between them. Likewise, the point has been made that downdrift is only attested when there is no intervening voiceless consonants. Regarding H, downdrift is intertwined with the spreading of the L to the downdrifted H. This implies that the downdrifted H doubles as the LH rising allotone of H. Also, available data show that Igasi will rather preserve hiatus. The consequence of this is that the tonal disequilibrium resulting from hiatus resolution, which usually results in downstep in cases where L is consequently lost, is not attested. The general implication of this is that downdrift is the sole evidence of terracing in Igasi.

**5.3. Upglide**

The upward gliding of word-final L when preceded by a non-L was reported in section 3. The term upglide is adopted in this article because rather than exhibit the natural phonetic effect of gliding downwards due to its adjacency to silence or reduced sub-glottal pressure, the low tone glides upwards. This however constitutes a marked difference between Igasi and Yoruba which is the dominant language in the whole of Akoko land. In fact all Igasi natives are bilingual in Yoruba; yet this tonal behaviour is preserved in Igasi.

**6. Conclusion**

It has been reported in this article that Igasi has three basic tones, L, M, and H as well as two contour tones LH rising and HL falling contours. While the falling contour is attested without inhibition every time there is H-L tonal sequence, the LH rising contour tone is blocked when there is a voiceless consonant between the L and H. Where it is attested, the LH

rising allotone of H is also reported to be realised on a lower level. The three tones of Igasi are also reported to downdrift when there is no intervening voiceless consonant between them and the triggering factor (L). Since this downdrifting can occur iteratively, Igasi can be said to operate a terraced level tone system.

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