

Tonal Transfer in Kisukuma

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1. Introduction

Different models of reduplication predict different results regarding the question of tonal transfer in reduplication (e.g. Marantz 1982, Clements 1985, McCarthy and Prince 1988, 1995; Steriade 1988; Mutaka and Hyman 1990, Hyman and Mtenje 1998, Downing 2002, Inkelas and Zoll 2000, among others). In McCarthy and Prince's model (1988); and Mutaka and Hyman's model (1990), for example, only underlying information gets transferred in reduplication. As far as Bantu tone is concerned, these models predict that underlying tone (which is unpredictable and common in nominals) will always be transferred in reduplication. Other models (e.g. Steriade's model, 1988) predict that tone will always be copied in reduplication regardless of whether it is underlying or floating. Other models of tonal transfer propose a phonological solution to explain why tone is not transferred in reduplication. Akinlabi (1997) and Alderete et al. (1999), for example, propose that the lack of correspondence between the reduplicant and the base can be accounted for by the Emergence of the Unmarked (TETU) effects. Generally, marked segmentism in the base corresponds to unmarked segmentism in the reduplicant. As far as tone is concerned, the tonal mismatch between the reduplicant and the base can be explained by the fact that the reduplicant has an unmarked tone; which in Bantu languages is the low tone.

Current studies have also shown that tonal transfer in Bantu languages is determined by two important factors namely stem length of the unreduplicated stem and the status of the stem that is copied in reduplication (whether it is a stem or an affix). Myers and Carleton (1996), and Hyman and Mtenje (1999), for example, show that in monosyllabic and disyllabic stems in Chichewa verb-stem reduplication, the reduplicant is an affix and the entire reduplicated complex forms a single domain for tone purposes, hence there is no tonal transfer. In longer stems, however, the reduplicant is a compound stem. As a result each stem in the reduplicative complex forms a distinct tonal domain and hence tone is transferred. Moreover, tonal transfer can also be determined by the grammatical category of the base stem. Although most of the studies on Bantu reduplication have concentrated on verb stems (where tonal transfer is rare), it seems that tonal transfer is common in nominals i.e. nouns, adjectives and numbers (cf. Mutaka and Hyman 1990, Odden 1996, Brassil 2001 and Matondo 2003). This follows from the fact that, compared to tone in verbs, tone in Bantu nominals is underlyingly linked (and thus unpredictable), hence there is tonal transfer (cf. McCarthy and Prince 1988 and Mutaka and Hyman 1990 models)

In this paper, I provide an account of the tonal transfer phenomenon in Kisukuma, a Bantu language spoken in Tanzania (F. 21 in Guthrie's (1948) classification)). I demonstrate that although some of the tonal patterns in Kisukuma reduplication can be accounted for by some of the models of tonal transfer mentioned above, Kisukuma displays tonal patterns that, to the extent of my knowledge, have not been observed before in the study of Bantu reduplication. This is the case, for example, of the mobile H tonal domain whereby the distinction between nominals and verbs observed in other Bantu languages is eliminated. Moreover, the length of the unreduplicated stem (minimal vs. polysyllabic) and whether the reduplicant is a compound stem (where tone is transferred) or an affix (with no tonal transfer) does not matter in Kisukuma. The tonal behavior in Kisukuma reduplication is controlled by two important factors namely the nature of the H tone involved (fixed vs. mobile) and the position of the sponsoring syllable in an unreduplicated stem. When the fixed H tone is involved, there is tonal transfer in nominals but when the unreduplicated stem has a mobile H tone, tone is not transferred regardless of the grammatical category involved. Although the length of the unreduplicated stem can determine the stem to which the mobile H tone will surface associated to in reduplication, what is

crucial in Kisukuma is the position of the sponsoring syllable (the syllable from which the mobile H tone originates) and tonal domain constraints that determine the landing site of the mobile H tone in reduplication. I will show that these properties can best be explained by using the Optimal Domains Theory (ODT) as outlined in Cassimjee and Kisseberth (1998). By reporting new tonal properties in reduplication, the paper enriches our understanding of the interaction of tone and reduplication in Bantu languages. The paper is organized as follows. Section 2 provides the basic tonal properties in unreduplicated stems¹. The analysis of tone in unreduplicated stems is provided in §3. This analysis is extended into §4 where the patterns of Kisukuma tone in reduplication are accounted for. The focus here will be on the mobile H tone because this is the most interesting aspect of Kisukuma tonology. This is particularly important because the trisyllabic mobile H domain and how it interacts with other factors in reduplication has not been investigated before. Section 5 focuses on identifying the variant to which Kisukuma belongs following the Downing's (2002) model. Finally, problematic cases that do not fit into the observed patterns will be discussed in §6, followed by summary and concluding remarks in the last section.

2. Tone in Unreduplicated stems

Kisukuma has 3 tonal levels namely High (H), Low (L) and Extra Low (XL) tones. Regarding the H tone, two types exist in Kisukuma: Fixed and Mobile H. In this study, Extra Low tone will be marked by a grave accent (`) as in (1a). Following Cassimjee and Kisseberth (1998), I will refer to the syllable from which any type of H tone originates as a sponsoring syllable. As a visual reminder, all sponsoring syllables will be underlined and whether a syllable is a head (i.e. is pronounced on a H tone) will be indicated by an acute accent (´) as in (1c). Normal L tones will not be marked as in (1b). Moreover, H tonal domain will be shown in brackets as in (1c).

- (1) a. sòk-`à “go very far”
 b. sok-a “type of fish”
 c. (sò)k-a “soccer”

2.1. Mobile High (MH)

The interest of Kisukuma tone centers on its mobile H. Unlike in other Bantu languages where the mobility of high tone either affects only the adjacent syllable or an indifferent number of syllables, the mobile H tone in Kisukuma shifts two syllables to the right from its original tone bearing unit (TBU) if it is within the same word. This is shown in (2)

- (2) a. (βá-gu-gú)-(βón-el-á) b. a-gu-gu-(βón-el-á)
 3rd pl-FT-you-see-ben-FV 3rd sg-FT-you-see-ben-FV
 “they will see for you” “he will see for you”
 c. a-gu-gu-sol-el-a
 3rd sg-FT-you-choose-ben-FV
 “he will choose for you”

In (2a), the mobile H tone that originates from the 3rd person plural morpheme /βá/ moves two syllables to the right to surface on the 2nd person singular object marker /-gu-/. Likewise, the mobile H that is sponsored by the verb root /βón-/ "see" is displaced two syllables to the right to surface on the final vowel of the entire verbal complex /-a/. Example (2b) shows that the 2nd person singular object marker /-gu-/ does not have an inherent tone, and indeed, the mobile H associated with this morpheme in (2a) has shifted from the preceding morpheme (the 3rd person plural βá). Likewise, (2c) shows that the final vowel of the verb complex /-a/ does not have a H-tone of its own.

¹ Due to space constraints, I will limit my discussion only to tonal phenomena that are relevant to reduplication. An interested reader can consult Batibo (1985), Sietsema (1989), Roberts (1992), Kang (1997) and Matondo (2003) for descriptive and theoretical analyses of complex Kisukuma tonology.

2.2. Extra Low Tone

When a sponsoring syllable is followed by fewer than two syllables in a word or phrase, there are not enough target syllables on which the sponsored H can successfully land. In this case the mobile H surfaces extra lowered. In (3a), a mobile H is sponsored by the final syllable and it surfaces as an Extra Low tone. As shown in (3b), the same pattern is attested when the mobile H is originally associated with a penultimate syllable. In this case, the final two syllables come out extra lowered. Example (3c) shows that when more than one mobile H sequentially occurs within the same morpheme, only the final two syllables come out as extra low and the mobile H tones sponsored by the preceding syllables are deleted. This is done in order to avoid the violation of the Obligatory Contour Principle (OCP).² Example (3d) shows that the extra lowering process does not affect mobile H tones that themselves have shifted to the penultimate or final syllables from preceding sponsors. In (4) are minimal pairs between the normal L and the XL tones.

- | | | | | | |
|--------|--------------|---|------------|-------------------|------------------|
| (3) a. | βa-dugù | b. | gu-βòñ-à | | |
| | CL2-relative | | inf-see-FV | | |
| | "relatives" | | "to see" | | |
| | c. | n-kun̄g <ul style="list-style-type: none">ù mè | d. | gu-(βon-el-á) | cf. *gu-βon-el-à |
| | | CL9-rooster | | inf-see-ben-FV | |
| | | "rooster" | | "to see for them" | |

(4) Normal Low tone vs. Extra Low tone (minimal pairs)

L tone	Gloss	XL tone	Gloss
a. gu-lula	"to cool"	gu-lùlà	"to whistle"
b. gu-luka	"to weave"	gu-lùkà	"to vomit"
c. gu-loβa	"to become wet"	gu-lòβà	"to fish"
d. nyama	"meat"	nyàmà	"bring back the animals"

2.3. Fixed H Tone

Kisukuma tone is also characterized by a fixed H tone. Morphemes containing a fixed H have a fixed tonal contour regardless of the syntactic, morphological or phonological contexts they appear in. Unlike the mobile H tone, the H tone in (5) is not sponsored by preceding syllables, and it is always realized on the sponsoring syllable itself. The ungrammatical (*) examples in (5a) and (5b) respectively show that the fixed H does not get extra lowered even when it occurs utterance finally, and that it is not affected by the tonal displacement phenomenon shown in (2).

- | | | | | | |
|--------|--------|--------|----|----------------|----------------|
| (5) a. | ta(lá) | "lamp" | b. | ta(lá) sagala | "useless lamp" |
| | *talà | | | *ta(là) sagála | |

3. Analysis of Tone in Unreduplicated Stems

Cassimjee and Kisseberth (1998) provide a compelling account of many of the tonal phenomena that characterize the tonology of Bantu languages by using Optimal Domains Theory (ODT). The basic assumption in ODT is that features are organized into domains. It follows that, for a feature to be pronounced, it must be parsed into a domain. The segment that is specified with the feature is called a sponsor. Crucially, every feature at the surface structure has what Cassimjee and Kisseberth call "a

² The OCP can constrain the trisyllabic domain of the mobile H tone. For example, shifting of the mobile H tone is postponed if it will result in two H adjacent tones (e.g a mobile and a fixed H). Thus aga(βoná) gii(ŋghí) "s/he saw an owl" is allowed although the domain of the mobile H tone in aga(βoná) is only disyllabic instead of the canonical (trisyllabic) one i.e. *aga(βona gíi)(ŋghí)

sphere of influence”, i.e. a domain. In many cases, this domain extends beyond the sponsoring element itself. This is the hallmark of Bantu tone whereby tone is known to spread or shift iteratively over long distances from its original location (sponsor). In ODT, the feature’s sphere of influence (i.e. domain) is assumed to be an aspect of the structure of the output candidates. ODT thus does not rely on association lines between the input and the output structures in evaluating faithfulness. As its general goal, therefore, ODT aims at replacing autosegmental representations as a mechanism of expressing the realization of a feature on segments. The domains in ODT are treated like other prosodic constituents and can be either binary or unbounded in size, subject to normal constraints like minimality and nonfinality.³

3.1. Constraint Inventory

From the above introduction, it is clear that the analysis of Kisukuma tone in unreduplicated stems must be able to account for the two types of H tonal domains: the monosyllabic high domain (HD) of the fixed H tone and the trisyllabic HD of the mobile H tone. The latter domain is controversial because it is not predicted in the standard ODT and is limited only to few other Bantu languages namely Tswana (Creissels 1998), Northern Kalanga (Topintzi 2003), Tonga (Kisseberth and Odden 2003) and Northern Sotho (Zerbian 2004). Although it might be necessary to invoke metrical analysis to account for Kisukuma tone, in this work I will not focus on the metrical structure. This follows from the fact that the tonal phenomena that are relevant to reduplication are somehow not as complicated and interwoven as the ones that one would expect when dealing with the general Kisukuma tonology.

The following constraints are proposed to account for the domains that characterize the tonal patterns in Kisukuma:

- (6) BASIC ALIGN-R (TD, S): Align the right edge of a tonal domain (TD) with the right edge of the sponsor to which it corresponds.
- (7) ALIGN R, (TD, PW): Align the right edge of the TD with the right edge of the phonological phrase (PP)
- (8) TRISYLLABIC HD: A High Domain must contain three syllables.
- (9) *(H, NON HEAD): Syllables that are not domain-heads should not be pronounced on a H tone.
- (10) EXPRESS (H): Every syllable in the HD should realize the H tone.
- (11) *ADJACENT HEADS: Two heads can not be adjacent *(HH)

BASIC ALIGN-R prohibits the expansion of a high domain to the right beyond its sponsor. This constraint is violated whenever a H tone spreads to the right. ALIGN R, (TD, PW) requires that a high TD extend through the end of the phonological phrase. If BASIC ALIGN-R is ranked above ALIGN R, (TD, PW), there is no spreading or shifting. This is the case of the fixed H tone. Ranking TRISYLLABIC HD, a constraint requiring that a high tonal domain contain three syllables, optimizes the shifting of the mobile H tone three syllables to the right. *(H, NON HEAD) requires that only heads of the domains i.e. the landing sites of the shifted H tones, associate with the H tone. EXPRESS (H) conflicts with *(H, NON HEAD) by requiring that every syllable in the HD realize the H tone. If *(H, NON HEAD) is ranked above EXPRESS (H), high tone will be realized on domain heads only. This represents shifting languages like Kisukuma.

Since the fixed H tone never moves, it is obvious that BASIC ALIGN-R is ranked above ALIGN R, (TD, PW) and TRISYLLABIC HD. When the mobile H tone is involved, TRISYLLABIC HD outranks both BASIC ALIGN-R (TD, S) and ALIGN R, (TD, PW). This accounts for the fact that the mobile H never moves to the end of the phonological phrase but the shifting stops after two syllables to the right. Since the H tone is realized on the rightmost syllable (the head of the domain) and not on all syllables within the domain, *(H, NON HEAD) is ranked above EXPRESS (H).

³For further details about ODT and its analytical applicability of Bantu tonal phenomena, see Cassimjee (1998) and Cassimjee and Kisseberth (1998)

(12) Ranking for narrow and bounded domains

- a. Fixed H: BASIC ALIGN-R >> ALIGN R, (TD, PW), TRISYLLABIC HD
 b. Mobile H: *ADJACENT HEADS, TRISYLLABIC HD >> BASIC ALIGN-R, ALIGN R, (TD, PW),
 *(H, NON HEAD) >> EXPRESS (H).⁴

The constraint *ADJACENT HEADS is the manifestation of the Obligatory Contour Principle (OCP) and it bans the adjacent occurrence of H tones. Ranking *ADJACENT HEADS above TRISYLLABIC HD optimizes disyllabic domains if further shifting to the right will result in *ADJACENT HEADS violations. The analysis of the fixed H is illustrated in tableaux (13). Tableau (14) illustrates the interactions between the highly ranked *ADJACENT HEADS on one hand and TRISYLLABIC HD that outranks BASIC ALIGNMENT in accounting for the mobile H tone on the other.

(13) Narrow HD (Fixed H) in Kisukuma

	BASIC ALIGN	TRISYLL. HD	ALIGN R
a. $\text{ta}(\text{lá}) \text{sa}(\text{gá})\text{la}$		**	***
b. $\text{ta}(\text{la} \text{sa}(\text{gá})\text{la})$	*!*		*
c. $\text{ta}(\text{la} \text{sa}(\text{gá})\text{la})$	*!***	*	

(14) Mobile (Trisyllabic) HD in Kisukuma

	*ADJ HEADS	TRISYLL. HD	BASIC ALIGN	ALIGN R	EXPRESS H
a. $\text{gu}-(\text{bóná}) \text{ta}(\text{lá})$		*	*		*
b. $\text{gu}-(\text{bóna} \text{tá})(\text{lá})$	*!		**		**
c. $\text{gu}-(\text{bóná}) \text{ta}(\text{lá})$	*!	*	*		

Any candidate whose H tone has shifted to the right in an attempt to satisfy either TRISYLLABIC HD or ALIGN R as in (13) incurs a fatal violation of the highly ranked BASIC ALIGN R because the fixed H tone never moves. In (14), the rightward expansion of the mobile HD to satisfy TRISYLLABIC HD or ALIGN R is abandoned if it will violate the OCP by bringing two domain heads (i.e. H tones) adjacent to one another.

4. Tone in Reduplicated Stems

The behavior of tone in reduplicated stems depends on the nature of the H tone involved and, to some extent, the grammatical category of the unreduplicated stem. Generally, when a verb stem is reduplicated no H tone is realized on the corresponding stem. Whether the H tone surfaces on the first or second half of the reduplicated complex is determined by the length of the unreduplicated stem. This is shown in (15) and (16) respectively.

(15) Disyllabic Verb Stem reduplication

- a. $\text{lò}\beta\text{à}$ “fish” ($\text{lò}\beta\text{a} + \text{ló}\beta\text{a}$)
 b. $\text{nyà}\text{mà}$ “bring back the animals” ($\text{nyama} + \text{nyá}\text{ma}$)
 c. $\text{lò}\text{ò}\text{m}\text{bà}$ “ask, beg” ($\text{lò}\text{omba} + \text{ló}\text{ó}\text{m}\text{ba}$)
 d. $\text{lè}\text{è}\text{m}\text{bà}$ “deceive, to lie” ($\text{lè}\text{emba} + \text{lé}\text{é}\text{m}\text{ba}$)
 e. $\text{kà}\text{à}\text{ngà}$ “terrorize” ($\text{kà}\text{anga} + \text{ká}\text{á}\text{ng}\text{a}$)

⁴ Metrical analysis might be necessary to harmonize the ranking conflicts between the mobile and fixed H tones. Due to space constraints, however, I will not dwell into the intricacies of such an analysis here. See Kang (1997) for ideas on how to apply metrical analyses to account for the two types of high tonal domains. I also realize that it might be more plausible to replace TRISYLLABIC HD with a more grounded constraint FOOT HEAD LOCALITY proposed in Topintzi (2003). The latter constraint, however, is not compatible with ODT particularly because of the bracketing mechanisms. Research is under way to resolve the conflict between ODT and metrical structure.

When the unreduplicated stem is less than three syllables as in (15), the mobile H tone sponsored by the initial syllable of the first stem is realized on the first syllable of the second stem in the reduplicated complex. As shown in (16), however, when the unreduplicated stem is three syllables or longer, the H tone is realized on the third syllable of the first half of the reduplicated complex. Immediately after the trisyllabic HD is realized, the HD expansion stops.

(16) Polysyllabic Verb Stem Reduplication

a.	(daanganá)	“confuse”	(daanganá) + daangana
b.	(nyenyeelá)	“whine”	(nyenyeelá) + nyenyeela
c.	(dadaaβú)ka	“stagger”	(dadaaβú)ka + dadaaβuka
d.	(hoomboké)la	“fall into a ditch”	(hoomboké)la + hoombokela
e.	(daandagá)na	“stagger”	(daandagá)na + daandagana
f.	(kaangaβá)la	“stiffen”	(kaangaβá)la + kaangaβala

As far as verb stem reduplication is concerned, the nature of H tone involved (Fixed vs. Mobile) is not relevant because only mobile H tone is relevant in verb stems. There is no evidence to show that fixed H is involved in verb stems in Kisukuma. The assumption here is that, like in other Bantu languages, only the verb stem initial syllable contrasts for H tone. It follows that, everything being equal, any H tone that is realized on the second or third syllable from the initial syllable is assumed to have shifted from the initial syllable (the sponsor). Since I have not come across any verb stems with a H tone on the initial syllable, (to indicate a fixed High tone), I will assume in this study that the fixed H is not realized in verb stems and thus is irrelevant in Kisukuma verb stem reduplication.

4.1. Reduplication of Nominals with Mobile H Tone

Nominal stems with a mobile H tone display the same tonal pattern like their verb-stem counterparts: if the nominal stem is two syllables or shorter, the mobile H tone is realized on the initial syllable of the second stem in reduplication. This is shown in (17).⁵ As shown in (18), when the nominal stem is three syllables or longer, the mobile H tone is realized on the third syllable of the first stem in reduplication. This is exactly what we find in verb stem reduplication (cf. 15 and 16 above).

(17) a.	chùùgá	“hoof (7)”	(chùuga + chúú)gá
b.	chòònzà	“fox (7)”	(choonza + chóó)nza
c.	ma-sààngù	“cooked corn (6)”	ma-(saangu + sáá)ngu
d.	βa-kòòndu	“slim (2)”	βa-(koondu + kóó)ndu
e.	n-zíìngì	“womanizer (1)”	(n-ziingi + zíí)ngi
f.	βa-gààndù	“thin (2)”	βa-(gaandu + gáá)ndu
g.	nchìlù	“naughty (9)”	(n-chilù + chí)lù
h.	kèèndà	“nine”	(keenda + kéé)nda
i.	ma-kumi a-βili na kèèndà	“twenty nine”	ma-kumi a-βili na(keenda + kéé)nda
(18) a.	(ŋgaangagáá)ngi	“wanderer (1)”	(ŋgaangagáá)ngi + gaangagangi
b.	i-(gookolé)lo	“object for scooping”	i-(gookolé)lo + gookolelo

Sometimes the length of the stem (whether disyllabic vs. polysyllabic) does not matter in determining the stem to which the mobile H will surface in reduplicated structure. As shown in (19), what matters the most is the position of the rightmost sponsoring syllable in the unreduplicated stem. In (19), the mobile H is sponsored by the penultimate syllable of the first stem. The mobile H then shifts two syllables to the right and is realized on the initial syllable of the second member in reduplication (cf. 17). What is apparent in this case is that even though the base is longer than two

⁵ In (17 a-c) are nouns, (17 d-g) are adjectives and (17 h-i) are numbers.

syllables, it is the position of the sponsor in the unreduplicated stem that determines the position of the mobile H tone in the reduplicated structure.

- (19) a. n-ghuṅguḷùmè “rooster (9)” n-ghuṅgu(ḷume + kú)ṅgulume
 c. βu-nogolèkù “laziness (15)” βu-nogo(ḷeku + nó)goleku
 d. n-daṅgàṅnù “kind of crazy (1)” n-da(ṅganu + dá)ṅganu
 e. ga-βinziḱù “kind of fragile (11)” ga-βi(nziḱu + βí)nziku

There is one crucial observation that merits attention: whether the sponsor is in the penultimate or final position in the unreduplicated stem, the mobile H will always surface on the initial syllable of the second stem in the reduplicated structure. As shown in (20), the obligatory alignment of the initial syllable of the second stem with the right edge of the HD can result in a disyllabic high domain instead of the canonical trisyllabic one.

- (20) a. n-dugù “relative (1)” n-du(gù + dǔ)gù. *n-du(gù + dugù)
 cf. ndu(gù sagá)la “useless relative”
 b. n-damà “calf (9)” n-da(mà + dá)ma *n-da(mà + damá)
 cf. n-da(mà sagála) “useless calf”

Further evidence to support the observation that the mobile H sponsored by the final syllable of the unreduplicated stem does not cross the domain boundary of the initial syllable of the second member in the reduplicated complex is provided by monosyllabic stems as in (21). Initially it looks as if the mobile H has undergone the normal two syllables tonal displacement to the right. That is, reduplication has taken place before glide formation.

- (21) a. /lǐ-a/ => ly-à “eat” (ly-ǎ + ly-á) ly-a
 b. /ṅǔ-a/ => ṅw-à “drink” (ṅw-ǎ + ṅw-á) ṅw-a
 c. (kú-a/ => kw-à “pay dowry” (kw-ǎ + kw-á) kw-a

The evidence to support the contention that this observation is not necessarily true is provided by monosyllabic roots that are not vowel-final and thus are not affected by glide formation. As shown in (22), the mobile H surfaces on the initial syllable of the second stem in the reduplicative complex even though the resulting HD is disyllabic.

- (22) a. βu-(βǐ) “bad (14)” βu-(βǐ + βǐ) βi
 βu-(βǐ + βǔ)-βi
 cf. βu-(βǐ sagá)la “senseless cruelty”
 b. (shǐ) “fish (9)” (shǐ + shǐ) shǐ
 cf. (shǐ nhaalé) “big fish”

To account for the tonal pattern in reduplication of stems with mobile H tone, we can motivate the same constraints that have already been proposed to account for tonal patterns in unreduplicated stems (cf. 6-11). To capture the generalization that the mobile HD does not cross the boundaries of the initial syllable of the second stem in reduplicated structure, the constraint in (23) is proposed. As shown in the tableau in (24) below, ALIGN L can constrain the rightwards expansion of the mobile HD. This shows that ALIGN L is ranked above TRISYLL HD. The other crucial rankings are the same as illustrated in (12b) and (14).

- (23) ALIGN L (TD, L, STEM₂): Align the left edge of the tonal domain with the left edge of the second stem in reduplicated stems.

	ALIGN L	TRISYLL HD
(24) a. n-da(mà + dá)ma		*
b. n-da(mà + damá)	*!	

4.2. Nominal Stems with Fixed H tone

When nouns (cf. 25a-b), adjectives (cf. 25c) and numbers (cf. 25 d-e) with a fixed H tone are reduplicated, there is tonal transfer. As in stems with mobile H tone, the fixed H tone is usually aligned with the first syllable of the second stem.⁶

(25) a.	(n-kí)ma	“woman (1)”	(n-kí)ma + (kí)ma
b.	ma-gu(ní)la	“sacks (6)”	ma-gu(ní)la + (gú)nɪla
c.	βa-dí(dí)ga	“stubborn”(2)	βa-dí(dí)ga + (dí)diga
d.	a-(táá)ndatu	“six (6)”	a-(táá)ndatu + (tá)ndatu
e.	m-pu(ŋgá)ti	“seven”	m-pu(ŋgá)ti + (pú)ŋgati

If the fixed H is realized on the final syllable of the unreduplicated stem, the second half of the reduplicated complex surfaces toneless (cf. 26). This is motivated by the need to avoid the violation of *ADJACENT HEADS.

(26) a.	ta(lá)	“lamp (9)”	ta(lá) + tala *ta(lá) + (tá)la
b.	maa(gí)	“slaughterer (1)”	maa(gí) + maagi *maa(gí) + (máá)gi

The tonal patterns of the fixed H tone in reduplication can be accounted for by using the same constraints that were proposed to account for its behavior in unreduplicated stems. The constraint in (27) is proposed to account for the copying of the fixed H tone in reduplication. It requires that a HD of the unreduplicated stem exist in exact correspondence with the HD of the second stem in reduplication. Any candidate with a HD that is not in exact correspondence with the HD of the unreduplicated stem will incur a violation of DOM COR.

(27) DOMAIN CORRESPONDENCE B-R (DOM COR): A HD in the unreduplicated stem must correspond to an exact HD in the second stem.

Since *ADJ HEADS and ALIGN L can interfere with the exact correspondence of the fixed HD, the former two constraints must be ranked above DOM COR. Also, since the fixed H tone does not move, BASIC ALIGN, must outrank ALIGN R. The ranking of the proposed constraints is illustrated in the tableau below.

28. i-qu(ní)la + RED	*ADJ HEADS	ALIGN L	DOM COR	BASIC ALIGN	ALIGN R
a. \varnothing i-qu(ní)la + (qú)nɪla			*		**
b. i-qu(ní)la + gu(ní)la		*!			*
c. i-qu(ní)la + guɪɪ(lá)		*!	*		
d. i-qu(ní)la + guɪɪla		*!	*		***
e. i-qu(nɪlá) + (qú)nɪla	*!		*	*	**

5. Variation in Tone Copy (Downing 2002)

Downing (2002) accounts for variations for tone realization in Bantu languages by defining different stems as relevant domains for stem association. Unlike previous studies of tone transfer in Bantu languages, most of which assume that a H tone is either identical in both stems in reduplication or a H tone is realized on only one stem in reduplication, Downing proposes three variants of tonal

⁶ There are few instances (mainly numbers) common with some speakers where the fixed H tone is not aligned with the left edge of the second stem in reduplication. Thus a-(táá)ndatu “six (6)” may reduplicate as a-(táá)ndatu + taanda(tó) and βa-(náá)ne “eight (2)” can reduplicate as βāñáá)ne + naa(né).

7. Summary and Conclusion

This paper is concerned with issues of tonal transfer in Kisukuma reduplication. It has been shown that, as in other Bantu languages, tone is not transferred in Kisukuma verb-stem reduplication. While it is common for tone to be transferred in nominals (nouns, adjectives and numbers) reduplication, tonal transfer in Kisukuma is limited to the type of H tone involved: only the fixed H tone is systematically transferred. This is predicted in some models of reduplication (McCarthy and Prince's model, 1988; and Mutaka and Hyman's model 1990). When a mobile H tone is involved, there is no tonal transfer regardless of the grammatical category of the stem being reduplicated (verbs vs. nominals), and unless constrained by high ranked constraints like *ADJACENT HEADS and ALIGN L, the HD in both cases is normally trisyllabic. Moreover, whether the mobile H surfaces on the first or second member in reduplicated structure is not always determined by the length of the unreduplicated stem but sometimes is determined by the position of the sponsoring syllable in the unreduplicated stem.

I have also shown that the stem length of unreduplicated stem does not play a significant role in stems with fixed H tone where tone is transferred. This is contrary to other accounts of tonal transfer like Hyman and Mtenje (1998) who show that tonal transfer in Chichewa is determined by the length of the stem: tone is transferred in polysyllabic stems but not in subminimal stems (disyllabic and shorter stems) because the reduplicant in the former is a compound and an affix in the latter.

Future research can focus on trying to understand the nature and evolution of the trisyllabic mobile HD in Kisukuma and other Bantu languages with the same HD like Tswana, Tonga and Venda, if Kisukuma tonology can be accounted for without resorting to metrical analysis as in other Bantu languages and why in some nouns, like those in (30) tonal transfer is blocked.

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