Tonal processes in the Kabiye verb phrase[1]

David Roberts, LLACAN Paris and SIL-Togo
Paper given at the 24th West African Linguistics Conference, University of Ibadan, Nigeria, 1-6 august 2004

Abstract : This paper uses an autosegmental approach to explain tonal processes in the simple verb phrase of Kabiye (Gur, Eastern Gurunsi). I begin by cataloguing verbs into three tone classes, based on the tone of the imperative, the inflected form closest to the underlying form of the root. Then I explain the tonal derivations of the three main inflected forms (i.e. imperfective-present, imperfective-past, perfective). Firstly, I show that adding a L tone prefix triggers a spreading rule. Secondly, I show that TAM[2] suffixes are underlyingly toneless and receive their tone by means of a dissimilation rule. Thirdly, I demonstrate the existence of floating TAM prefixes, and explore their effect on L tone spreading.

1. Introduction

a) Language classification and background

Kabiye (Gur, Eastern Gurunsi) is spoken in and around the town of Kara in the north of Togo, but the population has spread south, as well as into neighbouring Ghana and Benin. There are an estimated 1 million speakers.

b) Segmental phenomena

- SVO word order
- a vowel harmony system in which the features [+/- ATR], [LABIAL] and [DORSAL] all interact.[3]
- contrastive short and long vowels.
- a complex morphophonology at the boundary between the verb root and the TAM suffix. This will be noticeable in a number of my examples, but it is not the purpose of this paper to explain them.[4] Suffice to say that the tonal tier remains remarkably stable in the face of these changes.

[1] This paper is a fusion of two chapters which originally appeared in Roberts (2002) and (2003a). I wish to express my thanks to, Nick Clements, Keith Snider, Mike Cahill, Annie Rialland and Cédric Patin for their helpful comments during its preparation.
[2] Tense, Aspect, Mode
[3] I use capital letters to show that the quality of the vowel in question may change according to the rules of vowel harmony.
[4] See Roberts (2003a: 6-45) for a detailed analysis.

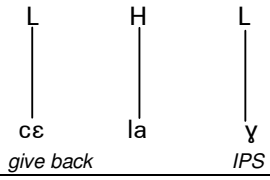
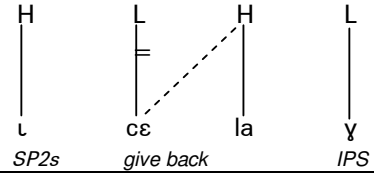
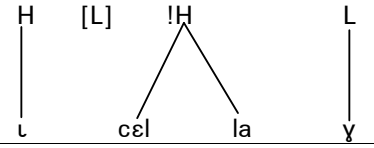
c) Tonal phenomena

- Two underlying tones: H and L.[5]
- The tone bearing unit is the mora (CV, V, ɣ[6] and certain nasals[7]).
- Two tones may not associate to a single TBU.
- Automatic downstep.
- Vertical assimilation[8]:

> « A L tone, when singly linked between two H tones, de-links[9]. The second H tone (with its lowered register because of downstep) spreads left.»

For example:

Table 1: Vertical assimilation

i) Imperfective past	
ii) Adding H tone pronoun triggers Vertical Assimilation	
iii) Non-automatic downstep	
iv) Surface form	[ɩ!célaɣ] *you (pl) were giving back*

[5] I mark H tone with an acute accent, and L tone by the absence of an accent.

[6] Researchers are divided as to the exact phonetic nature of the orthographic symbol ɣ. The crucial point for the purposes of tone study is that, whatever the change in vowel quality, ɣ also *lengthens* the preceeding vowel. Therefore the sequence Vɣ always represents 2 TBUs. On this point there is general agreement.

[7] See Roberts (2002: 25-31) for a detailed explanation.

[8] Lébikaza (1999: 192).

[9] In fact it must be singly linked to a *CV mora* between 2 H tones, but this detail is not pertinent to my presentation. See Roberts (2003a: 57-60).

2. Tonology of the verb phrase

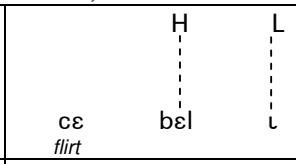
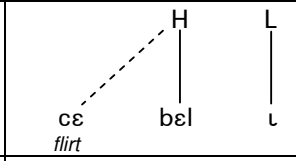
a) Three tone classes

I establish three tone classes (H, L and HL) on the basis of the melody of the imperative, which I consider to be the inflected form closest to the underlying form of the verb root:

1.	H tone class			há	*give!*
2.			cɛ́	lɩ́	*give back!*
3.			kpá	ɣ́	*take!*
4.		kú	ú	dí	*twist!*
5.	L tone class			cɛ	*cut!*
6.			ha	zʊ	*sweep!*
7.			ca	ɣ	*sit down!*
8.		lu	lu	si	*decant!*
9.	HL tone class		kɛ́	tʊ	*shell!*
10.			kpé	ɣ	*pardon!*
11.		cɛ́	bɛ́	lʊ	*flirt!*
12.		tú	lú	si	*demolish!*

Note that this classification is blind to mora-count. The melody simply spreads across all available moras. Initial tone-to-mora association is, unusually, right to left. The tone on the extreme left spreads onto any remaining TBUs. The proof of this right-to-left association is example 11 and 12 above[10]:

Table 2: Initial tonal association of HL tone class, 3 mora verb roots

i) Initial tonal association	
ii) H tone spreads left onto non-associated TBU.	
iii) Surface form	[cɛ́bɛ́l-ʊ] *flirt!*

[10] See Yip (2002: 93), who cites Hyman and Schuh (1974) and Akinlabi and Libermann (2000), concerning a similar R to L initial assocation in Yoruba.

b) L tone spreading

The L tone of a prefix spreads right onto the verb root until it is blocked by a singly-linked H tone[11].

For example:

		SP3s	TAM	*RT*		
13.	H tone class			cɛ́lɩ́	*IMP*	*give back!*
14.			taa	cɛlɩ́	*NEG IMP*	*don't give back!*
15.			tʊʊ	cɛlɩ́	*ADV IMP*	*give back, even so!*
16.		ɛ	tɛ	cɛlɩ́	*NEG PER*	*he didn't give back*
17.	H tone class			wélésí	*IMP*	*listen!*
18.			taa	welesí	*NEG IMP*	*don't listen!*
19.			tii	welesí	*ADV IMP*	*listen even so!*
20.		e	te	welesí	*NEG PER*	*he didn't listen!*
21.	HL tone class			cɛ́bɛ́lʊ	*IMP*	*flirt!*
22.			taa	cɛbɛ́lʊ	*NEG IMP*	*don't flirt!*
23.			tʊʊ	cɛbɛ́lʊ	*ADV IMP*	*flirt even so!*
24.		ɛ	tɛ	cɛbɛ́lʊ	*NEG PER*	*he didn't flirt*

Note that, in all these examples, a singly-linked H tone remains and blocks further spreading. Spreading eliminates association lines, it does not eliminate tones.

c) Dissimilation

A toneless suffix surfaces with a L tone if the root contains a H tone, and H otherwise[12]:

Tone of suffix Tone class

$$\circ \rightarrow \begin{Bmatrix} H \\ L \end{Bmatrix} / \begin{matrix} L \\ \\ H, HL \end{matrix} \Big\} \text{ rt] [sx } \_\_\_\_\_$$

[11] Whence Delord's (1976) observation that all Kabiye verb phrases contain a tonal summit (*sommet tonal*). However, there are a few examples where this is not the case (Roberts, 2003a: 64 (190-192) & 100 (9-18).

[12] I take the term Dissimilation from Lébikaza (1999). Cahill (personal correspondance) has pointed out that tonal dissimilation usually means that one tone *becomes* unlike its neighbor, and assumes that both tones are underlyingly present. He suggests that it would be more appropriate to analyse the suffix as being underlyingly L, and that it surfaces H only when the utterance contains no other H tone. But according to my analysis, it is crucial that the tone of the TAM suffix be assigned *post-lexically* to account for certain Descriptive-Perfective and Distant Imperfective-Present forms. It would be beyond the scope of this paper to explain these in detail, but see Roberts (2003a: 61-63). This, incidentally, is why I place the dissimilation rule last in the derivational examples which follow.

I analyse all TAM suffixes as being toneless, so this rule applies to all inflected forms[13]. For example :

		SP3s	*NEG*	*RT*	***TAM***		
25.	H tone class	ɛ	◦	cɛlá	**a**	*PER*	*he gave back*
26.		◦	taa	cɛlí	**ɣ**	*IPR HAB*	*don't be in the habit of giving back!*
27.		ɛ	tɛ	cɛlí	**ta**	*PER PRV*	*he has hasn't given back yet*
28.	L tone class	ɛ	◦	haza	**á**	*PER*	*he swept*
29.		◦	taa	hazɩ	**ɣ́**	*IPR HAB*	*don't be in the habit of sweeping!*
30.		ɛ	ta	hazɩ	**tá**	*PER PRV*	*he hasn't swept yet*
31.	HL tone class	ɛ	◦	kɛ́ta	**a**	*PER*	*he shelled*
32.		◦	taa	kɛ́tɩ	**ɣ**	*IPR HAB*	*don't be in the habit of shelling!*
33.		ɛ	tɛ	kɛ́tɩ	**ta**	*PER PRV*	*he hasn't shelled yet*

Note that it is tone melodies, not individual tones, which drive this rule. This lends support to the argument that, even in classic tonal polarity, it is tone melodies, rather than individual tones, which contrast with each other.

3. Inflected forms

Examples 13-33 have shown that in a *complex* verb phrase, the segmental TAM prefix (negative, adversative, habitual etc) is located between the subject pronoun and the verb root:

Subject Pronoun	+	***TAM prefix (segmental)***	+	*Verb Root*	+	*TAM suffix (toneless segment)*

Now I will demonstrate that the *simple* verb phrase can also contain a TAM prefix in this same slot, but that it is a floating tone:

Subject Pronoun	+	***TAM prefix (floating tone)***	+	*Verb Root*	+	*TAM suffix (toneless segment)*

My analysis will establish a three-way contrast: The simple imperfective-past is marked by a floating L tone TAM prefix. The simple imperfective-present is marked by a floating H tone TAM prefix. The simple perfective is marked by the absence of a floating tone TAM prefix.

[13] All, that is, except the Infinitive. This would be an argument in favour of considering the Infinitive as a nominalisation of the verb rather than an inflected form. See Roberts (2002: 86-95 and 2003a: 79). There are also some individual irregular forms which do not obey the rule, eg:

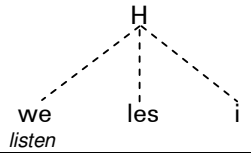
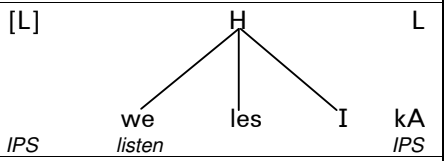
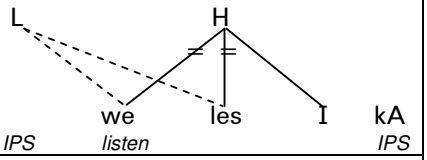
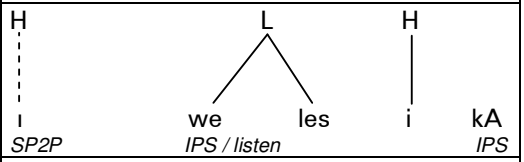
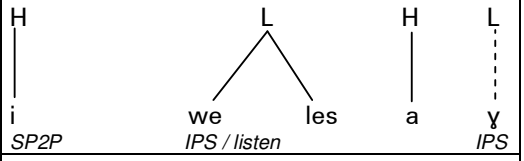
CVw- roots, perfective	ɩ	háw	á	*you (pl) gave*
H tone class, imperfective present	e	wélési	ɣ́	*he listens*

a) Imperfective-past

The Imperfective-past is marked by a floating L tone TAM prefix between the subject pronoun and the root. It spreads onto the root until it is blocked by a singly linked H tone. Proof is what happens when a H tone subject pronoun is added. Firstly, in the following H tone class examples, the first part of the root surfaces L:

		SP2P	*RT*	*IPS*	
34.	*H tone class*	í	welesá	ɣ	*you (pl) were listening*
35.		í	kuudá	ɣ	*you (pl) were twisting*

Table 3 : Imperfective past, H tone class

i) Root	
ii) Add floating L tone TAM prefix and segmental TAM suffix to mark the Imperfective-past	
iii) Floating L tone spreads onto root	
iv) Add H tone subject pronoun	
v) Dissimilation applies to toneless TAM suffix (and morphophonemic modification)	
vi) Surface form	[í-welesá-ɣ] *you (pl) were listening*

Secondly, in the following H and HL tone class examples, non-automatic downstep occurs root initially. This is triggered by the post-lexical rule of Vertical Assimilation[14], which can only apply if a floating L tone is present between two H tones:

[14] As for single mora roots, they surface without undergoing spreading or downstep. This is what leads me to believe that the principal of Stray Erasure applies at the end of the lexical stage of the phonological derivation. See Roberts (2002: 51, 73-4, 88, 93-4, 101) and Roberts (2003a: 65,159, 166). Exactly the same principle operates in the Associative NP concatenation, as I have shown in Roberts (2003b).

		SP2P	*RT*	*IPS*	
36.	H tone class	ɪ́	!cɛ́lá	ɣ	*you (pl)were giving back*
37.		ɪ́	!kpáká	ɣ	*you (pl) were taking*
38.	HL tone class	ɪ́	!cɛ́bɛ́la	ɣ	*you (pl) were flirting*
39.		í	!túlúsa	ɣ	*you (pl) were demolishing*

b) Imperfective-present

The imperfective-present is signaled by a floating H tone TAM prefix between the subject pronoun and the root. This spreads right, onto all but the final mora of the root[15]:

		SP3S	*RT*	*IPR*	
40.	H tone class	ɛ	há	ɣ	*he gives*
41.		e	lú	u	*he draws (water)*
42.	L tone class	ɛ	cák	ɪ	*he sits down*
43.		ɛ	házɪ	ɣ	*he sweeps*
44.		e	kélésu	u	*he rinses*
45.	HL tone class	ɛ	kɛ́tɪ	ɣ	*he shells*
46.		e	púzu	u	*he suspends*
47.		e	kpéɣ	u	*he pardons*

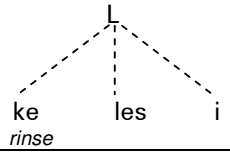
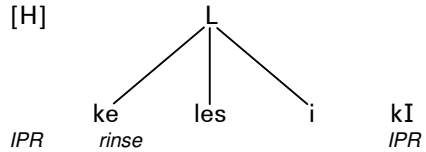
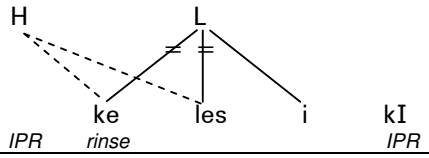
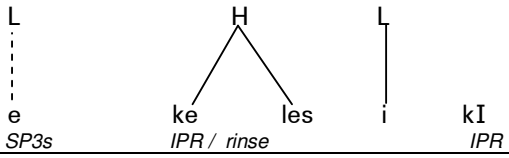
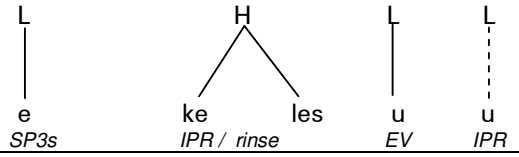
This H tone dominates the root in such a way as to block all possible spreading of the L tone of the subject pronoun :

		SP3S	*RT*	*IPR*	
48.	H tone class	e	kótú	ú[16]	*he folds*
49.		e	wélésí	ɣ́	*he listens*
50.		ɛ	túkú	ʊ́	*he diminishes*
51.	HL tone class	ɛ	cɛ́bɛ́lɪ	ɣ	*he flirts*
52.		e	túlúsu	u	*he demolishes*

[15] Lébikaza (1994).

[16] H tone class roots of more than one mora do not obey the rule of Dissimilation in the imperfective-present.

Table 4 : Imperfective-present , tone class L

i) Root	
ii) Add floating H tone TAM prefix and segmental TAM suffix to mark the Imperfective-present	
iii) H tone spreads onto root	
iv) Add L tone subject pronoun	
v) L tone of subject pronoun spreads	*N/A, because the H tone of the Imperfective-present blocks all spreading.*
vi) Dissimilation applies to toneless TAM suffix (and morphophonemic modification)	
vii) Surface form	[e-kélésu-u] *he rinses*

c) Perfective

The Perfective is marked by the absence of a floating TAM prefix. Proof is twofold. Firstly, when a H tone subject pronoun is present, verbs of tone class H and HL surface with their underlying melodies. So there is evidently no floating L tone between the subject pronoun and the root[17]:

[17] Except in the L tone class, which I consider to be irregular at this point because of the unusual H tone spreading. See Roberts (2002: 76, 79-82):

L tone class ĺ háza á *you (pl) swept*

Note that, even though it is irregular, it still testifies to the lack of a floating L tone element between the subject pronoun and the root.

		SP2P	*RT*	*PER*	
53.	H tone class	ɪ́	cɛ́lá	a	*you (pl) gave back*
54.		ɪ́	kpáɣ́	a	*you (pl) took*
55.		í	kúúdá	a	*you (pl) twisted*
56.	HL tone class	ɪ́	kɛ́ta	a	*you (pl) shelled*
57.		í	túlúsa	a	*you (pl) demolished*

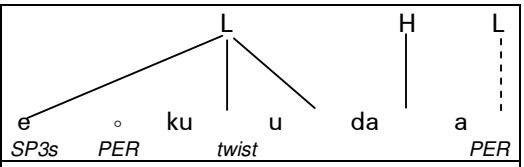
Secondly, when a L tone subject pronoun is present, it spreads onto the root until it is blocked by a singly-linked H. So there is no question of a floating H tone between the subject pronoun and the root which might block this process[18]:

		SP3S	*RT*	*PER*	
58.	H tone class	ɛ	cɛlá	a	*he gave back*
59.		ɛ	kpaɣ́	a	*he took*
60.		e	kuudá	a	*he twisted*
61.	HL tone class	ɛ	cɛbɛ́la	a	*he flirts*
62		e	tulúsa	a	*he demolishes*

Table 5 : Perfective, H tone class

i) Root	H ku ud i *twist*
ii) Add segmental TAM suffix (there is no floating tone TAM prefix in the perfective)	H ◦ ku u di a *PER twist PER*
iii) Add L tone subject pronoun	L H e ◦ ku u di a *SP3s PER twist PER*
iv) L tone spreads onto root	L H e ◦ ku u di a *SP3s PER twist PER*

[18] CVw- verbs of the H tone class are irregular at this point. See Roberts (2002: 99-106) eg:
CVw roots, H tone class ɛ haw á *he gave*

vi) Dissimilation (and morphophonemic modification)	
vii) Surface form	[e-kuudá-a] *he twisted*

4. Conclusion

- Three tone classes:

  H
  L
  HL

- Three derivational rules:

Rule:	Applies to:
1. Vertical assimilation	HLH environments
2. L tone spreading	L tone prefixes
3. Dissimilation	Toneless TAM suffixes

- Three-way contrast in TAM prefix slot:

Table 6: Floating TAM prefixes and their influence on L tone spreading

	Floating TAM prefix	Influence on L tone spreading of subject pronoun
Imperfective-past	[L]	Pre-empted: the floating L tone itself spreads before the L tone of the subject pronoun can do so.
Imperfective-present	[H]	Blocked: The H tone dominates the root in such a way as to block all possibility of spreading.
Perfective	◦	No effect: The L tone of a subject pronoun will spread as usual.

Abbreviations

ADV	adversative
ATR	advanced tongue root
H	H tone
[H]	floating H tone
HAB	habitual
IMP	imperative
IPS	imperfective past
IPR	imperfective present
L	L tone
[L]	floating L tone
NEG	negative
P	plural
PER	perfective
PRV	provisional

RT	verb root
S	singular
SVO	subject-verb-object
TAM	tense-aspect-mood
TBU	tone bearing unit
V	vowel
1s	1st person singular[19]
◦	zero
[!]	non-automatic downstep (= lowering of tonal register)

Bibliography

Delord, Jacques (1976) : *Le kabiyè.* Institut national de la recherche scientifique, Lomé.

Goldsmith, John (1990) : *Autosegmental and metrical phonology.* Blackwell, Oxford.

Hyman, Larry (1985) : *A Theory of Phonological Weight*. Foris, Dordecht.

Kassan, Balaïbaou Badameli (2000) *: De l'influence du ton consécutif dans les formes de l'aoriste en kabiyè*. In *Cahiers voltaïques 5*, Université de Bayreuth.

Kiparsky, Paul (1982) : *From cyclic to lexical phonology*. In *The structure of phonological representations*, ed. Van den Hulst et N Smith. Foris, Dordrecht.

Lébikaza, Kézié Koyenzi (1994) : *Les tons des verbes kabiyè dans les formes de l'inaccompli*. In *Sprachen und sprachzeugnisse in Afrika: Eine sammlung philogischer Beiträge*.

Lébikaza, Kézié Koyenzi (1999) : *Grammaire kabiyè: une analyse systématique - phonologie, tonologie et morphosyntaxe*. Rudiger Koppe, Cologne.

Marmor, Thomas ed. (2003) : *Tɔm kpou kabɪyɛ-fransɪɪ. Dictionnaire kabiyè-français avec lexique français-kabiyè et esquisse de grammaire kabiyè*.

Mohanan, K.P (1986) : *The theory of lexical phonology.* Reidel, Dordrecht.

Odden, David (1994) : *Tone in African languages.* In Goldsmith ed. *The handbook of phonological theory,* Blackwell, Oxford.

Roberts, David (2002) : *Les classes tonales du verbe en kabiyè,* mémoire de maîtrise, IL/PGA, Université de la Sorbonne nouvelle, Paris III.

Roberts, David (2003a) *: La tonologie des préfixes de modalité en kabiyè*. Mémoire de DEA, ILPGA, Université de la Sorbonne nouvelle, Paris III.

Roberts, David (2003b) : *Tone spreading in the kabiyè associative noun phrase*. In *Cahiers voltaïques 6,* Université de Bayreuth.

Snider, Keith (1999) : *The geometry and features of tone*. Dallas : SIL et l'Université de Texas, Arlington.

Yip, Moira (2002) : *Tone*. Cambridge Textbooks in Linguistics. CUP.

[19] And likewise for the other persons.