

THE INTERACTION OF TONAL FEATURES IN YABASSI

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This paper examines the tones in the nominal and verbal forms of Yabassi, a narrow Bantu language of Cameroon which has three level surface tones (high, mid, and low). The high tone downdrifts after a low tone. It is argued in this paper that, lexically, tonal rules manipulate the features [upper] and [raised], and that the mid tone may be the combination of the default tone features [+raised -upper] or the lexical features [-raised +upper].

Ce papier examine les tons dans les formes nominales et verbales du yabassi, une langue bantou du Cameroun qui a trois tons de surface (le ton haut, le ton moyen et le ton bas). Cette langue manifeste un abaissement automatique du ton haut lorsque celui-ci est précédé d'un ton bas. L'auteur démontre que les tons de surface résultent de la manipulation des traits tonaux [upper] et [raised] au niveau lexical, que le ton moyen peut être le résultat des traits tonaux de défaut [-upper +raised] ou des traits lexicaux [-raised +upper].

It has been long recognized that the surface tones of African languages are the manifestation of tonal features (e.g. Wang 1967, Woo 1969, Snider 1988, Hyman 1993, Clark 1993). However, consensus has not yet been reached as to the contents and featural organization of tones. In languages that exhibit downstep, it is usually proposed that surface tones result from a combination of features on two tiers: a register tier and a tonal tier. The register tier helps account for the degree of downstepping exhibited in such languages. A less studied phenomenon is the case of languages without the usual downstep but which exhibit downdrift, that is, the automatic lowering of a high tone after a linked low tone. Yabassi, a Bantu language spoken in the Littoral province of Cameroon and classified in Guthrie under A40, that is, as a dialect of Basaa, is such a language (Guthrie 1967). It has three level tones, the high (H), the low (L) and the mid tone (M). Following a proposal by Yip (1980) and Pulleyblank (1986), I would like to account for the tonal alternations in Yabassi by arguing that its surface tones are the manifestation of the combination of the lexical features [+upper] for the lexical high tone, [-raised] for the lexical low tone, and [-upper] and [+raised] as default tone features. The article is organized as follows. First, I will make explicit my assumptions with respect to the featural organization of tone. I will then look at the tonal alternations that occur in infinitives, nouns and verbs before drawing the necessary conclusion.

0. PRELIMINARIES

In this paper, I assume that tone is a combination of the features [upper] and [raised] (Yip 1980, Pulleyblank 1986). Following the combinatory model of Archangeli and Pulleyblank (1992), we obtain the following representations where R stands for the feature [raised] and U for the feature [upper]:

- (1) +U -U +R -R +U +R -R +R
-U -U +R -U
H1 L1 M1 L2 H2 M2 L3 H3

As shown in (1) the H, M, or L can be represented by a variety of feature combinations. However, in this paper I assume the theory of radical underspecification (Kiparsky 1985, Pulleyblank 1986) and further assume that the default tones are [-U] and [+R].¹

¹ Among its main tenets, this theory claims that all the redundancies are removed from the underlying representation of segments and the early lexical phonology. Such redundancies are the default values of features. They are introduced by default rules or complement rules. Their introduction is governed by the redundant rule ordering constraint (RROC). (For more details, see Archangeli 1984).

Note that the combination of these two features gives M as the default tone in a three level tone system. Since the default features do not appear in the underlying representation of segments, the feature combination I assume for Yabassi² is as in (2) for the underlying and surface features.

Underlying			Surface			
+U	+U		+U	+U	-U	-U
-R	-R		+R	-R	-R	+R
H	L	M	H	M	L	M2

As shown in (2), the surface mid tone can be realized either as the combination of [+upper -raised] or as [+raised -upper]. [-upper] and [+raised] are the default tone features and are assigned by the redundant rules in (3).

- (3) a. [] ← [-U]
 b. [] ← [+R]

Rules (3a) and (3b) assign a [-upper] feature and a [+raised] feature to a tone bearing unit not yet specified for the features [upper] and [raised] respectively.

As shown in (2), there are two kinds of mid tone. The question now is: how to distinguish one from the other? My assumption is that the surface mid tone will basically have two sources. Underlying toneless vowels on which no tone spreads from an adjacent vowel will surface with a mid tone. A second source will be the case of a vowel that is underlyingly linked to a [+upper] feature and with which a floating [-raised] associates in the early lexical phonology as will be clarified in the analysis of the Yabassi data.³

In the remainder of this paper, I will be representing the lexical features by upper case letters, that is, high for [+upper], low for [-raised]. Given these assumptions, let us look at the representation of tones in nominal and infinitive forms.

1. THE TONE IN NOMINAL AND INFINITIVE FORMS

Consider first the mid tone in the infinitive forms. Verbal forms appear in two groups in their infinitive forms as illustrated in (4) and (5).

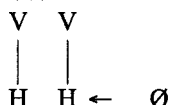
- (4) **dīlī** to eat
nólī to drink
fólī to give
lómli to bite
kwétli to speak
- (5) **swātlí** to swim
sēmli to sell
sólí to wear
tólí to come

The morpheme -li in these forms is the infinitive marker. In (4), it has a mid tone whereas in (5) it bears a high tone. Assuming that the mid tone is the default tone as was shown above, we can posit an underlying high for this morpheme. As for the verb roots, the forms in (4) have also an underlying high whereas those in (5) that surface with a mid tone are toneless underlyingly. If this assumption is correct, the mid tone on the infinitive marker in (4) is the result of Meeussen's Rule (Goldsmith 1979, 1984) that is formulated in (6).

² The data in this paper have been obtained from Catherine, Mary, and their mother who are Yabassi speakers and to whom I am very grateful.

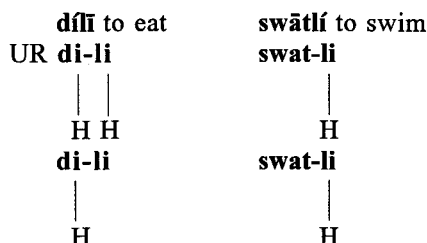
³ A potential third source for the mid tone is a vowel underlyingly fully specified for the [+upper -raised] features as in (2). See footnote 11 on a possible candidate in Yabassi for such a mid tone.

(6) Meeussen's rule



This rule says: when two tone bearing units are associated with high tones, the high on the second tone bearing unit deletes. Our first manifestation of the mid tone appears thus on the infinitive marker **-li** in (4) and the verb root in (5) as a result of the assignment of the default features [-upper +raised]. This is illustrated by the derivations in (7).

(7)



Meeussen's rule

(Assignment of default features, i.e., [-upper +raised])

Output: **dfli** **swätli**

A second type of the mid tone is provided by the present tense of a high tone verb as illustrated in (8) and (9). (The low tone is not marked by any accent throughout the paper except where specified.)

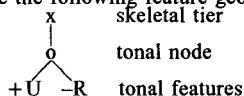
- | | |
|-----|---|
| (8) | bóm kwēt the egg speaks
ḡúp dī the chicken eats
sóḡ lōm the tooth bites |
| (9) | bóm swat the egg swims
ḡúp to the chicken comes
sóḡ sō the tooth wears (something) |

The verbal forms used in (8) are high tone verbs as they surface with a high on the verb root in their infinitive forms as shown in (4) and (5) whereas those in (9) are toneless as they surface with a mid tone in the infinitive forms. How to account for the surface mid tone in (8) and the low tone in (9)? A most plausible assumption is that this tense assigns a lexical low tone, that is the [-raised] feature, onto the verb. The association of the [-raised] feature to a tone bearing unit (TBU) with the [+upper] feature of the high-tone verb root yields a mid tone. In the toneless form, the verb surfaces with a low tone as a result of the [-raised] feature and the default [-upper] feature. This is shown in (10).⁴

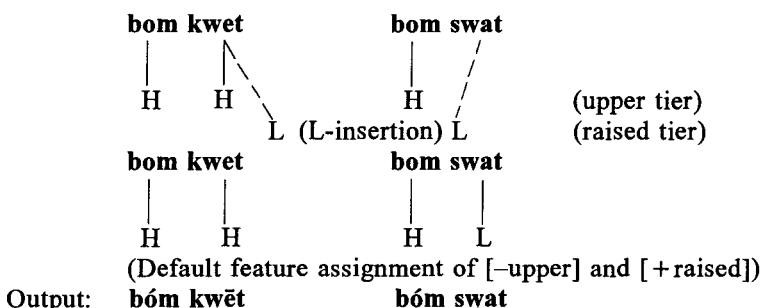
- | | |
|------|--|
| (10) | bom kwet bom swat

UR H H |
|------|--|

⁴ I assume the following feature geometry for tones:



In this feature geometry, the tonal features hang on the tonal node which, in turn, hangs on the skeletal tier, or more probably, reports directly to the moraic structure. Nothing crucial in this paper hinges on this indeterminacy. The representations of tones in the derivations given in this paper are simplified: the tonal features represented by high and low dock directly onto their tone bearing units.



As shown in this derivation, the surface mid tone on the high tone verb **kwet** is the result of a [+upper] feature in the environment of a floating [-raised] tone feature. It could be argued that this mid tone is the result of Meeussen's rule, that is, after Meeussen's rule deletes its high tone, **kwet** surfaces with the default features [-upper +raised] assigned by the rules in (3). The following forms show that this is not so. (TM here stands for tense marker).

- (11) **ma-ní mbap dī** I have eaten meat.
 I TM meat eat
- ma-ní kɔb lɔm** I have bitten the fingernail.
 I TM fingernail bite
- (12) **ma-ní mbap tɔ** I have burnt the animal.
 I TM animal burn
- ma-ní mbax sem** I have sold the corn.
 I TM corn sell

The nouns used in (11) and (12) will be argued below to be toneless underlyingly and they surface as low in the pre-stem position.⁵

Since the high-tone verb roots in (11) surface with a mid tone, this must be attributed to the assignment of the [-raised] by the present tense that combines with the [+upper] of these verb roots. Similarly, the surfacing of a low tone in the toneless verb roots in (12) is due to the assignment of this [-raised] feature, as argued previously.

Let us now examine the alternations that obtain when a noun precedes an adjective with a high tone on the first vowel. (Here, the underlying tones high and low to the left of the arrow, are marked with an acute and grave accent respectively. The mid tone that is underlyingly toneless is left unmarked.)

- (13) **tɔŋlí kápàŋ** ← **tóŋlí kápàŋ** a bad navel
 cúmíndí kápàŋ ← **cúmíndí kápàŋ** a bad meeting
- (14) **bóm kápàŋ** ← **bóm kápàŋ** a bad egg
 mbap kápàŋ ← **mbap kápàŋ** a bad animal
 kárí kápàŋ ← **kárí kápàŋ** a bad book
 wémìngò kápàŋ ← **wémìngò kápàŋ** a bad sick person
 wèsè kápàŋ ← **wèsè kápàŋ** a bad thief

While a toneless vowel becomes high when it precedes a high in a following word as shown in (13), a low tone does not change in the same environment as in (14). The rule causing this high spreading is stated in (15).

⁵ The reason why they surface as low in the pre-stem position rather than as an expected mid is that monosyllabic nouns are assigned [-raised] by a complement rule rather than the [+raised] default feature by the rule in (3). This complement rule would be:

[] ← [-raised] Condition: monosyllabic nouns

This would explain the low tone in the monosyllabic forms in (11) and (12), and the low on **mbap** in (14) and (21) which would undergo this rule.

(15) High tone spreading (HTS)



This rule says: a H spreads across word boundaries right to left onto a toneless tone bearing unit which is preceded by a vowel associated with a tone (T). The mentioning of a preceding associated tone will become clear after the discussion of the underlying representation of **mbap** in the following forms.

- (16) **mbáp kwēt** the animal speaks
 (cf. **mbap** animal, meat, **kwétlī** to speak)
kúb swat the fingernail swims
 (cf. **kub** fingernail, **swatlī** to swim)
ngóm kwēt death speaks
 (cf. **ngom** death, **kwétlī** to speak)
- (17) **káří kwēt** the book speaks
 (cf. **kári** book, **kwétlī** to speak)
wemingǝ kwēt the sick person speaks
 (cf. **wemingǝ** a sick person, **kwétlī** to speak)
wesě swat the thief swims
 (cf. **wese** thief, **swatlī** to swim)
ábǝ kwēt the dog speaks
 (cf. **ábǝ** dog)

In isolation, the nouns in (16) and (17) surface with a low tone on their last vowel. However, as the forms in (16) surface with a high tone when preceding a verb and those in (17) surface with a rising tone, we must conclude that they have different underlying representations. To account for the high tone on the last TBU of these nouns, I propose that it is the result of a high boundary tone that is inserted onto the last TBU of a noun in subject position. I also propose that the nouns in (16) are toneless underlyingly whereas those in (17) end with an underlying low tone, that is [-raised]. The high insertion thus surfaces in (16) as a high tone and causes the low in (17) to surface as LH.

At this point, one may wonder why, if it is true that the words in (16) are toneless, they do not surface with a mid tone in isolation. It should be observed that our research on Yabassi has so far revealed a single monosyllabic noun with an underlying mid tone, namely **lōm** 'man'. Ignoring this single word as an exception, there must be a constraint in the language that prevents monosyllabic nouns from surfacing with a mid tone.⁶

Notice also that, if it is true that the nouns in (16) are underlyingly toneless, this would explain why an associated tone must be mentioned in the HTS rule proposed in (15). Otherwise, it would be difficult to explain why the word **mbap** which is underlyingly toneless does not surface with a high tone when preceding an adjective starting with a high tone as is the case in the words in (16).

An alternative solution is to propose that the nouns in (16) have a floating low tone as opposed to a linked low tone for the nouns in (17). The question would be why this low tone does not surface in a preverbal position. What we would expect is that a floating tone would have docked onto a toneless TBU before the boundary high tone, which is phrasal, comes in. In order to prevent a LH to surface on the monosyllabic nouns in (16), one would be forced to propose an ad hoc rule deleting the low of a LH

⁶ Compare footnote 5 above.

in monosyllabic nouns. Because of all these problems, I adopt the proposal of treating these monosyllabic words in (16) as underlyingly toneless.

That a high tone is inserted onto a noun in subject position is further illustrated by the following forms.

- (18) **tóŋlí swat** the navel swims
 (cf. **tóŋlí** navel, **swátlí** to swim)
cúmindí to the meeting comes
 (cf. **cúmindí** meeting, **tólí** to come)
- (19) **bóm kwēt** the egg speaks (cf. **bóm** egg)
tugní kwēt the ear speaks (cf. **tugní** ear)
ngumá kwēt the oil speaks (cf. **ngumá** oil)
ndátím kwēt the chest speaks (cf. **ndátím**)

In isolation, the last TBU of the nouns in (18) and (19) surface with a mid tone and a high tone respectively. In subject position, it surfaces with a high tone, that is, the inserted boundary tone. Consider also the suffix -i in (20).

- (20) **mē ŋúbí sŋí** swallow the chicken and the tooth
 (cf. **mēlí** to swallow, **ŋúp** chicken, **sŋ** tooth)
- (21) **mē mbapí sŋí** swallow the meat and the tooth
 (cf. **mbap** meat)

The suffix **i** which stands for the conjunction 'and' surfaces with a mid tone in (20) when preceded by a high tone and it surfaces with a high tone in (21) when preceded by a low tone. I propose that this **i** morpheme is underlyingly high and that the mid tone in (20) is simply the result of Meeussen's rule proposed in (6) followed by the assignment of the default features.

Instead of the use of the suffix **i** as a coordination conjunction, a floating low tone can also be used. This is illustrated in (22) and (23).

- (22) **mē ŋúp sŋ** swallow the chicken and the tooth
 (cf. **mēlí** to swallow, **ŋúp** chicken, **sŋ** tooth)
- (23) **mē mbap sŋ** swallow the meat and the tooth
 (cf. **mbap** meat)

Notice that the conjunction morpheme here must be a low floating tone and it is associated with the last TBU of the noun to yield a falling tone for a noun ending in a high tone or a low tone for a noun like **mbap** that has been argued to be toneless underlyingly.

To sum up, we have identified three level surface tones in the nouns and infinitives. We have explained the manifestation of the mid tone either as the result of Meeussen's rule which deletes the second high in a sequence of two high tones or as a combination of the lexical tonal features [+upper -raised]. In the case of Meeussen's rule, we have proposed that the deleted tone surfaces as a mid tone which is a combination of the default tonal features [-upper +raised]. We have also established that a high tone is inserted onto a noun in subject position. In the following, we examine the tones in the verb structure.

2. TONAL FEATURES IN THE VERB STRUCTURE

The structure of the Yabassi verb, as of most narrow Bantu languages, consists of a subject marker (SM), a tense marker (TM) and a verb stem (ST) (Clements and Goldsmith 1984, Mutaka 1990).

Depending upon the tense used, the subject marker (particularly the first-person singular and the second-person plural) is morphologically determined: thus the first-person singular is **mi-** in the present and future tenses, but **ma-** in the immediate

past, recent past, and remote past tenses. Similarly, the second-person plural is **hin-** in the future tense but **higke-** in the immediate past, recent past, and remote past tenses. Our interest in the present section rests solely on the tones the different morphemes of the verb bear. Consider first the tones in the present tense illustrated in (24).

- (24) Present tense
mī-dī I am eating (cf. **dīlī** to eat)
 SM ST
há-dī we are eating
 SM ST
- (25) **mī-swat** I am swimming (cf. **swātí** to swim)
há-swat we are swimming

As was argued earlier, the verb in (24) is a high tone verb whereas the one in (25) is toneless underlyingly. To account for the surface mid tone of the form in (24) and the low tone in (25), I propose that the present tense assigns a suffixal low tone, i.e., [–raised] onto the last vowel as was illustrated earlier in the derivation in (10). The first-person plural **há-** is underlyingly H, i.e., [+upper] on **ha-** and the first-person singular **mi-** is underlyingly toneless as it surfaces with a mid tone. Consider also the future tense in (26) and (27).

- (26) Future tense
mī-tā-dī I will eat
 SM TM ST
wɔ-tā-dī you (SG) will eat
há-ta-dī we will eat
hín-ta-dī you (PL) will eat
- (27) **mī-tā-swat** I will swim
wɔ-tā-swat you (SG) will eat
há-ta-swat we will eat
hín-ta-swat you (PL) will eat

Like the present tense, the future tense also assigns a [–raised] onto the last vowel of the stem. Of interest here is the alternation that occurs on the TM **-ta-**. When **-ta-** is preceded by a mid or a low tone, it surfaces with a falling tone and when it is preceded by a high tone, it surfaces with a low tone. Assuming that, underlyingly a TBU can only be linked to a single tone (Goldsmith 1990, Clark 1993), I propose that the underlying representation of this tense marker is **táa**.⁷ Consider also the immediate past tense in (28) and (29).

- (28) Immediate past
ma-bó-dī I have just eaten
wa-bó-dī you (SG) have just eaten
há-bó-dī we have just eaten
hígke-bó-dī you (PL) have just eaten
- (29) **ma-bó-swat** I have just swum
wa-bó-swat you (SG) have just swum
há-bó-swat we have just swum
hígke-bó-swat you (PL) have just swum

⁷ One could alternatively represent the TM **-ta-** as **táy**, that is, an underlyingly high-toned short vowel followed by a floating L, as suggested to me by an anonymous JWAL reviewer. The problem with this proposal is that, in view of the analysis of a form like **-kwet-** in (8) whose surface mid tone has been proposed as the result of an underlyingly high tone followed by a floating L, one would wrongly expect this **-ta-** to surface with a mid tone.

Again, the [-raised] feature is assigned by this tense and is inserted onto the stem vowel to cause a mid tone in the high-tone verb stem in (28) and a low tone in a toneless verb stem in (29).

Of interest in these forms is the falling tone on the SM **ha-** which, in previous forms surfaces with a high tone. Notice also the change of the SM: **ma-** instead of **mi-** for the first-person singular, **wa-** instead of **wɔ-** for the second-person singular, **hínke-** instead of **hin-** for the second-person plural. To account for these various changes, I propose that the TM of this tense is **-àbó-** with a low tone on **-a-** and a high tone on **-bo-**. After the necessary segmental deletion rules that turn a VV sequence into a single V, the tone of **-a-** becomes floating and reassociates with the vowel of the SM **ha-**. The resulting tone is thus a rising tone.⁸ This is illustrated in (30).

- (30)
- | | | |
|--|------------------|---------------------------------|
| wa-bó-dī | hâ-bódī | hínke-bó-swat |
| wo-abo-di | ha-abo-di | hin-kebo-swat |
| | | |
| L L H H | H L H H | H L H |
| (word level: after prefixation of TM and SM to stem) | | |
| w-abo-dī | ha-bo-dī | hin-kebo-swat |
| \ | \ | |
| L H H L | H L H H L | H L H L |
| Vowel deletion and Association of suffixal L | | |
| w-abo-dī | ha bo-di | hin-kebo-swat |
| \ | \ | |
| L H H L | H L H H L | H L H L |
| (Postlexically: association of default features) | | |
| Output: wabódī | hâbódī | hínkebóswat ⁹ |

Consider also the tones in the recent past tense in (31) and (32).

- (31) Recent past tense
- | | |
|----------------------|--------------------------|
| ma-dí | I ate (cf. dīlī) |
| wɔ-dí / wa-dí | you (SG) ate |
| hâ-dí | we ate |
| hínke-dí | you (PL) ate |
- (32)
- | | |
|--------------------------|-----------------------------------|
| ma-swāt | I swam (cf. swātí to swim) |
| wɔ-swāt / wa-swāt | you (SG) swam |
| há-swat | we swam |
| hínké-swat | you (PL) swam |

This tense is most irregular. While the high-tone verb stem surfaces with a high tone instead of the observed mid tone, the toneless verb stem surfaces with a mid tone in the first- and second-person singular and with a low tone in the first- and second-person plural. More surprising is the high tone on **-ŋke-** of **hínke-** in the second-person plural subject marker. Notice also the shape of the subject marker which is similar to the one in the immediate past tense where we posited a tense marker **-a-**. However, in the second-person singular, there is a dialectal variant

⁸ In **hínke-bó-swat**, **-ke-** is presumably a formative whose appearance is idiosyncratic in the second-person plural. Its distribution in the Yabassi verb still awaits further research; the **ŋ** is a morphophoneme **-N-** with the nasal feature but without the place feature which appears in other forms as **n** as in **híntadī** 'you ate'; in **hínke-bó-swat**, it surfaces as a velar before a vowel.

⁹ I would like to mention the existence of the phenomenon of a downdrifted high tone in Yabassi which is illustrated in forms like **hínkebóswat** 'you (pl) have just swum' and **hâbódī** 'we have just eaten'. There is clearly a difference of pitch between the high tone on **-bo** and the mid tone on **-dī-**. The high tone on **bo** is intermediary between the high tone on the SM and the mid tone. What I call downdrifted high is the high on **-bo**. The difference is made even clearer if we compare this high on **-bo-** with the second high on **dī** in **hánidī** 'we ate' (remote past tense in (34) and (35)). This high on **dī** is not downdrifted and is of the same pitch quality as the first high tone on the subject marker **ha-**.

where both *wə-* and *wa-* are acceptable. To account for these differences, I propose that the tense marker *-a-* is again assigned by this tense with an unassociated low tone. This low associates with the vowel *-a-* (e.g. first-person plural) or deletes when it is preceded by a low tone (e.g., first- and second-person singular). In the first-person plural of the high tone verb in (28), the low tone surfaces as the second part of the HL tone on the subject marker. In all these cases, no tone is inserted onto the stem. That is why it surfaces with its underlying tone, in the case of the high tone verb, and a mid tone, that is, the combination of the default tone features [-upper +raised] in the case of the toneless verb. As for the last two forms in (32), the floating low tone docks onto the stem vowel that is toneless. That is why it surfaces with a low tone. The unusual high tone on *-ŋke-* in *híŋké-swat* can be explained as resulting from the spreading of the high of the first SM vowel onto this vowel which is, until then, toneless. This is illustrated in the following derivations.

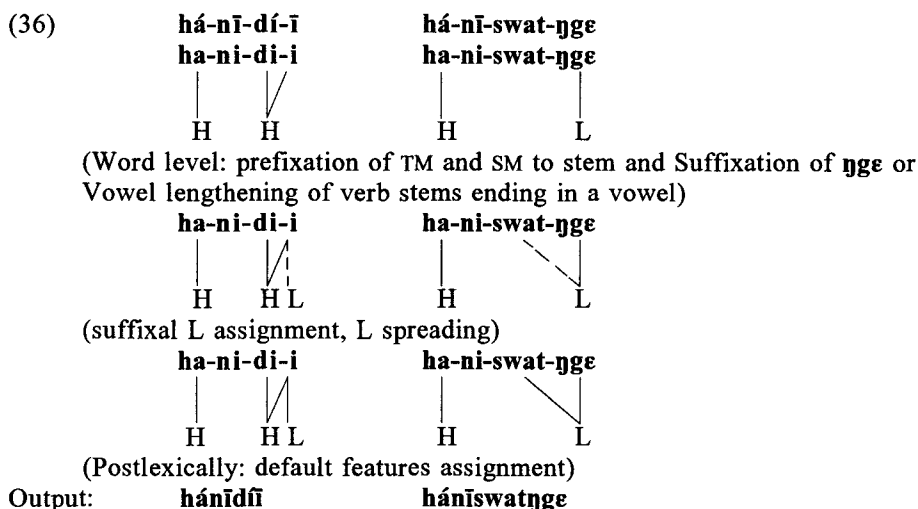
- (33)
- | | | | |
|----------------|----------------|------------------|--------------------|
| ma-dí | há-dí | ma-swāt | híŋké-swat |
| mi-a-di | ha-a-di | mi-a-swat | hiN-ke-swat |
| LL H | H L H | L L | H L |
- (Word level: after prefixation of TM and SM to stem)
- | | | | |
|----------------|----------------|------------------|--------------------|
| mi-a-di | ha-a-di | mi-a-swat | hiN-ke-swat |
| L H | H L H | L | H L |
- (Deletion of floating L after L, Association of floating L)
- | | | | |
|--------------|--------------|----------------|--------------------|
| ma-di | ha-di | ma-swat | hiN-ke-swat |
| L H | HLH | L | H L |
- (vowel deletion, L re-association, H spreading)
- | | | | |
|--------------|--------------|----------------|--------------------|
| ma-di | ha-di | ma-swat | hiŋk-e-swat |
| L H | HLH | L | H L |
- (N ← ŋ)
- (postlexically, [-upper +raised] assigned to toneless TBU)
- Output: **ma-dí** **há-dí** **ma-swāt** **híŋké-swat**

As shown in these derivations, only the stem of *ma-swāt* has no tone at the lexical level. That is why it surfaces with the default features [-upper +raised], i.e., with a mid tone. Finally, consider the remote past tense in (34) and (35).

- (34) Remote past tense
- | | |
|--------------------|--------------|
| ma-nī-dí-ī | I ate |
| SM TM ST | |
| wa-nī-dí-ī | you (SG) ate |
| há-nī-dí-ī | we ate |
| híŋke-nī-dī | you (PL) ate |
- (35)
- | | |
|--------------------------|---------------|
| ma-nī-swat-ŋge | I swam |
| wa-nī-swat-ŋge | you (SG) swam |
| há-nī-swat-ŋge | we swam |
| híŋke-nī-swat-ŋge | you (PL) swam |

As illustrated in these forms, the formation of the remote past tense is characterised by the use of the TM *-ni-* and the use of the SM with the vowel *-a-* that has been proposed as a tense marker in the past tense and immediate past tense. Furthermore, most verbs whose stem ends in a vowel lengthen their final vowel as exemplified in

(34) whereas the suffix **-nge** is added to the verbs whose stem ends in a consonant as exemplified in (35).¹⁰ This is illustrated in (36).



As illustrated in these derivations, I assume that the toneless verb stem **swat** gets its low by a rule of low tone spreading and that the lengthened vowel in the left column keeps its high tone.

Concerning the mid tone on the tense marker **-ni-**, I assume that it is the result of the combination of the default tone features [–upper +raised].¹¹

To sum up, it has been shown in this section that the different morphemes of the structure of the verb may modify their underlying tonal shapes when they combine with a different tonal feature. The high-tone verb stem has thus been shown to surface with a mid tone through the influence of the [–raised] tonal feature assigned by some of the tenses.

3. CONCLUSION

The main thrust of this paper has been to show that, lexically, tonal rules manipulate the features [upper] and [raised]. It has been shown that the surface mid tone in Yabassi may be the combination of the default tone features [–upper +raised] or the realization of an underlyingly high-toned vowel, in the environment of a floating low tone.

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¹⁰ There are some exceptions such as **táfi** (or **tálin-dí** /**tálin-lí**/ 'to dry', **wéndi-lí** 'to walk', **s5h5-lí** 'to bathe' whose remote past tense is formed with the **-nge** prefix although their stems end in a vowel (cf. **ma-ni-tálinge** 'I dried', **ma-ni-wéndinge** 'I walked').

¹¹ However I would like to leave open the possibility that the tense marker **-ni-** could be underlyingly specified for the [–raised] and [+upper] as its tone seems to be inert. As exemplified in the remote past tense forms in (34) and (35), its surface tone remains constantly mid in the environment of a high or a low tone. In principle, since [+upper] and [–raised] are both underlying and that they are compatible features, it would not be too surprising to find both features associated with the same tone bearing unit underlyingly. As pointed out by a J WAL anonymous reviewer, such cases of an underlying full specification should nonetheless be marked and scarce in a language whose segments are otherwise generally underspecified.

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