

Consonant Types and Tone in Kipsikiis

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0. INTRODUCTION

This is an attempt to examine the relationship between consonant types and tone in the Kipsikiis language.¹⁾ There have been a number of studies on the influence of consonants on tone and a number of new findings have been proposed. This paper will try to give an additional support to the findings and will show the importance of tonal studies in reconstructing proto-forms in the historical linguistics.

1. CONSONANT TYPES AND TONE

It is widely attested and understood in the studies of Southeast Asian languages that contrastive tones on vowels have developed in several manners in compensation for the loss of consonantal opposition.²⁾ The most familiar type of tonogenesis is the development of tones due to the loss of a voicing distinction on consonants in the prevocalic position. In the prevocalic position a low toneme develops on vowels following the originally voiced consonants, while a high toneme develops on vowels after previously voiceless consonants. This sort of development is found in Chinese (Maspéro, 1912), Kammu, Tibeto-Burman (Nishida, 1979), and Vietnamese (Haudricourt, 1954). It is well understood that this development is phonetically motivated. It is pointed out that a voicing in prevocalic position affects the fundamental frequency (Fo) of the following vowel.

When an aspiration takes part in tonogenesis, sometimes, higher tones develop on vowels after the historically voiceless aspirated series, sometimes, however, lower tones develop on vowels following the historically aspirated series than after the unaspirated one. There is no clear tendency to develop a higher (or a lower) tone after voiceless aspirated stops when these stops merge with the voiceless unaspirated series (Hombert, 1978). It seems that an aspirated vs. unaspirated distinction is parallel to a voicing distinction. There is, however, a counterexample, i.e., the tone following the originally aspirated series is lowered than after the unaspirated one. This phenomenon is due to another unknown factor than an aspiration as in

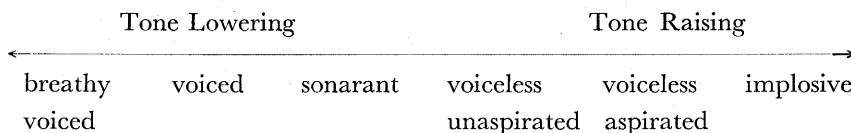
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1) Kipsikiis has been classified by F. Rottland as a language which belongs to the Kalenjin branch of the Southern dialects of the Nilotic languages. This language is spoken by 471, 459 person mostly in Kericho District of Kenya, according to B. Heine (Heine and Möhlig, 1980).

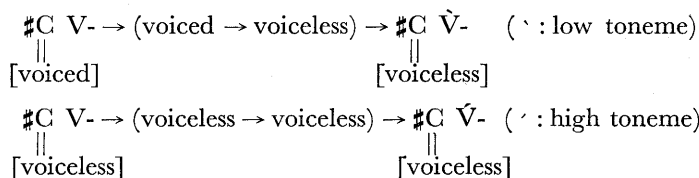
2) Nishida, 1979.

Chinese (Nishida, 1979). In Panjabi, breathy voiced consonants became voiceless unaspirated, giving lower tonal effect on the following vowel (Gill and Gleason, 1969). In Podoko (an African language), implosive consonants pattern with voiceless consonants when influencing tone (Anderson and Swackhamer, 1981).

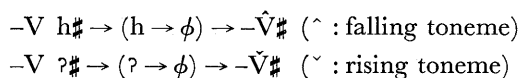
In the prevocalic position, the tone raising or lowering effect of consonants is summarized in the following scale (Hyman and Schuh, 1974):



It is, however, possible to say that a main factor of tonogenesis is a voicing distinction in the prevocalic position. When a language loses a voicing distinction, a low toneme develops on vowels after the previously voiced consonants, while a high toneme develops on vowels following the originally voiceless consonants as follows (Nishida, 1979):



In the postvocalic position both voiced and voiceless consonants lower the Fo of the preceding vowel, and such lowered tones cannot be reinterpreted as tonal contrasts by speakers, although some studies (Mohr, 1971, etc.) show that a voiced consonant lowers the Fo of the vowel and a voiceless raises the Fo in the postvocalic position like as in the prevocalic position. Hombert summarized that the only laryngeals /ʔ/ and /h/ can affect a preceding tone in the postvocalic position.³⁾ The historical data agree to the phonetic observation. In Vietnamese final -h and -ʔ had disappeared, and were replaced by a falling and rising effect, respectively, on the pitch of the preceding vowel (Maspéro, 1912, Haudricourt, 1954). The development of tones due to the loss of a voicing distinction in the postvocalic position is not easy to find out. When a language loses a final -h or -ʔ, a falling tone develops on vowels before the original -h, while a rising tone develops on vowels before the previous -ʔ as follows:



What is generally known about the relationship between consonants and tone is that any consonants except h and ʔ have no influence on tone in the postvocalic position. However, postvocalic sonorants in the Kipsikiis language have an effect

3) Hombert, 1978.

on tone, though not directly, and play an important role in restructuring the tonal system in the language.

The consonants in the Kipsikiis language can be classified into the following types:

(1) Kipsikiis	Consonant type	Proto-Nilotic
p t c k s	Voiceless consonants	*p *th *t *c *k *k ^w
m n ŋ l r	Sonorants	*m *nh *n *ŋ *l *r *r̄
	Voiced consonants	*b *dh *d *j *g

There is no voiced consonant in the Kipsikiis language, though there existed the ones in the proto-language (Proto-Nilotic).

2. TONAL SYSTEM IN KIPSIKIIS⁴⁾

The Kipsikiis language is characterized as a three-tone language, having three surface tones; i.e., a high tone (H), a low tone (L), and a falling tone (F). This language has also three underlying tonemes (H, L, F), while the proto-language (Proto-Nilotic) had only two underlying tonemes, a high toneme and a low toneme.

2.1. Tonal processes⁵⁾

The Kipsikiis language has five tonal processes through which surface tonal representations are derived from underlying tonal forms. These processes can be summarized as follows:

High Fall Raising (HFR)

A falling tone is raised when a high tone follows.

(2) taâ + ít → taá-ít 'lamp'

High Lowering (HL)

A high tone is alternated with a low tone in the process of dissimilation, when a high tone follows.⁶⁾

(3) kaát + ít → kaàt-ít 'neck'

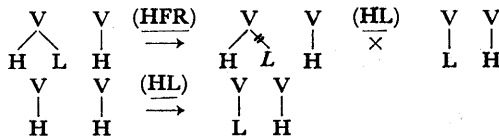
High Fall Creation (HFC)

In the process of coalescence, two high tones end up with a falling tone, when

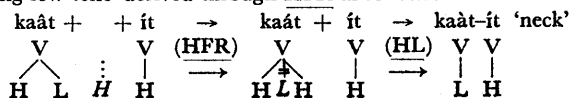
4) The data used in this chapter is mostly based on T. Toweett (Toweett, 1979).

5) This section as well as the following section are mostly due to the idea in Creider (1981).

6) HL is not applied to the tonal structure derived through HFR. In the autosegmental version of tonal theory, a floating low tone between high tones in (2) blocks the application of HL, as shown below:



But when a floating high tone presents between a falling tone and a high tone, HL is not blocked by a floating low tone derived through HFR as follows:



each of the two syllables has a high tone (HFC I), and two tones are simplified to a high tone, when a low tone is followed by a high tone (HFC II).

(4) múk (á) +ít → múk-eét 'lid' (HFC I)

(5) tèr (à) +ít → tèr-eét 'pot' (HFC II)

Floating Tone Addition (FTA)

When a final syllable bearing a high tone is deleted, this high tone attaches to the preceding syllable with a low tone, and a high tone is assigned to it.

(6) poòr + ' → poór 'body'

Final Fall (FF)

A high tone on a final syllable ending in a sonorant is lowered to a falling tone, when a preceding syllable bears a high tone (FF I). This rule has an exception to be discussed later in the following chapter.

(7) kaályaáŋ → kaályaâŋ 'flies' (FF I)

A high tone on a long syllable in the word-final position is lowered to a falling tone when the word consists of more than three syllables (FF II), on the contrary a falling tone on a short syllable in the word-final position is raised to a high tone when the word consists of more than three syllables (FF III).

(8) soònaàtìnweék → soònaàtìnweêk 'barren' (FF II)

(9) muúíywék → muúíywék 'hide' (FF III)

FF II or FF III applies automatically after HFC if they stand in a feeding order. Furthermore, two segmental rules are needed to get correct surface forms in the examples cited above.

Vowel Coalescence (VC)

Two vowels /a/ and /ɪ/ are merged into /εε/, and /a/ and /i/ are merged into /ee/.

(10) pénoòsyà +ík → pénoòsyéék 'dagger'

Length Dissimilation (LD)

In a word having more than three syllables a final long syllable is shortened, when it is preceded by a long syllable.

(11) pénoòsyéék → pénoòsyék 'dagger'

VC, of course, is applied before LD, being accompanied with a suprasegmental HFC. Derivatives by LD are subject to FF II or FF III.

2.2. Nominal morphophonemics⁷⁾

The Kipsikiis language has an underlying falling tone only on a stem, elsewhere a falling tone (surface) is derived through the tonal processes discussed in the preceding section.

Nouns in the Kipsikiis language have two basic forms, i.e., termed as primary and secondary, both in the singular and the plural. Primary forms consist of a stem

7) In verbal morphology tonal patterns are decided so primarily not to be discussed.

and a primary suffix in effect. Secondary forms are additionally affixed by a secondary suffix *-ít* (sg.)/*-ík* (pl.). A primary suffix bears either a low tone or a high tone, while a secondary suffix always bears a high tone. Furthermore a stem in effect has a low tone, a high tone, or a falling tone underlyingly. Consequently a noun is formed by attaching suffixes to a stem in six sets of tonal combinations: a low-toned stem plus a low-toned primary suffix (12), a high-toned stem plus a low-toned primary suffix (13), a falling-toned stem plus a low-toned primary suffix (14), a low-toned stem plus a high-toned primary suffix (15), a high-toned stem plus a high-toned primary suffix (16), and a falling-toned stem plus a high-toned primary suffix (17).

- (12) *sòt+à+ít* → *sòt-eét* 'calabash' (HFC II)
 (13) *má+à+át* → *má-aát* 'fire' (HFC II)
 (14) *kooî+à+ít* → *kooî-ét* 'liver' (HFC II)
 (15) *poðr+(´)+tá* → *poðr-tá* 'body'
 (16) *múk+á+ít* → *múk-eét* 'lid' (HFC I)
 (17) *maâ+á+ít* → *maâ-eét* 'stomach' (HFR, HFC I)

Creider suggested that a falling tone on a stem can be attested historically in the Proto-Southern Nilotic.⁸⁾ The Pok language, which belongs to the same branch of the dialects as the Kipsikiis language, is a two-tone language having only a high tone and a low tone. A falling tone in the Kipsikiis language corresponds to a high tone in the Pok language.

- (18) Kipsikiis Pok
 roôt-wà *roót-wà* 'knife'

The Pok language has a specific rule of High Spreading (HS) which spreads a high tone from a nominal stem onto a low-toned primary suffix, but does not if the stem is a cognate with a falling-toned stem in the Kipsikiis language, as shown below:

- (19) Pok Kipsikiis
 áy+wà → *áy-wá* (HS) *áy-wà* 'axe'
 roót+wà → *roót-wà* *roôt-wà* 'knife'

A high-toned stem which is a cognate with a falling-toned stem in the Kipsikiis language is also historically a falling-toned in the Pok language.

3. CONSONANT TYPES AND TONE IN KIPSIKIIS

A falling tone plays a major role in examining the relationship between consonants and tone in the Kipsikiis language. Stems with a falling tone (underlyingly) in effect are classified to the two types, the one ends with /y/, a diphthong, or a long vowel (20), and the other ends with a sonorant (21).⁹⁾

8) Creider (1981), p. 32.

9) There is another type of stems with a falling tone, which is likely derived through a contraction of an original disyllabic stem.

'baboon' Ki *mô:s-à*, Na (T-B) *mos-à*, Pá (T-B) *mayo:s*

(33) /\$pén/+à+ít → \$pén-ét → 'pén-ét (VC, LD) (\$: syllable)

In fact a preliminary comparison with other Nilotic dialects attests that the stem had originally another syllable, as shown in comparing with the Maasai cognate, ol-kipin-to 'dagger'. Such a stem having the additional syllable /ki-/ was termed type B and a stem without it type A, respectively, in Hieda (1981, Forthcoming). Type B stem ending in a sonorant preserves an original high tone underlyingly, whether it loses an initial syllable or not. Some typical examples of type B stem ending in a sonorant with a high tone can be shown as follows:

- (34) 'fly' SN : Ki kaályaân /kaályaân/, Na(T-B) ka:lyá:ŋ, Na(H) kaliañg, Sa kalyang, Pã(T-B) káo:lyà:ŋ, Pã(C) kólíyŋ, Su kolioñg
 EN : Ma ɔl-ɔjɔŋ-áni (*ɔl-kɔjɔŋ-áni), Ba kadoŋ-onti
 WN : Lu lwàŋ-nì(pl.), Ac lwàŋ-ò, Ju a-luaŋ-o, Sh lwaŋ-o
 'finger' SN : Ki mó:r-nà, Na(T-B) mɔ:r-na, Na(H) mor-na, Sa mor-net, Pã(T-B) mó:r-àn, Pã(C) mór-ñ, Su môr-in
 EN : Ma ol-kimoj-ínò, On o-ŋimoj-'íno, Ba mor-inet
 'cow' SN : Ki tâny /'tány/, Na(T-B) tany, Na(H) tany, Sa tany, Pã(T-B) tány, Pã(C) táŋ, Su tainy
 EN : Ma en-kítéŋ, Lo neteŋ(na-xiteŋ), Ba kiteŋ
 WN : Lu dhiàŋ, Ac dyaàŋ, Al dhyàŋ, Sh dhyaŋ

- (35) SN EN WN PN
 (kV)CŴS kVCŴS CŴS *kVCŴS (S: sonorant)

Type B stem does by no means bear an underlying falling tone, while type A stem, which is monosyllabic in effect, bears a falling tone underlyingly.

- (36) 'barren' Ki soôn, Na(H) son, Sa son-et, Pã(C) sòon-ó, Su sôn-o
 'elephant' Ki pê:l, Na(T-B) pe:l, Na(H) pel, Sa pel-yontet, Pã(T-B) pé:l-ăw, Pã(C) p⁰l-iyóɔn, Su pêl-ion

Through comparative examination with other Nilotic dialects, it has become possible to generalize the tonal correspondence of type A stem ending in a sonorant as in the following scheme:

- (37) 'road' SN : Ki ô:r, Na(H) or, Sa ar, Pã(T-B) ó:r, Pã(C) ɔr, Su ôr
 EN : Ma enk-óí-tóí, On n'ík-ɔɪ, Lo ek-ɔɪ
 WN: Lu yò, yòr-è(pl.), Ac yoð, Any ù-jéd-í
 'belly' SN : Ki mât:, Na(T-B) mât:., Na(H) mo, Pã(T-B) mù:., Su mū
 'liver' EN : Ma e-móíny-úá, On na-m'óŋny-á, Ba muny-et
 WN: La ì-mány
 'eye' SN : Ki kô:ŋ, Na(T-B) kô:ŋ, Sa kong-ta, Pã(T-B) kó:ŋ, Su koñg
 EN : Ma en-kɔŋ-ú, On na-hɔŋ-'ú, Ba kɔŋ-ε, Te a-kɔŋ
 WN: Lu wàŋ, Ac waàŋ, La wàŋ, Sh waŋ

- (38) SN EN WN PN
 CŶS CŶS CŶS (?) *CŶS

Type A stem ending in a sonorant which had originally a high tone changed it to a falling tone in the Southern Nilotic. What is noticeable in this change is that a high tone was lowered to an underlying falling tone on type A stem and that type B stem preserved an original high tone. Type B stem had a tendency to lose an initial syllable and to merge into type A stem at the segmental point of view, however, at the suprasegmental point of view the lexical distinction between type A and type B is maintained as a tonal contrast. Type A stem ending in a sonorant is distinguished from type B stem by having an underlying falling tone.

This lowering of tone reminds us of a resemblance to FF I. A falling tone (surface) caused by a certain kind of FF was *phonologized* as an underlying falling tone; i.e., a falling tone to which a underlying high tone was lowered by FF was reinterpreted as an underlying tone by speakers, at a certain time, perhaps after the time when an underlying falling tone was derived from *-h. This phonologization secured the distinction between type A and type B from absolutely merging by the initial syllable loss in type B. The development is schematized as follows:

(39)		Previous stage		Present stage
Type A	Underlying	/*CŶS/		/CŶS/
	(<u>FF</u>) ↓	↓	Phonologization ↗	↓
	Surface	*CŶS	↘	CŶS
Type B	Underlying	/*kŶCŶS/ = kV-Loss ⇒		/'CŶS/
	(<u>FF</u>) ↓	↓		↓
	Surface	*kŶCŶS		'CŶS
<hr/>				
	Tonal system	*Two-tone system	⇒	Three-tone system
		(/H/, /L/)		(/H/, /L/, /F/)
<hr/>				
	<u>Final Fall</u>	*/H/ → F/-S	⇒	/H/ → F/H-S

With regard to FF, it was applied to all stems at the previous stage, whether such stems belonged to type A or to type B, as far as they ended with a sonorant. A falling tone (surface) derived from an original high tone by FF is interpreted as an underlying tone in type A at the present stage, consequently type A stem is not subject to FF rule. This is why FF came to be conditioned on a high tone of type B at the stem-final position. FF rule magnified a complexity to compensate for the segmental simplification.

A sonorant affected tonal pattern at the stem-final position. Furthermore, it is possible to reconstruct a sonorant at the final position of the stem which bears a falling tone, whether the final sonorant may be apparent or not. Examples of 'belly' (37) in the Southern Nilotic do not possess a sonorant at the stem-final position. They must, however, end in a sonorant, perhaps in *ɲ or *ŋ, because they bear a

falling tone and because the cognates in the Eastern and Western Nilotic languages have a final sonorant consonant.

FF rule can spread to the stem ending in any consonant in the other Southern Nilotic dialects.¹⁶⁾ Nevertheless, an underlying falling tone caused by FF in type A stem can be attested in all the Southern Nilotic. The phonologization might have taken place during the Proto-Southern Nilotic periods, before FF rule spread to the stem ending in any consonant other than a sonorant.

Any stems bearing a low tone, whichever sonorant they end with, are not affected at all by a final sonorant, as shown below:

- (40) 'body' Ki pór:r /pò:r /, Na(T-B) pór:r, Na(H) por, Sa por,
Pä(T-B) pō:r, Pä(C) pòór, Su por-to
'enemy' Ki pù:n-yâ:n, Na(T-B) pù·n-yâ·, Na(H) pun-yo, Sa
pun-yontet, Pä(T-B) pù·ny-ǎ:n, Pä(C) pùŋ-on, Su
pũn-yon
- (41) 'ash' SN : Ki òr, Na(T-B) òr, Na(H) or, Sa ar, Pä(T-B) òr, Pä(C)
or, Su hõr
EN : Ma enk-úr-úóní, On ok-uř- í'óni, Ba k-ur-öŋ
WN: Lu búr-ú, Ac bvuur-u, Al vúr-ú, Sh burr

In summary the stems ending in a sonorant have developed according to the types in two manners, i.e., type A stem changed its high tone into a falling tone, and type B stem preserved a high tone. A low tone was not affected at all by the final sonorant.

3.3. Voiceless consonants

Any voiceless consonants have no effect on a preceding syllable, whichever tone it has. Some examples of the stems bearing a high tone can be given as in the following lists:

- (42) 'spear' Ki ŋót, Na(T-B) ŋót, Na(H) ñgot, Sa ngot-it, Pä(T-B) ŋó·t,
Pä(C) ŋót, Su ñgõt
'head' Ki mét, Na(T-B) mèt, Na(H) met, Sa mèt-it, Pä(T-B) má·t,
Pä(C) m'ót, Su mèt
- (43) 'tongue' SN : Ki ŋélyép, Na(T-B) ŋélyêp, Na(H) ñgelyep, Sa ngalep-
ta, Pä(T-B) ŋályâp, Pä(C) ŋálíép, Su ñgáliep
EN : Ma ɔl-ŋéjép, On ɔ-ŋ'éjéβ-í, Lo a-ŋadyef
WN: Lu lép, Ac léb, Al lép, Sh lep, Ju leb

Some stems with a high tone happen to have lost a final voiceless consonant, which does not give any effect on tone unlike the *-h derived from a voiced consonant. The examples can be shown as follows:

- (44) 'fire' SN : Ki má, Na(T-B) mà, Sa ma, Pä(C) má, Su ma?

16) Creider (1981), p. 24.

- EN : Ma en-kímá, On na-k'ímá, Lo neema (na-xíma)
 WN: Lu màc, Ac maàc, Al màc, Sh mac, Ju mac¹⁷⁾
- 'bad' SN : Ki yá, Na(T-B) yá:c (pl.), Pā(C) ɣa, Su gha?
 EN : Ma torrón-ò, Lo 'rɔx-ɔj, Tu ron-o
 WN: Lu ràc, Ac raàc, Sh rac

The final consonant of the stems is reconstructed as *-k from the correspondence in the list cited above. In the Southern Nilotic the Proto-Nilotic *-k changed to -s or -c, and which was deleted under some condition which is not yet understood. The development is schematized in the following diagram:

- | | | |
|---------|--------------|--------|
| (45) PN | PSN | SN(Ki) |
| *-'k | > *-'s, *-'c | > -'∅ |

Any voiceless consonants have also no effect on tone on the preceding syllable which bears a low tone. The examples can be shown as follows:

- (46) 'hind-leg' Ki caát /caàt'/, Na(T-B) cá:t, Na(H) chat, Sa cat-ìt, Pā(C) cáat, Su chàt
- (47) 'hump' SN: Ki uúk /uùk'/, Na(H) uk, Sa ka-ywuk-et, Pā(C) wóók
 EN : Te a-ruk
 WN: Ac a-ruk¹⁸⁾

In summary the stems ending in a voiceless consonant preserved their original high or low tone.

4. CONCLUDING REMARKS

The relationship between consonant types and tone can be summarized as follows: (1) a final *-h derived from the Proto-Nilotic voiced consonants affected a preceding tone and followed the development of underlying falling tone, (2) a final sonorant did not directly affect a preceding tone, but conditioned the application of FF so that it could play a role in phonologizing a falling tone in type A stem, (3) any other consonants had no effect on a preceding tone.

The statements abridged above would give the additional support to several findings which a number of linguists have established. With regard to the language specific property of the Kipsikiis language, a final sonorant influenced the development of an underlying falling tone.

The studies on tones are important and significant in reconstructing proto-languages in the historical linguistics. The data which I discussed in this paper are for the ones to establish the relation between consonant types and tone, and the paper is the first attempt to explain an origin of a falling tone in the Kipsikiis language.

17) The tonal reflect is very complicated in the Western Nilotic, because the stem belongs to B type as well as 'bad', etc.
 18) This word might be a borrowed form from the Eastern Nilotic.

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