Tonal and Non-Tonal Intonation in Shekgalagari

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Abstract

The study of intonation in a (fully) tonal language presents both a challenge and an opportunity. The challenge is to see how a language which exploits F0 mainly for the purpose of lexical and grammatical contrasts succeeds in encoding the functions often expressed by means of intonation in non-tonal languages. As is well-known, word-level distinctions can be quite rich in tone systems, which contrast up to five pitch levels and a dozen or more tonal contours or clusters, e.g. Wobe (Kru; Liberia) (Bearth & Link 1980, Singler 1984). Word-level tones, in turn, can be subject to considerable manipulation by the postlexical phonology, where juxtaposition, syntactic conditioning, or phonological phrasing can modify the word-level inputs and introduce additional pitch features, e.g. the phonological phrase-final H% boundary tone of Kinande (Bantu; Democratic Republic of the Congo) (Hyman 1990). Particularly when tone systems are complex in these ways, the question is how there can be much room left for intonation to modify or add pitch specifications without obscuring the word-level tonal contrasts. The goal of this paper is to examine how Shekgalagari (Bantu; Botswana, Namibia), a language which exploits F0 mainly for the purpose of lexical and grammatical contrasts, succeeds in encoding the functions often expressed by means of intonational phonology in non-tonal languages. Whereas other languages with lexical tone adopt different strategies for incorporating intonational pitch features, we demonstrate that most of the intonational marking is non-tonal in Shekgalagari, thereby raising the question of what is a possible intonational system.

1. Introduction

It is common knowledge that tone languages can have F0-based intonation, including H and L intonational tones (or "intonemes"): "Even in languages with elaborate omnisyllabic tone systems, intonation certainly exists as a phenomenon independent of tone." (Matisoff 1994:116) "Most tone languages will have some form of structural intonation." (Gussenhoven 2004:45) The occurrence of intonational tones alongside lexical ones is, however, not without potential complica-

tions. Word-level tones show three degrees of hospitality (or hostility) towards F0 intrusions at the phrase- or utterance level:

(i) *Accommodation* ("peaceful coexistence"), whereby the terrain is divided up somehow such that the lexical and intonational tones minimally interact. One instantiation of this occurs in certain Otopamean languages of Mexico, which restrict their lexical tone contrasts to pre-final syllables, reserving word-final syllables for intonational contrasts. An example is Mazahua which contrasts /H/, /L/ and /HL/ tones: "The pitches of all syllables which do not immediately precede word space are those of the tonemic system. The pitch of any syllable immediately preceding word space is part of the intonemic system." (Pike 1951:101) The "intonemes" which are distinguished in Mazahua are identified in the table in (1).

(1)	Intoneme	Meaning	Intoneme	Meaning
	L%	"colorless finality"	MH%	"surprise"
	H%	"is that what you said/mean?"	ML%	"anger, disgust"
	M%	"something is expected to follow"	H:L%	"calling, shouting"

It should be noted that while intonemes can be combined, they never go beyond being distributed on one syllable. This is not to say that there is no interaction. Thus, while Mazahua lexical and intonation tones generally accommodate each other by staying on their respective syllables, Pike (1951:103) further explains:

> A simple stem is made up of two syllables, one of which is a root and the other a stem formative. The root contains the toneme, and the stem formative normally carries an intoneme. When a compound is formed of stems whose stem formatives are composed of ?V, the stem formatives are dropped and one of the roots now occurs word final. In word-final position, the toneme of the root becomes obliterated and an intoneme takes its place. In this way the intonation-character of word-final syllables has overpowered the earlier tonemic character of the old penultimate syllable.

The mutual accommodation of lexical and intonational tones is thus imperfect in Mazahua. While an intoneme can "overpower" a lexical tone, the other logical outcome is where a lexical tone blocks intonation. These constitute the two remaining types of interaction between lexical tones and intonemes:

(ii) *Submission* ("surrender"), whereby the intonational tones invade and override the lexical tones. A rather striking case of this occurs in Coreguaje (Tukanoan; Colombia), where in isolation CVCV noun tones merge as L-HL with statement intonation and as H-L with question intonation: "...we found that in certain frames there were four contrasting sets, but in isolation phrase stress completely neutralized the contrasts, at least in CVCV nouns." (Gralow 1985:3). As seen in the table in (2), CVV noun tones also merge except for /LL/ nouns, which remain distinct under statement intonation:

(2)	CVCV:	Basic form	statement	question	CVV:	Basic form	statement	question
		H-H	L-HL	H-L		HH	HL	HL
		H-L	L-HL	H-L		HL	HL	HL
		L-L	L-HL	H-L		LL	LH	HL
		L-H	L-HL	H-L				

It would appear that the statement and question intonemes are LHL% and HL%, respectively, although more information would be needed to confirm this.

(iii) *Avoidance* ("blockade") constitutes the third type of interaction between lexical tones and intonation. In this case intonation is minimized, perhaps limited to Ladd's (1980, 1996) "paralinguistic" modulations (pitch range and pitch interval adjustments, etc.) One possibility is incomplete avoidance whereby one or more lexical tones override one or more intonemes. A second is complete avoidance, where the tone system does not tolerate any intonemes. If intonational tones cannot be exploited, their common functions may be fulfilled by something else, e.g. by particles: "... omnisyllabic tone languages typically have a repetoire of particles whose only job is to convey the emotion or affect of the speaker—syllabic exclamation points, as it were." (Matisoff 1994:118)

With the above potential tone-intonation relations established, we now come to the following two questions:

(3) a. Can a language do without structural intonation?
b. Can an utterance lack intonation?

Concerning the first, many researchers have assumed that intonation is a universal:

> Every human language has both an intonational system and a nonintonational system.... (Hockett 1963:19)

> Intonation is universal first of all because every language possesses intonation.... Intonation is universal also because many of the linguistic and paralinguistic functions of intonation systems seem to be shared by languages of widely different origins. (Hirst & Di Cristo 1998:1) (but see Ladd 1996, ch. 4)

> Languages described as having "no intonation"... or "no contrastive pitch patterns"... are still admitted to have changes in pitch corresponding to the fluctuations of emotion. (Bolinger 1978:475)

However, the question is not whether all languages have utterance-level F0 modulations such as raising vs. lowering of pitch level or expanding vs. compressing of pitch intervals, but rather whether there are languages which lack "structural" intonation, i.e. categorical intonational pitch features or intonemes. The strongest limiting cases are probably "monosyllabic languages" with highly

developed tone systems such as the five levels of Dan (Mande; Ivory Coast) (Bearth & Zemp 1967, Vydrine & Kességbeu 2008:10) or Wobe (Kru; Liberia) (Bearth & Link 1980, Singler 1984), which contrasts fourteen tones (four levels, ten contours) on monosyllables. In such languages intonational tones would not only have to cope with the strong competition from so many lexical tones, but also with analytic ambiguities. If, for example, such a highly tonal language marked questions by a final high pitch, this could be evidence of a H% "intoneme" phonologizing Gussenhoven's (1994) frequency code. However, it could also be an accidental "tonal morpheme" derived from an old monosyllabic interrogative particle that has lost its segments, but whose *H is preserved. The same ambiguity would be present if a question or any other utterance type were marked instead by a final low pitch.

If we assume for the purpose of discussion that intonation is universal, the question in (3b) then asks whether specific utterances in an individual language can be intonation-less. In other words, if a language has intonation, does this mean that all utterances are marked by an intonation, whether structural or "paralinguistic"? Again, this possibility would seem most likely to arise in complex tone languages. If absence of intonation does occur, would intonation-less utterances represent a kind of default, or could the absence of intonation itself signal specific pragmatic functions? As we shall see, this very question arises in Shekgalagari.

As mentioned above, languages with "omnisyllabic tone" (Matisoff 1994) may choose to use particles and perhaps avoid structural intonation altogether. While it has yet to be established that tone languages do in fact make greater use of particles than non-tonal languages, they need not give up on intonation altogether. There exists an alternative intonational strategy: use features other than tone. This is exactly the situation in Shekgalagari. In the following sections we shall first establish the basic tone system of the language, followed by a systematic description of the intonational marking of different utterance types in Shekgalagari. We shall see that the marking of intonation goes well beyond structural tones or pitch adjustments, thereby raising questions concerning the inventory of intonational features and the nature of intonation itself.

2. Shekgalagari basic tonology

Shekgalagari is a Bantu language of the Sotho-Tswana group designated as S.30 by Guthrie (1967-1971). Although sometimes lumped with Setswana, it is a separate language (Janson 1995), spoken by an estimated 272,000 speakers in Botswana (RETENG 2006) as well as a smaller number of speakers in Namibia. Previous research on the language has been relatively limited but includes Krüger & du Plessis (1968), Dickens (1984, 1986a,b), Neumann (1999) and Monaka (2005a,b). Recent reseach includes a grammar (Lukusa & Monaka 2008), a lexicon (Monaka, in preparation), and a detailed description of the tone system (Crane 2008, 2009a,b). The material presented in this paper are based on the speech of the

second author, which differs only slightly (and in irrelevant details) from previous documentation of the language.

The basic properties of the tone system are as follows: The underlying system is characterized by a binary contrast, probably best analyzed as /H, Ø/ rather than /H, L/ (Crane 2008, 2009). The surface system consists of four pitch levels: H, L, ꜜH and LꜜL, all but the last of which are level. While "non-automatic" downstepped ꜜH is contrastive after another (ꜜ)H tone, there is no perceptible "automatic downstep" or "downdrift" in H-L^{n}-H sequences. Unlike many other tone systems, L tones are level in pitch, even before pause, thereby sometimes giving the impression of a mid tone level. Two contour tones, HL and LꜜL, occur only on a lengthened penultimate syllable. LꜜL consists of a L tone falling to an even lower pitch level. Finally, there are no rising tones in the language. While there are occasional long vowels which have a L to H rise, there is independent evidence that these should be analyzed as heterosyllabic sequences of identical vowels ($V_i.V_i$). In citing examples, L tone is unmarked, H tone is marked by an acute accent (á), HL falling tone by a circumflex (â:), and the LꜜL falling tone by a grave accent (à:).

We begin in (4) by presenting the four logical combinations of H and L tones on bisyllabic noun stems, as they are pronounced utterance-medially:

(4)		prefixless		prefixed	
	L-L	nama	'meat'	mʊ-lɪmi	'farmer'
	L-H	nawá	'bean'	ma-rumé	'greetings'
	H-L	lóri	'lorry'	mʊ-nʊ́na	'man'
	H-H	nárí	'buffalo'	mu-rérí	'preacher'

As seen, nouns may be prefixed or not, the L tone prefixes marking the typical Bantu noun classes. The reason for citing utterance-medial outputs will become apparent, but is done basically to avoid the tonal complications which accompany utterance-penultimate vowel lengthening (see (8)).

As seen in (5), in the infinitive, which is marked by a *xʊ-* prefix, verb stems exhibit three different tone patterns independent of the length of the verb stem:

(5)	all L (1291)		two Hs (1484)		one H (590)	
	k-a	'mention'			gy-á	'eat'
	bal-a	'count'	bɔ́n-á	'see'	lɔ́r-a	'dream'
	lɛlɛk-a	'chase'	rúmél-a	'send'	láleʒ-a	'invite'
	xalaleʒ-a	'praise'	sérímuʃ-a	'reveal'	bútsʊlʊs-a	'avenge'
	makyʊrʊlʊl-a	'unstick'	xáqúlʊʃɛlw-a	'remember'	bútsʊlʊseʒ-a	'pay back'

As seen, monosyllabic stems can be L or H, while bisyllabic and longer stems show three patterns: all L, a H on the first two syllables, and a H on the first syllable followed by all low. The numbers in the headings indicate how many lexical entries were found of each tone pattern in Monaka (in preparation), not counting the 11 monosyllabic H verbs which occur in the language. As seen, the one H pattern is distinctly in the minority. This is because there is a general rule of bounded H tone spreading (HTS) which has the effects shown in (6) (Crane 2008):

(6)

bɔn-a	rʊmɛl-a	serimuʃ-a	xaqʊlʊʃɛlwa
H	H	H	H

As originally pointed out by Dickens (1984), the one-H forms are exceptions to HTS deriving from loss of the Proto-Bantu (PB) vowel length (*VV):

(7)	Proto-Bantu	Shekgalagari		Proto-Bantu	Shekgalagari	
	*bón-a	bɔ́n-á	‘see’	*dóot-a	lɔ́r-a	‘dream’
	*dóm-a	lóm-á	‘bite’	*dáad-a	lál-a	‘sleep’
	*túk-a	rúx-á	‘insult’	*búʊd-i-a	búʒ-a	‘ask’

The first two columns show that PB H tone *CVC-a stems surface as H-H, while the forms to the right show that PB *CVVC-a stems are realized as H-L. What this means is that pre-Shekgalagari **lɔ́ɔr-a* ‘dream’ first becomes *lɔ́ɔ́r-a* by HTS, and then lɔ́r-a by vowel-shortening. The same H-L pattern is found on native noun stems, but also in borrowings, e.g. *lóri* ‘lorry’.

As mentioned, forms have thus far been cited as they appear in medial position, i.e. when not immediately preceding pause. The reason for this is that a pause-penultimate vowel is lengthened in declarative utterances, including citation forms. Thus, compare the pre-pausal realizations of the nouns in (8) with the corresponding medial forms in (4).

(8)	input			prefixless		prefixed	
	L-L	→	L↓L:-L	nà:ma	‘meat’	mʊ-lì:mi	‘farmer’
	L-H			na:wá	‘bean’	ma-ru:mé	‘greetings’
	H-L			ló:ri	‘lorry’	mʊ-nó:na	‘man’
	H-H	→	HL:-L	nâ:rɪ	‘buffalo’	mu-rê:ri	‘preacher’

As indicated, and as summarized in (9), the penultimate lengthening can have an effect on the tones of the last two syllables before pause:

(9) a. no effect other than lengthening if the last two syllables differ in tone

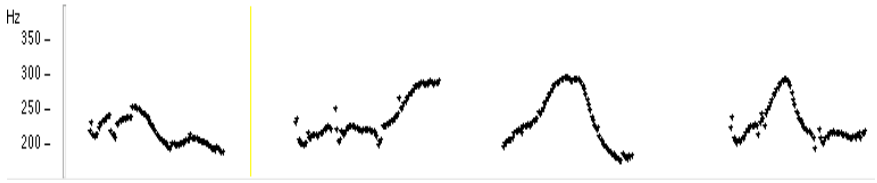
L-H	→	L:-H	:	ma-rumé	→	ma-ru:mé	‘greetings’
H-L	→	H:-L	:	mʊ-nʊ́na	→	mʊ-nʊ́:na	‘man’

b. pitch of the penult falls if the last two syllables have the same input tones

L-L	→	L↓L:-L	:	mʊ-lɪmi	→	mʊ-lì:mi	‘farmer’
H-H	→	HL:-L	:	mʊ-rérí	→	mʊ-rê:ri	‘preacher’

Representative pitch traces of the above four nouns are provided in (10), with thanks to Keith Johnson for his guidance:

(10) Toneless TBUs which precede ↓L start higher than before H or HL



Before proposing an analysis of the tone changes in (9b), note that the alternations are also observed on the verb stems of the infinitive when they appear before pause. The forms in (11) should thus be compared with those in (5):

(11)	all L		two Hs	(cf. (5))	one H	
	(xʊ̀:-) k-a	‘mention’			(xʊ:-) gy-á	‘eat’
	bà:l-a	‘count’	bɔ́:n-a	‘see’	lɔ́:r-a	‘dream’
	lɛlɛ̀:k-a	‘chase’	rʊ́mɛ́:l-a	‘send’	lálɛ̀:ʒ-a	‘invite’
	xalalɛ̀:ʒ-a	‘praise’	sérímù:ʃ-a	‘reveal’	bʊ́tsʊlʊ̀:s-a	‘avenge’
	pakyʊlʊxà:n-a	‘come apart’	xáqʊ́lʊʃɛ̀:lw-a	‘remember’	bʊ́tsʊlʊsɛ̀:ʒ-a	‘pay back’

As indicated, when the verb stem is monosyllabic, the infinitive prefix is lengthened to *xʊ:-*.

Our proposal to account for the observed tone changes is that a L% intonational tone links to the second mora of the lengthened penult when the final two syllables are Ø-Ø or H-H:

(12) a. L%
|
naama [nà:ma] ‘meat’

b. L%
|
naarɪ [nâ:rɪ] ‘buffalo’
\/
H

In (12), we assume that the lexical tonal contrast is between /H/ and /Ø/. The L% which is shown on a separate tier is the intonational tone which has an audible effect only when the last two tones are identical. Since L% represents a tone lower than /Ø/, the result will be a L to ↓L falling tone in (12a). A striking fact about the the penultimate L↓L contour is that Ls which precede it are realized higher than Ls which precede H. Thus, one can see in (10) that the prefix *mʊ-* is realized higher on *mʊ-lì:mi* 'farmer' than on *mʊ-nʊ́na* 'man'. In longer forms, a sequence of Ls is audibly raised to anticipate the L↓L fall. It is striking that H-H alternates with HL:-L. The derivation we propose is in (13).

(13) H-H → HL:-H → HL:-L (HL%-Ø)

First the L% splits up the two Hs of the H:-H sequence to produce HL:-H. Subsequently, the final H is delinked, thereby creating the flat L pitch on the last syllable. Evidence for the intermediate step is seen from Ikalanga, a nearby Bantu language of the Shona group, which has corresponding alternations such as *túmá* ~ *tû:má* 'send' (Hyman & Mathangwane 1998, Mathangwane 1999). Although we have no evidence that L% is present when the last two tones are H-L or L-H, note that we may allow L% to link to final syllable of prepausal H-L and to the penultimate syllable of prepausal L-H. If correct, the generalization would be that L% links to the penult unless the form ends H-L, in which case L% links to the final syllable. As an alternative, we considered the following: If H-L were represented as /HL-Ø/, it could undergo the following multistep derivation prepausally: HL-Ø → H-L (→ HL:-L?) → H:-L. This would keep /HL-Ø/ distinct from /H-Ø/, which could become HL:-Ø directly. While it may seem autosegmentally unusual to derive HL:-H from intermediate H-H, the alternative analysis requires the counter-intuitive assignment of intonational length + L% before applying word-bounded HTS. Instead, Ikalanga justifies the analysis in (13).

Having illustrated prepausal lengthening and its tonal consequences on citation forms, we are now ready to consider the full range of intonation in Shekgalagari. In the following discussion we shall refer to the penultimate lengthening + L% tone as PLL.

3. Shekgalagari intonation types

As in other studies of intonation, it is necessary to establish both the prosodic features marking different intonations as well as the utterance types in which they occur. As seen in the table below in (14), many Bantu languages have penultimate lengthening. In the left column we have indicated the utterance types or functions marked by penultimate lengthening in one or more of the above languages. Since grammars rarely go into such detail, the above table was made possible only by generous personal communications from our Bantuist colleagues, specifically

Malillo Machobane and Katherine Demuth (Sesotho), Philippe Ngessimo Mutaka (Kinande), Joyce Mathangwane (Ikalanga), Galen Sibanda (Ndebele), and Sam Mchombo and Al Mtenje (Chichewa). As indicated, none of the cited languages restricts penultimate lengthening like Shekgalagari. The fact that PLL also is marked by L% is clearly duplicated in other languages of the Sotho-Tswana group, as well as by Ikalanga. In other languages such as Kinande and Chichewa penultimate lengthening is not accompanied by an intonational tone in ordinary declaratives.

(14)	Shekgalagari	Sesotho	Ikalanga	Kinande	Ndebele	Chichewa
Declaratives	+	+	+	+	+	+
Yes-No Q	-	-	+	-	+	+
WH Q	-	-	+	-	+	+
Ideophones	-	-	-	-	+	+
Paused lists	-	+	-	+	+	+
Imperatives	-	+	+	+	+	+
Hortatives	-	+	+	+	+	+
Vocatives	-	±	+	+	+	+
Exclamatives	-	-	+	+	+	+
1σ word	-	+	+	+	+	+

We now briefly illustrate the presence vs. absence of PLL in each of the utterance types listed in (14). As seen in (15), PLL occurs before pause in declarative indicatives, including citation forms:

(15) a. ri-nâːrɪ ‘buffalos’ a-bal-a ri-nâːrɪ ‘he is counting buffalos’
b. xʊ-bôːn-a ‘to see’ a-bɔ́n-á mʊ-lìːmi ‘he sees the farmer’

Unlike the other Bantu languages characterized in (14), (15) represents the only utterance types in which PLL is required in Shekgalagari. Failure to lengthen would unambiguously result in these forms being interpreted as yes-no questions:

(16) a. ri-nárí ‘buffalos?’ a-bal-a ri-nárí ‘is he counting buffalos?’
b. xʊ-bɔ́n-á ‘to see?’ a-bɔ́n-á mʊ-lɪmi ‘does he see the farmer?’

Correspondingly, the examples in (17) show that there is no PLL in WH questions (the downstep in (17a) and elsewhere is irrelevant for our purposes—see Crane 2008, 2009a,b):

(17) a. ri-nárí zhé ↓ríhí ‘which buffalos?’
b. a-bal-a ʃiŋ̍ ‘what has he just counted? (ʃi.ŋ̍ = bisyllabic
c. xʊ-bɔ́n-a ányí ‘to see who?’ with L-H tone)
d. ányí a-bɔ́n-á mʊ-lɪmi ‘who has just seen the farmer?’

While there are other Bantu languages which suspend penultimate lengthening in questions, Shekgalagari is thus far the only known to disallow PLL in imperatives (cf. Hyman 2009):

(18) a. bal-á ‘count!’
b. bal-á ↓rí-nárí ‘count the buffalos!’
c. bɔ́n-a ‘see, look!’
d. bɔ́n-á mʊ-lɪmi ‘see the farmer!’

The same is true of hortatives:

(19) a. á ↓hí-bál-ɛ ‘let’s count!’
b. á ↓hí-bál-ɛ ri-nárí ‘let’s count the buffalos!’
c. á ↓bá-bɔ́n-ɛ ‘let them see!’
d. á ↓bá-bɔ́n-ɛ mʊ-lɪmi ‘let them see the farmer!’
e. á mʊ-lɪmi a-w-ɛ ‘let the farmer fall!’

PLL is likewise not found in vocatives and terms of address:

(20) a. Mʊnaká ‘Monaka!’
b. ntó Gabalʊxúŋ ‘come here, Ghabalogong!’
c. taté ‘father!’
d. ɛɛ mmá ‘yes, ma’am’ (m.má = two syllables with L-H tone)

The data in (21) show that there is no PLL in exclamatives, which use the same *á* marker as hortatives:

(21) a. á ↓ʃí-xúlú ‘what a situation!’
b. á ↓ʃí-súlú ‘what a bargain!’
c. á ↓ʃí-tʃútʃʊ ‘what an idiot!’
d. á ↓ʃí-tʃútʃʊ ʃá mú-khyʊ ‘what an idiot of a person!’

The above constitutes the list of utterance types where the prepausal forms without PLL are identical to how they would appear in utterance-medial position. Two additional utterance-types also block PLL but add an intonational mark of their own. First, ideophones have a short penult. In addition, their pre-pausal vowel undegoes final devoicing (FD):

(22) a. y-á-rɪ bílʊ̥ ‘it (fish) appeared suddenly out of water’ (*it went BILU*)

b.	a-rɪ bítsi̯	'he left in a hurry'	*(he went BITSI)*
c.	l-á-rɪ phátsi̯	'lightening flashed'	*(it went PHATSI)*
d.	a-rɪ tshíki̯	'it's cold, I'm feeling cold'	*(it went TSHIKI)*

As in many Bantu languages, there is a general verb, here *-rɪ* 'say', which is used with ideophones. The equivalent in English is to use the verb 'go', as indicated in the parenthetical paraphrases to the right of the above examples. What is important is that the final vowel must be devoiced in the declarative (see below for the corresponding interrogatives). We will argue below that ideophone devoicing is intonational.

Like ideophones, the internal members of "paused lists" are not subject to PLL, but undergo final lengthening (FL):

(23) a. a-bal-a ri-nama: ... ri-nawá: ... lí ri-nâ:rɪ
'he's counting meats... beans... and buffalos'
b. a-bɔ́n-á lʊ-rʊli: ... malílɪ: ... lí mʊ-rî:ri
'he sees dust... rubbish... and hair'

For there to be such lengthening, it is obligatory that there be a pause after each of the listed items. In other languages, such paused lists are often marked by a final rising intonation with possible lengthening. This brings us to the following observation: Recalling that the declarative not only lengthens the penultimate vowel, but also assigns a L% tone to its second mora, it is striking that interrogatives, imperatives, hortatives, vocatives, exclamatives, ideophones, and paused lists are all suspended and/or vivid speech act types where speakers might be expected to raise their voice. Could this be related to the fact that they all resist the fall-creating L% tone—a blocking effect attributable to the Frequency Code (Gussenhoven (2004:82)?

Before summing up this section, it is necessary to consider one last relevant environment: Shekgalagari differs from related languages in not assigning PLL when the prepause word is monosyllabic:

(24) a.	ri-nárí ʒé		'these buffalos'
b.	ʊ-bat-a ʃé		'he wants this one'
c.	a-rí-bál-a ʒwá		'he has counted them in this way'
d.	qa-rɪ ʊ́-ʃíkíl-a =xɔ́ thé		'I say, you really move around'
	I-say	you-go =infl really	

In related Bantu languages, the final vowel of the preceding word would be lengthened. What this shows is that PLL is sensitive to word boundaries (cf. the Appendix).

To summarize, we have seen four different intonational patterns before pause:

(25)	a.	PLL	:	declaratives, citation forms
	b.	FD: final devoicing (no PLL)	:	ideophones
	c.	FL: final lengthening (no PLL)	:	paused lists
	d.	Ø (none of the above)	:	yes-no questions, Wh-questions, imperatives, hortatives, vocatives, exclamatives, 1σ words

Finally, for clarity, it should be noted that the above intonations cannot be combined: It is totally ungrammatical for the last two syllables of any utterance to undergo PLL+FD, PLL+FL, or FD+FL. The above raises the following two questions:

(26) a. Are all Shekgalagari utterances marked by an intonation?
b. Which pattern is unmarked, the default: PLL or Ø?

The answer to the first question depends on how we interpret (25d): the absence of PLL, FD or FL. If Ø is an intonation which is actively assigned, then there are four intonations in Shekgalagari: PLL, FD, FL, Ø. If Ø is not an actively assigned intonation, then utterances not marked by PLL, FD or FL can in fact exist without an intonation. The second question which concerns questions of markedness is related to the first. The problem in Shekgalagari is that phonological and pragmatic markedness are at odds with each other: Declaratives and citation forms are PRAGMATICALLY unmarked speech acts, but are PHONOLOGICALLY marked by the intrusive mora and L% feature. On the other hand, a short penult is phonologically unmarked but pragmatically marked, thus assigned to questions, imperatives, vocatives etc. We would like to answer "yes" to (26a) and assume that Ø is an intonation, but that PLL is pragmatically unmarked. To see how this might work out it is necessary to investigate how an utterance is realized which qualifies for more than one intonation. This is taken up in the next section.

4. Competing intonations in Shekgalagari

The question we address in this section is: What happens when a construction qualifies for more than one intonation? Which one wins? For example, what happens if a question ends in an ideophone: Will the ideophone undergo FD, or will it be marked by Ø? If the latter, this gives further evidence that Ø is an actively assigned intonation. Two logical resolutions of such conflicts have occurred to us: (i) There could be a fixed hierarchy of utterance types and their intonations. (ii) There could be variation, with the outcome depending on the intention of the speaker or on the relative importance that the speaker gives to each of the inputs. To some extent both properties are found in Shekgalagari.

Let us first examine whether a fixed hierarchy is possible. A first approximation which will now be examined is presented in (27).

(27)	Yes-No, Wh-Q	>>	Ideo	>>	Imper, Hort, Voc, Excl	>>	List	>>	Decl
	Ø		FD		Ø		FL		PLL

The first line in (27) hierarchizes the different utterance types, while the second line provides a reminder of the intonation associated with each type. While it is not logically possible to combine all utterance types (e.g. an ideophone cannot be used in a vocative utterance), vocative, and exclamatory utterance types have been grouped together with imperatives and hortatives with which they seem otherwise to pattern. While we will next illustrate the implied conflict resolutions, the following should be noted concerning (27): (i) Ø needs to be split up in the hierarchy; (ii) interrogative Ø can override any other intonation; (iii) declarative PLL never overrides anything (but cf. emphatic PLL below).

Let us consider some of the conflict resolutions implied in (27). To begin, the utterances in (28) illustrate how interrogative Ø can suspend the final devoicing on ideophones:

(28) YES-NO, WH-Q >> IDEO (Ø >> FD)

a.	y-á-rɪ bílʊ?	'did it (fish) suddenly appear out of water?'	*(Did it go BILU?)*
b.	l-á-rɪ phátsi?	'did lightening flash?'	*(Did it go PHATSI?)*
c.	a-rɪ tshíki?	'is it cold?'	*(Did it go TSHIKI?)*
d.	ányí a-rɪ bítsɪ	'who left in a hurry?'	*(Who went BITSI?)*

Questions also override the final lengthening in paused lists:

(29) YES-NO Q >> LIST (Ø >> FL)

a. a-bal-a ri-nama ... ri-nawá ... kana ri-nárí?
'has he just counted meats... beans... or buffalos?'

b. a-bɔ́n-á lʊ-rʊli ... malílɪ ... kana mʊ-ríríʔ
'has he just seen dust... rubbish... or hair?'

The examples in (30) and (31) show that the final devoicing of ideophones overrides the Ø of the hortative and the final lengthening of paused lists:

(30) IDEO >> HORT (FD >> Ø)

á ba-rɪ bítsɪ̥ 'may they leave in a hurry!'

(31) IDEO >> LIST (FD >> FL)

y-á-rɪ bílu̱ ... bítsɪ̱ ... phátsi̱ ... tshíki̱ ‘it suddenly appeared out of water, in a hurry, flash of lightning, cold’

The fact that interrogative Ø overrides the FD of ideophones, but the FD of ideophones overrides the Ø of hortatives and paused lists provides the motivation for splitting the Ø intonation into positions on the hierarchy. Finally, the sentences in (32) show that the Ø of both Wh-questions and imperatives block the final lengthening of paused lists:

(32) WH-Q, IMPER >> LIST (Ø > FL)

a. ányí a-bal-a ri-nama ... ri-nawá ... lí ri-nárí
‘who is counting meats... beans... and buffalos?’

b. bal-á ri-nama ... ri-nawá ... lí ri-nárí
‘count meats... beans... and buffalos!’

The examples in (28)-(32) and the resulting hierarchy in (27) illustrate what we might refer to as the pragmatically unmarked way of resolving conflicts between the different utterance types and their intonations. There is, however, evidence that speakers have further options available to them if they want to place a different emphasis on an utterance. Before going into this, it must be reiterated that everything that has been shown up to this point represents a neutral or non-emphatic realization, whether of a specific utterance type or of a conflict between utterance types. The additional options we are about to illustrate were never directly elicited, i.e. when translating an English utterance into Shegkalagari. Rather, it was only when we systematically assigned alternative intonations to different utterance types to see if they were interpretable that we discovered other possibilities.

A major complication with respect to the hierarchy in (27) is a marked highlighting process, possibly paralinguistic, which we term “emphatic” PLL. While declarative PLL is pragmatically unmarked, EMPH PLL is highly marked and can be assigned to any utterance type except yes-no questions, with seemingly contradictory results such as those in (33).

(33) EMPH PLL can

a. make WH-Qs, imperatives, and hortatives seem either like statements or more insistent
b. emphasize or de-emphasize the effect of such non-declarative speech acts
c. clarify what was said, often repeating or rewording when someone has not understood

d. provide some kind of emphasis, but not necessarily on the last word or its constituent
e. be often subtle, never obligatory, perhaps "attitudinal" in the sense of Bolinger (1978:484)

Consider the case of WH-words. First, as seen in (34), it is not surprising that they undergo PLL in citation form:

(34)	citation form	as question		citation form	as question	
	â:nyɪ	ányí	'who'	lî:ŋ̀	líŋ́	'when'
	ʃi:ŋ́	ʃiŋ́	'what'	ʒwâ:ŋ̀	ʒwáŋ́	'how'
	qâ:ɪ	qáí	'where'	qa xʊri:ŋ́	qa xʊriŋ́	'why'

In an elicitation session, if one asks a speaker how to say 'who', the answer has to be *â:nyɪ,* since the form is not a question, but rather a declarative citation form. (If asking for the one-word question utterance 'who?' the form would of course be *ányí*.) The same is observed in (35a) where the WH-word is used in a contrastive declarative utterance:

(35) a. ó-ráy-á qâ:ɪ 'you mean WHERE'
b. ó-ráy-á qáí 'do you mean WHERE?'

The absence of PLL in (35b) unambiguously establishes the utterance as a question. (Although incomplete, (35b) could also be taken to mean 'where do you mean?') Since the WH words in (34) and (35a) do not occur in Wh-questions, they escape interrogative Ø-assignment in (27) and instead filter down to receive declarative PLL.

The situation in (36), however, is quite different.

(36) a. w-á qáí 'where are you going?':
b. w-á qâ:ɪ 'where are you going?'
c. yó ↓íye í-↓bɔ́n-á Mʊnaká kí ↓ányí (~↓â:nyɪ) 'the one who saw Monaka
DEM PAST s/he-saw Monaka is who is who?'

While the normal Wh-question is with Ø, as in (36a), (36b) can be used to repeat the question, for insistence, or "just emphasis". In (36b) the most immediate interpretation is that the speaker is being very insistent: he or she really wants to be responded to! The same interpretation occurs when PLL applies in (36c): 'The one who saw Monaka is WHO? Tell me!'

While EMPH PLL intensifies the illocutionary force of a Wh-question, it seems to have an attenuating effect on imperatives and hortatives. As seen in (37), the unmarked Ø forms are interpreted as commands, while the forms with EMPH PLL seem rather to be suggestions:

(37) a. ḿ-búʒ-é ‘ask him!’
ḿ-bû:ʒ-ɛ ‘what you can do is ask him’ (that’s what I suggest)
3sg-ask-INFL

b. ʃí-ǹ-tʃwél-é ‘don’t tell me!’ (= an instruction)
ʃí-ǹ-tʃwê:l-ɛ ‘you shouldn’t tell me!’ (= a statement)
NEG-1sg-tell-INFL

c. á ↓bá-bál-ɛ ri-nárí ‘let them count the buffalos!’ (= stronger, a command)
á ↓bá-bál-ɛ ri-nâ:rɪ ‘they should count the buffalos!’ (= weaker, a suggestion)
COMP-3pl-count-INFL buffalos

Other cases were found to have just the opposite effect. Thus, the imperative/hortative forms with PLL in (38) mark insistence or have a strong finality effect (‘and that’s that!’):

(38) a. ʃí-gy-é ‘eat it!’ (= normal)
b. ʃî:-gy-ɛ ‘eat it!’ (= stronger)
c. á kɪ-gy-ɛ kúkú ‘let me eat the chicken!’ (= weaker)
d. á kɪ-gy-ɛ kû:kʊ ‘let me eat the chicken’ (= stronger)
COMP-1sg-eat-INFL chicken

While (38a) is the normal imperative, the PLL form in (38b) might be translated ‘eat it or else!’ or ‘eat it already!’ (with the speaker showing impatience). The normal hortative in (38c) is weak enough to be interpreted as asking permission (‘may I eat the chicken?’), while the PLL form in (38d) expresses finality (‘that’s what I’m going to do!’) and does not expect an answer.

In still other cases, the effect of emphatic PLL is not clear, other than adding a vague sense of emphasis:

(39) a. balá ↓rí-nárí (...) ísɪŋ́ ri-kú ‘count buffalos, not sheep!’
b. balá ↓rí-nâ:rɪ ... ísɪŋ́ ri:-kú (idem.)

Finally, it should be noted that EMPH PLL can override anything except a yes-no question (which would then become a statement):

(40) a. >> IDEO FD : y-á-rɪ bílʊ̥ ~ y-á-rɪ bí:lʊ
‘it suddenly appeared out of water’

b. >> 1σ word Ø : bá-bal-a ʒé ~ bá-bal-a: ʒé
‘they are counting these’

c. >> WH-Q Ø >> IDEO FD : ányí a-rɪ bí:tsɪ
‘who left in a hurry?’ (insisting)

In all of the above examples with EMPH PLL the basic utterance type is recoverable from the structure: presence of a WH-word, absence of a subject in imperatives, presence of *á* in hortatives and exclamatives, the verb *-rɪ* 'say' with ideophones, etc. Since yes-no questions are marked exclusively by Ø intonation, if the penultimate vowel were to be lengthened the result would be a statement, not a question. EMPH PLL thus may not occur on a yes-no question.

While the hierarchy in (27) can be modified to accommodate EMPH PLL, YES-NO and WH-Qs would have to be split up, as in (41).

(41)	Yes-No Q	>>	Emph	>>	Wh-Q
	Ø		PLL		Ø

Since we have argued that EMPH PLL cannot override the Ø of a yes-no question for reasons of recoverability, it is not clear that the hierarchical approach in (41) is the right way to go. An alternative interpretation is that EMPH PLL represents a separate (paralinguistic?) dimension, perhaps like Bolinger's (1972:644) characterization of "accent": "The distribution of sentence accents [in English] is not determined by syntactic structures but by semantic and emotional highlighting." And so it appears to be with EMPH PLL.

There is in fact good reason to view the original hierarchy in (27) as representing the "normal" or "expected" relationships between the different intonations, which can, however, be modified in marked situations. Quite late in our study we discovered the following minimal triplet concerning ideophones in Wh-questions:

(42) a. ányí a-rɪ bítsɪ 'who left in a hurry?'
b. ányí a-rɪ bítsɪ̰ 'who left in a HURRY?'
c. ányí a-rɪ bí:tsɪ 'WHO LEFT IN A HURRY?'

As we have said, (42a) represents the normal or expected form, where WH-Q Ø overrides the FD of the ideophone. Although the other two possibilities are quite unusual, (42b) might be uttered if the speaker wanted to bring special emphasis to leaving in a hurry, perhaps contrasting *bítsɪ̰* with another ideophone. In (42c), with EMPH PLL, emphasis is on the whole question, as when the speaker, perhaps with exasperation, is insisting that s/he be responded to. What's important is that speakers do have some choice in effecting different pragmatic overrides violating the hierarchy in (27).

The final question in this section is how to account for the variation in the meanings of EMPH PLL. As an introduction to what might be going on, consider the utterances in (43).

(43) a. íye bá-m-búʃ-a xʊ-rɪ íye a-bɔ́n-a â:nyɪ 'they asked him who he saw'
b. íye bá-m-búʃ-a xʊ-rɪ íye a-bɔ́n-a ányí 'did they ask him who he saw?'
PAST 3pl-3sg-ask to say PAST 3sg-see who

As can observed, indirect questions take PLL or Ø according to the nature of the higher-clause: (43a) is a statement, while (43b) is a question. What we would like to propose is that, like indirect questions, EMPH implies an abstract declarative higher clause, hence PLL. As indicated in (44), the unexpressed higher clause (in parentheses) may have either an emphatic or attenuating effect:

(44)	a.	WH-Q	Ø	:	Where are you going?
			PLL	:	(I am asking you again) where you are going?
	b.	IMPER	Ø	:	Ask him!
			PLL	:	(What I suggest is) ask him! (= weaker)
			PLL	:	(Again, I'm telling you to) ask him! (= stronger)
	c.	HORT	Ø	:	Let them count the buffalos!
			PLL	:	(What I suggest is that) they count the buffalos! (= weaker)
			PLL	:	(What I insist is that) they count the buffalos! (= stronger)

In other words, EMPH PLL may be paralinguistic (Ladd 1996) and attitudinal (Bolinger 1978), outside the structural system and subject to cultural norms. (We note, for example, that one cannot use an imperative + EMPH PLL if speaking to an older person.) As such, it is hard to pin down exclusive or fixed meanings. We thus arrive at a view of EMPH PLL much like Bolinger's characterization of pitch: "The picture is clouded in a number of ways. The meanings conveyed by pitch are attitudinal, and attitudes are notoriously subject to distortion and inhibition...." (Bolinger 1978:515). Thus, to paraphrase Bolinger (1972), EMPH PLL may be "predictable" if you are a mind-reader.

Before leaving this section, we would like to make one more point: While we believe the above characterization of the different intonations in Shekgalagari to be accurate, there is undoubtedly much more to be said. One issue we have not dealt with is phrasing. This is another area where there is an expected realization, but also some choice. Consider, for example, the utterances in (45), which concern the marking of right-dislocations:

(45)	a.	ba-rímó bá-bál-a ri-nâ:rɪ gods they-count buffalos	'the gods have just counted the buffalos'
	b.	bá-rí-bá:l-a they-them-count	'they have just counted them'
	c.	[bá-rí-bál-a, ba-rímó, ↓rí-nâ:rɪ]	'they have just counted them,
	d.	[bá-rí-bál-a, ba-rímó:] [↓rí-nâ:rɪ]	the gods, the buffalos'
	e.	[bá-rí-bá:l-a] [ba-rímó:] [↓rí-nâ:rɪ]	

f. [bá-rí-bá:l-a] [ba-rî:mʊ] [ri-nâ:rɪ] (= “emphasis” (EMPH))
they-them-count gods buffalos

(45a) shows the pervasive SVO structure of Shekgalagari. When the class 10 object *rinâ:ri* ‘buffalos’ is pronominalized in (45b), the prefix *-rí-* occurs in its place. The utterance in (45c) shows the “normal” way of expressing right-dislocations. As seen, there is no pause, and therefore only the last word is marked by PLL. In (45d-f) the fully bracketed nouns indicate that there is a pause before them. In (45d, e) we see that the recapitulated subject *ba-rímʊ́:* ‘the gods’ undergoes FL, which we have heretofore identified with paused lists. In addition, the prepausal verb undergoes PLL in (45e). In (45f), which sounds very emphatic, each of the three pause groups is marked by PLL, as if to say, “I’m telling you they COUNTED them, the GODS, the BUFFALOS.” While the lack of pauses in (45c) is the most natural realization of right-dislocations, the above realizations give some idea of the range of variation that is potentially available to Shekgalagari speakers. No doubt further investigation will turn up more subtleties and clarification of the relation between intonation marking and phrasing.

5. Summary and conclusion

In the preceding sections we have seen that Shekgalagari, a tone language, is rich in intonational options. Except for PLL, which includes a L% feature, intonation is not tonal, but rather involves penultimate lengthening, final lengthening, final devoicing, or none of the above. Returning to the three strategies a tone system may adopt for dealing with intonation (accommodation, submission, avoidance), Shekgalagari’s response seems best characterized as accommodation: None of the intonations merges anything from the lexical phonology. Thus, while the L% of PLL has a striking effect on tone, HL:-H and L$^{\downarrow}$L:-L unambigously correspond to lexical H-H and L-L. Similarly, the length from PLL and FL does not cause merger, since there is no underlying lexical contrast in the language. (We assume that the effects of Proto-Bantu long vowels on tone indicated in (7) is not best analyzed by setting up an abstract, underlying vowel length contrast.) In fact, it has long been observed that Bantu languages which have lost the historical vowel length contrast are more likely to have penultimate lengthening: “...many Bantu languages have an H and L tone with a superimposed penultimate accent. This accent may cause vowel lengthening (especially if the vowel length contrast of Proto-Bantu has been lost), or it may affect the tone of the penultimate syllable.” (Hyman 1978:14) Finally, there is no loss of lexical information when ideophones undergo final devoicing. It can thus be said that Shekgalagari has found ways to express different intonations without infringing on the prosodic properties of the word-level phonology.

Several of the properties of the Shekgalagari intonational phonology are of typological interest: (i) the unusual intonational functions that are distinguished (e.g.

imperative, ideophone); (ii) the non-tonal means by which utterance types are distinguished (lengthening, devoicing, absence); (iii) the hierarchization of the intonational functions (which is reminiscent of competing tonal assignments in inflectional morphology); (iv) the pragmatically marked nature of Ø intonation—which can override the others. The system is also of diachronic interest in the sense that the PLL, FD and FL intonations are not likely relics of old particles that been lost, but are more probably due to independent phonologizations.

The Shekgalagari system naturally raises the question of what the full range of intonational features is. Besides pitch, length, and devoicing, attested in Shekgalagari, both breathy and creaky phonations as well as the laryngeal segments *-h* and *-ʔ* have been claimed to mark intonation. For example, final glottal stop marks imperatives in Lahu (Tibeto-Burman; Thailand, China, Myanmar) (Matisoff 1973:353), questions in Kaingang (Macro-Ge; Brazil) (Wiesemann 1972, Wetzels 2008), and negatives in Dagbani (Niger-Congo, Gur; Ghana) (Hyman 1989). Perhaps other prosodic features such as nasality may also be exploited for intonation (cf. the "nasal pause" phenomenon in Amazonia (Aikhenvald 1996:511-512)). Whether suprasegmental segments such as *-k*, *-s*, or *-m* or full syllables can mark intonation has been questioned (Hyman 1989), although Aikhenvald (1998:410) reports the case of *-hĩ* or *h* + a V copy with nasalization in Warekena (Arawakan; Venezuela): "A morpheme *-hṽ* 'pausal marker' is inserted at the end of a phonological word or a phonological phrase." We have cited Matisoff's (1994:118) comment about the equivalence of particles to intonation marking, a point also taken up by Ladd (1996) and in earlier work of my own: "...besides the parallel in function, there may be important structural similarities between boundary tones and particles. In fact, the difference may be simply that the former lack segmental content, while the latter do not." (Hyman 1990:123). Thus, paralleling intonational marking in other languages, "interrogative, exclamatory, imperative, emphatic, and doubt meanings in Capanahua are represented in the base component by features that are spelled out as segments (morphemes)" (Loos 1969:211). (Cf. paralinguistic [+irritation] marking in Capanahua: "Anger and irritation are not given morphemic shape in the string, but are expressed... by nasalization of the whole sentence".) This raises the question of whether prosodic "intonemes" are morphemes, and if so, whether they should be identified as clitics or phrasal affixes in the sense of Anderson (1992, ch. 8).

This brings us to the final question: What are the necessary definitional properties of intonation? It seems there are at least three possibilities in determining what should vs. should not be considered "intonation": One might restrict intonation to certain specific realizations, e.g. pitch (and ??). Alternatively, one might delimit intonation on the basis of a restricted set of functions (declarative, interrogative and ??). A final possibility is that intonation might be identified in terms of its domain or place in a grammar. In this last case, we might say that anything that originates at the intonational phrase or utterance level, or within the "Phonetic Form" module of government-binding theory, is by definition "intonation". In this last approach it would not matter if the mark were a feature, a mora, a segment, or

a fuller "particle". The equivalence would be defined by the place at which the so-defined intonation enters the grammar. Conversely, a feature which has to be present earlier in the phonology would not be intonational, nor would a particle which has to be present in the syntax. We believe that this kind of approach is likely to be the most revealing in determining what is vs. is not intonation.

APPENDIX: Monosyllabic Words and PLL

As was seen in (24), declarative PLL does not apply when the last word of the utterance is monosyllabic, a property which is thus far limited to Shekgalagari among the Bantu languages for which we have information. Here we consider a few more facts in order to determine how this fact might be account for.

First, it should be noted that monosyllabic words are very limited in Shekgalagari. Among the ones we have identified by independent criteria are the following:

(46) a. monosyllabic verbs in the imperative: *k-á* 'mention!', *gy-á* 'eat!'
b. demonstratives: *ʃé* 'this (one)' (cl. 7), *ʒé* 'those' (cl. 10) etc.
c. adverbs: *ʒwá* 'in this way', *thɛ́* 'really'
d. the preposition *qá* 'with', which, however, cannot occur finally

As seen, all of the above monosyllabic words have /H/ tone. Monosyllabic imperatives have a bisyllabic variant, which can occur with EMPH PLL: *ɪ:-k-á* 'mention!', *ɪ:-gy-á* 'eat!'. Similarly, although monosyllabic words block declarative PLL, EMPH PLL may assign length to the final vowel of the preceding word:

(47) a. a-bal-a qá ʃe ~ a-bal-a qá: ʃe 'he has just counted with this'
b. a-rí-bál-a ʒwá ~ a-rí-bál-a: ʒwá 'he has just counted them like this'

(In (47a) /qá + ʃé/ 'with this' becomes *qá ʃe* by a rule discussed by Crane (2008, 2009).)

But should utterance-level intonation, here PLL, be allowed to have access to word boundaries? If yes, monosyllabic words can block PLL by virtue of not having a penultimate syllable. If no, an alternative is needed to avoid direct reference to word boundaries.

While we suspect that intonation can know where the word boundaries are, if it were necessary to exclude them from intonational implementation, the following metrical solution would work:

(48) a. construct a trochaic foot over the last two syllables of each word
b. in case the last word is monosyllabic, the trochaic foot will have only one syllable

c. declarative PLL specifically targets the nucleus of the penultimate syllable (vowel or syllabic nasal) of the last foot of an utterance or pause-marked intonational phrase (IP)
d. EMPH essentially encliticizes an IP-final monosyllabic word in which case PLL is free to target the nucleus of the penultimate syllable across the word boundary.

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