A grammar of Ik (Icé-tód) : Northeast Uganda's last thriving Kuliak language

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3 Suprasegmental Phonology

Suprasegmental phonology covers those properties of the Ik sound system whose domain may be greater than the single segment or syllable. Ik vowel harmony (§3.1) and tone (§3.2) fall into this category and so are treated here together. They also belong together for other reasons, namely that they have been the most difficult apsect of Ik phonology to comprehend and are crucial characteristics of the overall Ik grammar and lexicon.

3.1 Vowel harmony

In their survey of African vowel harmony systems, Hall et al. noted that for 'Teuso' (Ik), 'no information' was available (1974:257). This section is intended to partly remedy that situation. Like many sub-Saharan languages, particularly in Nilo-Saharan, Ik shows a system of vowel harmony. This puts it in the areal company of Eastern Nilotic (Teso-Turkana), Southern Nilotic (Pokot, Kalenjin), Western Nilotic (Acholi, Lango), as well as the Cushitic Somali and Kuliak (Rub) So. Ik is a 9-vowel harmony language with two sets of high contrastive vowels—a /2IU/ system in Casali's typology (2008:504)—two sets of mid contrastive vowels and one low vowel:

(1) *Ik 9-vowel harmony system*

[+ATR]	FRONT	CENTRAL	BACK
HIGH	i		u
MID	e		o
[-ATR]	FRONT	CENTRAL	BACK
HIGH	ɪ		ʊ
MID	ɛ		ɔ
LOW		a	

Vowel harmony is a general condition in the language that all vowels in a given phonological word have the same value for the feature Advanced Tongue Root or [ATR]. Cross-linguistically, the phonetic correlates of ATR vary from tongue-root frontness/backness to tongue-body height to laryngeal-cavity volume. Because it requires instrumental measurements, the exact phonetic manifestation of ATR in Ik has not been determined.

Ik is a [+ATR]-dominant language with dominant-recessive harmony. Harmony spread is bi-directional. Lexical roots are specified underlyingly for [ATR], and [+ATR] roots spread harmony rightward to any recessive suffixes. All synchronic Ik affixes are suffixes, and these suffixes are also specified underlyingly for [ATR]. Three suffixes with high front vowels are dominantly [+ATR], harmonizing the stem in both directions as far as possible (§3.1.2). Nine other suffixes containing /a/ as one or the only vowel are also [+ATR] but can only harmonize rightward due to /a/'s opacity (§3.1.3). Most suffixes in the language are recessively [-ATR] (§3.1.4). However, two unique [-ATR] suffixes containing /a/ block bi-directional [+ATR] spread, also due to /a/'s opacity (§3.1.5). The phonological domain over which Ik lexical vowel harmony presides is the phonological word, which may include a root, suffixes, and clitics.

From a typological point of view, the Ik system is interesting in the following respects (Casali, p.c.). First, roots and affixes whose only vowel is /a/ can be specified for either [ATR] value underlyingly. In other languages, /a/ often has a [+ATR] allophone in [+ATR] environments (Casali 2008:502), but in Ik there is no indication of this. This leads to a second fascinating feature: Because 1) /a/ is inherently [-ATR] and 2) morphemes containing only /a/ can be [+ATR], this requires positing a floating [+ATR] feature that can spread rightward but not leftward (i.e. through /a/ which is opaque). Third, though [+ATR] vowels are dominant and marked, they statistically outnumber [-ATR] vowels almost two-to-one (see §3.1.1).

3.1.1 Lexical vowel harmony

Vowel harmony in Ik operates at both the lexical and post-lexical levels (§3.1.6) of phonological representation. The lexical forms of all Ik roots and affixes are specified as either [+ATR] or [-ATR]. In the present analysis, the [ATR] specification—as an autosegment on a separate tier from the segmental—is a property of morphemes, not of individual vowels. As an autosegment, it links up to any available vowel in the morpheme.

From a traditional structuralist point of view, the nine vowels shown above in (1) are seen as invididual 'phonemes'. This view is fine and creates no problems for the analysis of Ik vowel harmony. But following Kutsch-Lojenga's analysis of Ngiti vowel harmony (1994:56), a more generativist view is also possible, namely that—leaving aside /a/ for the moment—Ik has four 'archi-phonemes' underspecified for [ATR] in deep structure:

(2) *Ik archi-phonemic vowels*

	[+/-ATR]	[-ATR]	[+/-ATR]
	FRONT	CENTRAL	BACK
HIGH	I		U
MID	E		O
LOW		a	

In this analysis, while the low vowel /a/ stays inherently [-ATR], the other eight Ik vowels can be viewed as generated by these four archi-phonemes that get specified for their 'allo-phoneme' by a given morpheme's [ATR] specification. Though quite abstract, this view may help account for why (in my experience with Ik and Atɛsɔ), vowel harmony falls largely below the perceptual threshold for native speakers. Paradoxically, the nine surface allophones (or 'allo-phonemes') of the archi-phonemes are also 'phonemes' themselves. This suggests that the strict division between 'phoneme' and 'allophone' may prove less than adequate for such vowel harmony systems.

With the archi-phonemic analysis in the background, lexical (near-) minimal pairs like the following can be viewed as (nearly) the same sequence of segments, only with different [ATR] (and in some case tone) specifications:

(3) *[ATR] (near-) minimal pairs*

Nouns		Verbs	
gúró-	'heart'	bot-	'migrate'
gʊra-	'Sickle-bush tree'	bɔt-	'peel'
ikóŋá-	'oath'	bun-	'join in'
ɪkɔŋa-	'fried beer mash'	ɓʊn-	'pass by'
ínó-	'animal'	isá-	'do first'
ɪnɔ́-	'Milkbush'	ɪsa-	'miss (a shot)'
koni-	'ligament'	isép-	'flow'
kɔní-	'one'	ɪsɛ́p-	'be lame'
ƙóré-	'back of knee'	kup-	'be cloudy'
ƙɔ́ré-	'ladle'	kʊp-	'burn'

At an autosegmental level of representation, words like the above ones for 'back of knee' and 'ladle' can be depicted as in (4). Here, the relevant archi-phonemic vowels get specified for either of the two [ATR] values:

(4)

'back of knee'	'ladle'
[+ATR]	[-ATR]
/ƙÓrÉ/ → ƙóré-	/ƙÓrÉ/ → ƙɔ́ré-

Less abstractly, it can be said that the two nouns in (4) simply contain similar (only different in [ATR]) vowels from the nine-vowel inventory.

Whatever theoretical interpretation one may make, Ik lexical roots can be neatly divided into two groups according to their [ATR] specification. The following table offers a few more examples of this. [+ATR] lexical roots are more numerous than [-ATR] ones. In a sample of 1930 noun roots, approximately 60% were found to be [+ATR] and 40% [-ATR]. Conversely, there are far more [-ATR] suffixes than there are [+ATR] ones (§3.1.4).

(5) *Lexical [ATR] specification on nouns and verbs*

Nouns			
[+ATR]		[-ATR]	
bíroó-	'bird sp.'	bílɔɔrɔ́-	'bird sp.'
demio-	'Wild olive tree'	cɛmɛrɪ-	'herb'
fetí-	'sun'	dʊɗérɛ-	'water beetle'
girúu-	'locust'	ɗɛrétʊ́-	'Sudan gum arabic'
hoo-	'hut'	ɛkɛ́ʊ-	'muscle fiber'
ídeme-	'snake'	gɔgɔmɔ́-	'breast-bone'
jíjei-	'opposite bank'	ɟɪrɔkʊ-	'toy spear'
ɟolílé-	'Black kite'	kíɗɔlɛ́ɛ-	'young baboon'
nébu-	'body'	ƙɔfɔ́ɔ-	'calabash'
rébe-	'finger millet'	ɲɛ́ɛ́sɛɛ́-	'big rock'
Verbs			
[+ATR]		[-ATR]	
bíz-	'press'	bɛ́ɗ-	'want'
ɓoɓ-	'be deep'	ɓɔ́ŋ-	'be nearly ripe'
dim-	'refuse'	cɛm-	'fight'
erég-	'use'	dʊ́b-	'catch'
fój-	'whistle'	gwɪr-	'jump up and down'
góóz-	'throw away'	hɔn-	'drive'
hoɗ-	'free'	ɪfɔ-	'scoot'
itél-	'watch'	ɟɛɟ-	'stay'
luƙ-	'swallow'	kɔ́ŋ-	'cook'
mídz-	'smell'	ƙʊɗ-	'suck'

In 9-vowel systems, it is cross-linguistically common for a low vowel to combine in roots with vowels of either [ATR] value (Casali 2008:528). This is certainly the case in Ik. Though inherently [-ATR], /a/ is found within morphemes with both [+ATR] and [-ATR] vowels in a variety of arrangements. This is illustrated below with only nouns, as most verb roots have a (i)CVC- profile. For VV combinations involving /a/, see §2.2.3:

(6) */a/ in combinaton with other vowels*

Nouns			
[+ATR]		[-ATR]	
abúba-	'spider'	abɛta-	'Sitatunga antelope'
bácíka-	'area'	barísá-	'male hyrax'
ɓiɓa-	'egg'	ɓɪsá-	'spear'
céŋá-	'joke'	cɛŋá-	'woodpecker'
dokira-	'old honeycomb'	dɛdɛsa-	'Willow warbler'
ɗario-	'dirty teeth'	ɗamó-	'brain'
faido-	'Ebony tree'	ɛ́ba-	'horn'
gasoó-	'warthog'	gáʒadɪ-	'Red-pod terminalia'
haúu-	'Spotted hyena'	ɪláŋí-	'Indian jujube'
ƙálíts'i-	'jaw'	ƙɛƙérá-	'grasshopper'

In light of the above data, a crucial claim for the Ik harmony system is that there are not two phonetically different /a/ vowels. This claim has yet to be confirmed by extensive instrumental evidence. But initial investigations reveal no detectable phonetic difference between the /a/'s in [+ATR] and [-ATR] environments (Casali, p.c.). This is corroborated by my auditory impressions over several years of exposure, as well as the adamant testimony of native speakers. Still, further instrumental testing is needed.

The main issue is this: It is not predictable whether a noun or verb containing /a/ as its only vowel will have [+ATR] or [-ATR] suffixes. For nouns, this is shown below by affixing the ablative case suffix {-ɔ} and for verbs either the transitive infinitive suffix {-ɛ́s} or the intransitive infinitive

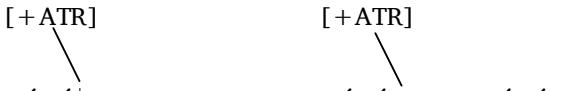
suffix {-ɔn}. In half of the roots shown in (7), these suffixes surface as their [+ATR] allomorphs. The vowel assimilation seen in the nouns in (7) is normal (see §2.5.4). In the [+ATR] nominal stems, vowel assimilation first takes place between the [-ATR] case suffix and root-final /a/ (still [-ATR] at that point). Then the [+ATR] autosegment is able to link up with both the root-final vowel (now /ɔ/) and the suffix {-ɔ} producing an /o-o/ sequence.

(7) *[ATR] ambiguity on roots containing only /a/*

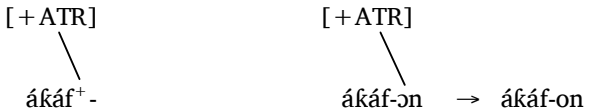
	Nouns			
[-ATR]	báts'á-	→	báts'ɔ́-ɔ	'from pus'
	gaɗárá-	→	gaɗárɔ́-ɔ	'from slime'
	gwa-	→	gwɔ-ɔ	'from the stomach'
	kanaʃaa-	→	kanaʃɔ-ɔ	'from the beehive'
	ʃara-	→	ʃarɔ-ɔ	'from the bladder'
[+ATR]	ámá-	→	ámó-o	'from the person'
	asaka-	→	asako-o	'from the door'
	kaná-	→	kanó-ó	'from the back'
	ƙwaza-	→	ƙwazo-o	'from the clothing'
	taɓá-	→	taɓó-ó	'from the rock'
	Verbs			
[-ATR]	áts'-	→	áts'-és	'to gnaw'
	bar-	→	bar-ɔn	'to be rich'
	kán-	→	kán-és	'to lick'
	ŋwaʃ-	→	ŋwaʃ-ɔn	'to be lame'
	tam-	→	tam-és	'to think'
[+ATR]	áƙáf-	→	áƙáf-on	'to yawn'
	ats-	→	ats-on	'to come'
	raɲ-	→	raɲ-és	'to return'
	táb-	→	táb-es	'to touch'
	tsáŋ-	→	tsáŋ-és	'to smear'

To account for one /a/ in both [ATR] environments, it is claimed here that the feature [+ATR] simply does not link to /a/. Instead, whenever /a/ figures into a [+ATR] morpheme, it just floats its [+ATR] autosegment. But if a recessive suffix is attached to such a root, the floating [+ATR] autosegment spreads its harmony to it. This analysis is illustrated below, where the symbol ($^{+}$) is used to signify the floating [+ATR] autosegment (on analogy with a floating tone). Note that for (8), vowel assimilation is shown to have already occurred at the docking of the [+ATR] autosegment:

(8) ‘person’ ‘from the person’



(9) ‘yawn’ ‘to yawn’



By contrast, in [-ATR] roots, the autosegment can readily dock to /a/ and any recessive suffixes that many follow, as in:

(10) ‘slime’ ‘from slime’

(11) ‘think’ ‘to think’

3.1.2 Dominant suffixes

As already noted, Ik is a [+ATR]-dominant language. In principle then, all [+ATR] suffixes (in addition to roots) are also dominant. In reality though, some [+ATR] suffixes contain /a/ which blocks harmony spread back to the stem; it only spreads rightward to other suffixes. These opaque dominant suffixes are treated below in §3.1.3. The present section concerns the three non-opaque dominant suffixes. These are the pluractional aspect suffix {-í-}, the plurative I nominal pluralizer {-íkó-}, and the middle voice suffix {-ím-}. All three of these suffixes spread harmony in both directions until they encounter an /a/ (if any). Incidentally, they all have H tone:

(12) *Ik dominant [+ATR] suffixes*

{-í-}	PLUR	Pluractional	(§7.7.7)
{-íkó-}	PL	Plurative I	(§4.2.1)
{-ím-}	MID	Middle	(§7.8.5)

To illustrate the harmony spread of {-í-}, a set of verbs is given below. In the first column is found the [-ATR] verb root. This is then followed by a 1PL.EXC verb containing the pluractional suffix which gives the verb a nuance of habitualness or repetitiveness. The 1PL.EXC bound pronominal is the recessive {-ím(í-)} that is harmonized by the pluractional suffix. Note that if the root-final vowel is /a/, it vowel blocks [+ATR] spread from {-í-}:

(13) *Vowel harmony spread by the pluractional {-í-}*

bɛr-	ber-í-ím	‘We (always/usually) build.’
íbaɗ-	íbaɗ-i-ím	‘We (always/usually) knock over.’
ɪɗím-	iɗim-i-ím	‘We (always/usually) make.’
ƙɔ́ɗ-	ƙóɗ-i-ím	‘We (always/usually) cry.’
zík-	zík-i-ím	‘We (always/usually) tie.’

Then, to illustrate the harmony spread of the plurative {-íkó-}, a set of nouns is given below. The singular [-ATR] noun root is shown in the first

column. And this is followed by the plural bearing the plurative I suffix and then the recessive copluative case marker {-kɔ} in its non-final allomorph /-o/. Note the bi-directional [+ATR] harmony spread out from {-íkó-}:

(14) *Vowel harmony spread by the plurative {-íkó-}*

kɔlá-	kól-íkó-o	'Is it uncastrated goats?'
ƙɔ́rɛ́-	ƙór-íkó-o	'Is it ladles?'
ŋɛ́rá-	ŋér-íkó-o	'Is it mingling sticks?'
ɔrɔrɔ́-	orór-íkó-o	'Is it smalls streams?'
wɛla-	wél-íkó-o	'Is it small openings?'

Lastly, to illustrate the harmony spread of the middle suffix {-ím-}, a sample of Ik verbs is given in (15). The first column contains [-ATR] roots, while the second column shows the full harmonized stems. The middle suffix not only harmonizes leftward to the root but also rightward to the inchoative aspect marker {-ét} and the intransitive infinitive marker {-ɔn}. However, harmony spread to the root is blocked by /a/ in the case of *ɪraŋíméton*:

(15) *Vowel harmony spread by the middle {-ím-}*

ɪɓóts-	iɓuts-ím-ét-on	'to be mistaken'
ɪlɔ́-	ilo-ím-ét-on	'to be defeated'
ɪráŋ-	ɪraŋ-ím-ét-on	'to be ruined'
kɔk-	kok-ím-ét-on	'to shut
tʊɓún-	tuɓun-ím-ét-on	'to close off'

3.1.3 Opaque dominant suffixes

Nine Ik suffixes are dominantly [+ATR] but differ from those in (12) in that they contain /a/ as one or their only vowel. These 'opaque dominant suffixes' include the suffix {-a^{+}}, which is identical as the nominative case and realis modality markers; the distributive adjectival suffix {-aák^{+}-}, the patientive {-amá$^{+}$-}, the stative adjectival suffix {-án^{+}}, the

hortative/optative {-anó}, the 3PL bound pronominal suffix {-áti-}, the accusative case suffix {-ka$^+$}, and the present perfect aspect suffix {-ʹka$^+$}:

(16) *Ik opaque dominant [+ATR] suffixes*

{-a$^+$-}	NOM	Nominative case	§6.3.2
{-a$^+$-}	REAL	Realis modality	§7.6.2
{-aák$^+$-}	DISTR	Distributive adjectival	§7.9.6
{-amá$^+$-}	PAT	Patientive nominalizer	§7.2.4
{-án$^+$-}	STAT	Stative adjectival	§7.9.3
{-anó}	OPT	Hortative/optative	§7.7.4
{-áti-}	3PL	3-person plural	§7.4
{-ka$^+$}	ACC	Accusative case	§6.3.6
{-ʹka$^+$}	PRF	Present perfect	§7.8.7

All nine of these suffixes harmonize [-ATR] vowels rightward (if no other /a/ intervenes) but not leftward. Apart from the hortative/optative suffix {-anó} and the 3PL bound pronominal {-áti-}, which have underlying [+ATR] vowels /o/ and /i/, these opaque suffixes have only a floating [+ATR] autosegment. Since [+ATR] is dominant, it spreads to any following suffixes, but it cannot spread through the /a/ back to the root.

The rightward-only dominance of the nominative case and realis modality suffix {-a$^+$} is illustrated in the next two tables. In the nominal system, the remote past demonstrative/tense enclitic {=nɔɔ} is contrasted on nouns with and without the nominative case suffix:

(17) *Rightward-only dominance of nominative {-a$^+$}*

Nouns with {-a$^+$}		Nouns without {-a$^+$}	
ɛ́ɓ-a=nok^{o}	‘that gun’	ɛ́ɓɔ-ɔ=nɔk^{ɔ}	‘It was a gun.’
ɦiyɔ-a=nok^{o}	‘that cow’	ɦiyɔ-ɔ=nɔk^{ɔ}	‘It was a cow.’
mʊtú-á=nok^{o}	‘that needle’	mʊtú-ɔ́=nɔk^{ɔ}	‘It was a needle.’

In the verbal system, the same tensed enclitic {=nɔɔ} is contrasted on verbs with and without the realis suffix:

(18) *Rightward-only dominance of realis {-a⁺}*

Verbs with {-a⁺}		Verbs without {-a⁺}	
bɛr-a=nokº	'He built.'	bɛr-ʊkɔ́ɔ=nɔkᵊ	'He built with it.'
ƙɔ́ɗ-a=nokº	'He cried.'	ƙɔ́ɗ-ʊkɔ́ɔ=nɔkᵊ	'He cried from it.'
dʊ́b-a=nokº	'He caught.'	dʊ́b-ʊkɔ́ɔ=nɔkᵊ	'He caught with it.'

Moving on to the distributive adjectival suffix {-aák⁺-}, its rightward-only harmony spread caused by /a/ is shown below. The first column of (19) contains [-ATR] verb roots. Then in the second column are verbs stems with {-aák⁺-} followed by the recessive intransitive infinitive {-ɔn} and the completive aspect {-ʊƙɔt}. It is clear from these examples that the distributive suffix spreads harmony to the suffixes but not back to the root:

(19) *Rightward-only dominance of distributive {-aák⁺-}*

cɪ-	cɪ-aak-ón-uƙot	'to get full (of multiple people)'
ɗɔƙ-	ɗɔƙ-aak-ón-uƙot	'to become wet (of multiple entities)'
ɪlíɓ-	ɪlɪɓ-aak-ón-uƙot	'to become green (of multiple entities)'

Next, the rightward-only dominance of the patientive nominalizer {-amá⁺-} is illustrated in the following table. This [+ATR] suffix spreads harmony to the the non-final copulative case suffix {-(k)ɔ} but not back to the stem:

(20) *Rightward-only dominance of patientive {-amá⁺-}*

bɪt-	bɪt-ɪt-amó-o	'Is it (a) reproducible?'
ɗɪƙw-	ɗɪƙw-amó-o	'Is it a pillow?'
íbɔts-	íbɔts-amó-o	'Is it (a) curdlable (i.e. milk cream)?'

The stative adjectival suffix {-án⁺-} also only harmonizes recessive vowels to its right. This is shown below with verb stems in the intransitive infinitive

(marked by {-ɔn}). Observe that the verb stem before the stative may be [-ATR], but the infinitive suffix also surfaces as [+ATR]:

(21) *Rightward-only dominance the stative adjectival {-án⁺-}*

ɓɛl-	'crack'	ɓɛléɓél-án-ón	'to crack, chap'
cɛm-	'fight'	cɛmɛk-án-ón	'to be combative'
zík-	'tie'	zíkízık-án-on	'to be all tied up'

As another opaque dominant morpheme, the hortative (or 1PL.INC optative) suffix {-anó́} also only harmonizes rightward. Because it contains the [+ATR] vowel /o/, no floating [+ATR] autosegment is posited. The morpheme's [+ATR] specification can be associated with /o/. The following table shows the invariability of /o/ on the one hand, and the failure of preceding [-ATR] stems to harmonize on the other hand:

(22) *Rightward-only dominance the hortative/optative {-anó́}*

cɛ-	'kill'	cɛ-íḱɔ́t-anó́	'Let's kill (it).'
dúb-	'catch'	dúb-anó́	'Let's catch (it).'
kɔk-	'close'	kɔ́k-ét-anó́	'Let's close up.'

Like {-anó́}, the 3PL subject-agreement pronominal {-áti-} also has a [+ATR] vowel in its underlying form. This vowel, /i/, provides a segment to which the morpheme's [+ATR] autosegment can link to. In those verb paradigms that preserve /i/ on this suffix, it spreads harmony rightward in accordance with the language's [+ATR] dominance.

In (23) below, the first column contains a [-ATR] verb. This is followed in column two by verb stems with {-áti-} and the recessive simultaneous aspect marker {-kɛ} in its non-final allomorph /-ɛ/. The first example also has the completive aspect suffix {-ʊḱɔt} showing some vowel assimilation. What is evident from (23) is that any vowels to the right of {-áti-} surface as [+ATR], while any to the left may be [-ATR]. (And if they are [+ATR], it is because the root has spread its dominant harmony rightward):

(23) *Rightward-only dominance of 3PL {-áti-}*

ɪlɪlí-	ɪlɪlí-íƙɔt-áti-e	‘they getting angry’
kɔrɔ́ɗɔ́m-	kɔrɔ́ɗɔ́m-áti-e	‘they being emaciated’
ɲɛdéd-	ɲɛdéd-ati-e	‘they protruding’

The accusative case suffix {-ka^{+}} is yet another opaque dominant [+ATR] morpheme. Because no other suffix can follow {-ka^{+}}, its harmonizing behaviour can only be seen with enclitics. In the next table, the singular anaphoric demonstrative {=ˈdéɛ́} is appended to the non-final accusative case allomorph /-a/ on three nouns. Note that while the anaphoric enclitic is harmonized, the nominal stem preceding {-ka^{+}} remains [-ATR]:

(23) *Rightward-only dominance of the accusative {-ka^{+}}*

ɦyɔɔ-	ɦyɔ-a=ˈdéé	‘that cow’
ƙɛƙérá-	ƙɛƙérá-á=ˈdéé	‘that grasshopper’
pɔpɔsa-	pɔpɔsa-a=ˈdéé	‘that lizard’

The final opaque suffix to be discussed is the present perfect aspect marker {-ˊka^{+}}. In the following table, this suffix is placed on [-ATR] verbs and followed by the dummy pronoun enclitic {=ˊdɛ} in its non-final allomorph /=ˊɛ/. Observe how the present perfect suffix {-ˊka^{+}} harmonizes the dummy pronoun enclitic but cannot harmonize back to the verb due to /a/:

(24) *Rightward-only dominance of the present perfect {-ˊka^{+}}*

cɛ-	cɛ-á-ké=e	‘Has he killed (with it)?’
ɪtsúŋ-	ɪtsúŋ-á-ké=e	‘Has he burnt (with it)?’
ƙɔɗ-	ƙɔɗ-á-ké=e	‘Has he cried (for it)?’

The human singulative suffix {-Vma-} varies in its morphological [ATR] specification. With a [-ATR] value, it takes the form {-ɔma-} as in *kɔ́n-ɔ́ma-* ‘someone (strange)’. And with a [+ATR] value, it takes the form {-ama^{+}-} as in *ŋ́mɔ́kɔká-áma-* ‘young man’. In the latter form, it too functions as an oqaque dominant suffix, for example in *ŋ́mɔ́kɔká-ámo-o* ‘Is it a young man?’.

3.1.4 Recessive suffixes

However, most Ik affixes are recessively [-ATR]. For a full list of these morphemes, the reader is referred to the Affix list at the book's beginning. A few examples suffice here: 1) First, in (25), a comparative non-final form case paradigm with a plural [-ATR] noun and a plural [+ATR] noun—both marked by the plurative III suffix {-ɪka-}. 2) Then in (26), a table comparing [-ATR] and [+ATR] verbs with three suffixes after the root: the causative {-ɪt-}, the inchoative aspect {-ét}, and the transitive infinitive {-és}:

(25) *Comparative case paradigm illustrating recessive nominal suffixes*

		[-ATR]	[+ATR]
Case	Case suffix	'arms'	'mountains'
OBL	-∅	kwɛt-ɪka	kwar-ika
NOM	-a	kwɛt-ɪk-a	kwar-ik-a
INS	-ɔ	kwɛt-ɪk-ɔ	kwar-ik-o
ABL	-ɔ	kwɛt-ɪkɔ-ɔ	kwar-iko-o
GEN	-ɛ	kwɛt-ɪkɛ-ɛ	kwar-ike-e
ACC	-(k)a	kwɛt-ɪka-a	kwar-ika-a
DAT	-(k)ɛ	kwɛt-ɪkɛ-ɛ	kwar-ike-e
COP	-(k)ɔ	kwɛt-ɪkɔ-ɔ	kwar-iko-o

(26) *Verbs illustrating recessive verbal suffixes*

[-ATR]		[+ATR]	
bɪt-ɪt-ɛt-és	'to multiply'	aĕ-it-et-és	'to light'
ɻéɓ-ít-ɛt-és	'to make cold'	déƙw-ít-et-és	'to rebuke'
ɻán-ít-ɛt-és	'to explain'	ɗóɗ-ít-et-és	'to show'
ɪlélé-ít-ɛt-és	'to disgust'	en-it-et-és	'to clarify'
ɪtsán-ít-ɛt-és	'to cause trouble'	fek-it-et-és	'to amuse'
ƙídz-ɪt-ɛt-és	'to compare'	fiyek-it-et-és	'to invigorate'
ŋƙ-ɪt-ɛt-és	'to feed'	irím-ít-et-és-	'to spin around'
zɛƙw-ɪt-ɛt-és	'to settle'	ƙám-ít-et-és	'to equate'

As long as no /a/ interferes, [+ATR] vowel harmony continues from the root rightward to the end of the phonological word. The two sentences below further illustrate this with longer verb stems:

(27) [-ATR] ɗɔƙ- 'wet' → ɗɔƙ-ɪt-és-úƙɔt-ím-^{Ø}
wet-CAUS-INT-COMP-1PL.EXC-REAL
We will make (it) wet.

[+ATR] ɓoɓ- 'deep' → ɓoɓ-it-és-úƙot-ím-^{Ø}
deep-CAUS-INT-COMP-1PL.EXC-REAL
We will make (it) deep.

3.1.5 Opaque recessive suffixes

Lastly, Ik has two [-ATR] suffixes opaque by virtue of containing /a/. These are the impersonal passive {-aní-} and the abstractive nominalizer {-ásí-}:

(28) *Ik opaque recessive [-ATR] suffixes*

{-aní-}	IMP	Impersonal passive	(§7.8.3)
{-ásí-}	ABST	Abstractive nominalizer	(§7.2.3)

Both of these suffixes block harmony spread from either direction. This is illustrated in the next two tables. In (29), {-aní-} is suffixed to [+ATR] verbs and followed by the simultaneous aspect marker {-(k)ɛ}. The fact that the simultaneous aspect marker remains [-ATR] throughout indicates that [+ATR] spread from the verb root has been blocked by the /a/ in {-aní-}:

(29) *[+ATR] harmony-blocking by {-aní-}*

gon-	gon-aní-ɛ́	'while looking'
i-	i-aní-ɛ́	'while being (somewhere)'
ƙa^{+}-	ƙa-aní-ɛ́	'while going'
mor-	mor-aní-ɛ́	'while fleeing'
sár^{+}-	sár-ání-ɛ́	'while still...'

Then in (30), five [+ATR] verb roots are listed in the first column. In the second column are given their simple intransitive infinitives to confirm their [+ATR] specification. After that, the abstractive nominalizer {-ásí-} is suffixed to the bare verb roots and then followed by the non-final allomorph of the instrumental case suffix {-ɔ}. The fact that the case suffix consistently surfaces as [-ATR] shows the [+ATR] harmony from the root is blocked:

(30) *[+ATR] harmony-blocking by {-ásí-}*

Root	Infinitive	Abstract noun	
da^{+}-	do-on	da-as-ɔ́	'with niceness'
gaan^{+}-	gaan-ón	gáán-as-ɔ	'with badness'
háb^{+}-	háb-on	háb-as-ɔ	'with heat'
kom-	kom-on	kom-ás-ɔ́	'with multiplicity'
itíón-	itíón-on	itíón-as-ɔ	'with difficulty'

3.1.6 Recessive enclitics

Up to this point, the lexical vowel harmony being discussed applied to the formation of grammatical words—roots with suffixes. But in the phonological word, post-lexical vowel harmony may also occur. The phonological word in Ik can coincide exactly with the grammatical word, but it may also include one of a set of enclitics. Among this set are found demonstratives, relative pronouns, tense markers, and adverbs. Recessive enclitics, the topic of this section, are fully harmonized by [+ATR] morphemes. Dominant [+ATR] enclitics (§3.1.7), harmonize leftward to the stem but only to the extent of one open phonetic syllable (CV or CVV).

The four enclitics that are harmonized by [+ATR] stems include the removed past tense marker =*bɛɛ*, the form =*nɔɔ* which is the same for the singular remote past relative pronoun and remote past tense marker, the singular anaphoric demonstrative =ˈ*dɛ́ɛ́*, and the sentential adverb =*kɔtɔ*:

(31) *Ik recessive enclitics*

=bɛɛ	PST2	Removed past tense marker	§7.11.1
=nɔ(k)ɔ	DEM.SG.PST3	Remote past demonstr. (sg.)	§8.2.2
=nɔ(k)ɔ	REL.SG.PST3	Remote past rel. pro. (sg.)	§5.6
=nɔ(k)ɔ	PST3	Remote past tense marker	§7.11.1
=ˈdéé	ANPH.SG	Anaphoric demonstr. (sg.)	§8.2.3
=kɔtɔ	ADV	Sentential adverb ('then, so')	§8.3

The recessive enclitics in (31) are harmonized when attached to noun or verb stems whose final morpheme is [+ATR]. To illustrate this, in (32) the singular anaphoric demonstrative *=ˈdéé* and the singular remote past demonstrative *=nɔkɔ* are shown following first a [-ATR] nominal stem and then a stem ending with the dominantly [+ATR] Nominative case {-a^{+}-}:

(32) *Ik recessive nominal enclitics*

[-ATR] stem		[+ATR] stem	
ɲɛkɔ-ɔ=ˈdéé	'from that hunger'	ɲɛk-a=ˈdéé	'that hunger'
tsʼɪkɔ́-ɔ́=ˈdéé	'from that bee'	tsʼɪk-a=ˈdéé	'that bee'
ɲɛkɔ-ɔ=nɔkᵊ	'from that hunger'	ɲɛk-a=nokᵒ	'that hunger'
tsʼɪkɔ́-ɔ́-nɔkᵊ	'from that bee'	tsʼɪk-a=nokᵒ	'that bee'

And for the case of verbs, the table in (33) shows the non-final removed past tense marker *=bɛɛ* and the sentential adverb *=kɔtɔ* first on [-ATR] verb stems and then on stems ending in the [+ATR] realis suffix {-a^{+}-}

(33) *Ik recessive verbal enclitics*

[-ATR] stem	
ʃɪk-ʊ-kɔ́=ɔ=bɛɛ...	'And he hung (it) from there (yesterday).'
ʃɪk-ɔ-ɔ=kɔ́tᵊ	'And then he hung (it).'
[+ATR] stem	
ʃɪká=bee...	'He hung (it yesterday).'
ʃɪk-a=kótᵒ	'So he hangs (it).'

3.1.7 Post-lexical /i,u/-dominance

The recessive enclitics described in the previous section are harmonizable at the post-lexical level. But another type of post-lexical vowel harmony—/i,u-dominance—is also operative in Ik. It involves [+ATR] harmony spreading leftward from to *one open phonetic syllable* (CV or CVV) from the high vowels /i/ or /u/ and *only across a compound or clitic boundary*.

The uni-directionality of Ik /i,u/-dominance is a natural syntactic constraint imposed by the position of the harmonizing morpheme: as the final one in the phonological word. The harmony spread does not go beyond one phonetic syllable, that is, not past the first encountered consonant. A similar condition is reported for the Kuliak language So, where "the scope of vowel harmony does not extend beyond a preceding or following syllable" (Carlin 1993:23). Lastly, the special status of /i/ and /u/ in this kind of post-lexical harmony recalls the nearby Surmic language Didinga whose vowels /i/ and /u/ are also more dominant than others (De Jong (2004:148).

Post-lexical /i,u/-dominance takes place in two syntactic environments: 1) between the two terms of a (pro)nominal compound and 2) between certain plural encitics and the preceding nominal stems. Each are described below.

As described in §4.3.1, Ik compounds consist of two or more (pro)nominals linked in an associative construction. The first element in the compound (N_1) is in the oblique case and therefore always ends in a vowel. Post-lexical harmony takes place in a compound if the following conditions are met: 1) the compound's N_1 is [-ATR] and 2) ends in a non-low vowel, 3) the compound's N_2 is [+ATR] and 4) begins with /i/. If these conditions are met, the final phonetic syllable of the N_1 is harmonized to [+ATR]. In the examples below, the brackets [ ] are meant to signify post-lexical vowel harmony, not necessarily any other allophonic or allotonic specifications:

(34) */i,u/-dominance in compounds*

N_1	N_2	Compound	
ɛdéɛ-	imá-	[ɛdé-im]	'brother's child'
ɦiyɔɔ-	ído-	[ɦiyo-idw[a]]	'cow-milk'
kača-	imá-	[kaě-im]	'small car'
ƙɔfɔ́ɔ-	imá-	[ƙɔfó-im]	'small gourd'
ɲɔ́kɔkɔrɔ́-	imá-	[ɲɔ́kɔkɔró-ím]	'chick'

The second environment for post-lexical /i,u/-dominance involves enclitics. A number of Ik plural enclitics contain the high vowels /i/ or /u/. They are listed below in (35). All but the plural anaphoric demonstrative =ˡ*díí* have two different grammatical functions (due to grammaticalization):

(35) */i,u/-dominant enclitics*

=ni	DEM.PL	Plural demonstrative	§8.2.1
	REL.PL	Plural relative pronoun	§5.6
=ní(k)i	DEM.PL:PST1	Recent past pl. dem.	§8.2.2
	REL.PL:PST1	Recent past pl. rel. pro.	§5.6
=sini	DEM.PL:PST2	Removed past pl. dem.	§8.2.2
	REL.PL:PST2	Removed past pl. rel. pro.	§5.6
=nu(k)u	DEM.PL:PST3	Remote past pl. dem.	§8.2.2
	REL.PL:PST3	Remote past pl. rel. pro.	§5.6
=ˡdíí	ANPH.PL	Plural anaphoric dem.	§8.2.3

The enclitics in (35) cause /i,u/-dominance if the following conditions are met: 1) The preceding noun stem is [-ATR] and 2) ends in a non-low vowel. If these are met, the enclitic harmonizes the final phonetic syllable of the [-ATR] noun. The conditions are not so often met, because the two case suffixes often required on nouns are the nominative {-a$^+$} and the accusative {-ka$^+$}, both of which obstruct the spread of [+ATR]. The examples in (36) consist of nouns—four of which have plurative suffixes—with case suffixes and one example each of the [+ATR] clitics from (35):

(36) */i,u/-dominant enclitics in context*

ɟírɔ́k-ɪkɛ-ɛ	[ɟírɔ́k-ɪke-e = ni]	'of the toy spears which...'
kaín-ík-ɔ	[kaín-ík-o = nuk^{u}]	'in those years'
mɛsɛ-ɛ	[mɛse-e = níi]	'in that beer which...'
ŋƙáƙé-ɛ	[ŋƙáƙé-e = ˈdíí]	'in that food'
sɛ́w-ítín-ɔ́	[sɛ́w-ítín-ó = sin]	'with those sticks'

3.2 Tone

Ik must be viewed as a 'tone language' because in Ik "the pitch of a word can change the meaning of the word. Not just its nuances, but its core meaning" (Yip 2002:1). The following lexical minimal or near-minimal pairs show how pitch (and therefore tone) creates meaningful contrasts:

(37) *Ik tonal (near-)minimal pairs*

Nouns		Verbs	
céŋá-	'joke'	ɓúƙ-	'enter'
cēŋá-	'joke'	ɓùƙ-	'lift'
ɛ́sá-	'drunkenness'	dôb-	'catch in hand'
ēsá-	'termites'	dùb-	'mix with water'
gwāá-	'bird'	hɔ̀n-	'drive'
gwàà-	'crop, stomach'	hɔ́n-	'chase animals'
rɔ̄ɓá-	'animal collar'	ītíŋ-	'force'
ròɓà-	'people'	ìtìŋ-	'cook'
séí-	'quartz'	rúɓ-	'groan'
sèà-	'blood'	rùɓ-	'fall'

As a lexical tone language, Ik falls in the company of all the neighboring Surmic languages like Didinga, Eastern Nilotic languages like Teso-Turkana, Western Nilotic languages like Acholi and Lango, and Southern Nilotic languages like Pokot and Kupsabiny. But Ik differs from nearby 'tonal accent' languages like East Cushitic Dhaasanac that allow only one high tone per word (Tosco 2001:34). And from within the Kuliak group, Carlin "found no evidence of So being a tone language" but rather that "stress-accent is important in So, not on the paradigmatic level, but rather on the syntagmatic level" (1993:16). Tone data on Nyang'ía is not yet available.

Although Ik has a well developed lexical tonology, it does not have 'grammatical tone' in the sense of any morphemes consisting only of tone. This sets it apart from languages like Dhaasanac (Tosco 2001:93) and Turkana (Dimmendaal 1983:259) that mark case, for example, partially or exclusively with H tone/accent. Instead of grammatical tone *per se*, Ik shows 'construction-specific tonology' (Yip 2002:107) whereby various morphemes like pluratives, constructions like noun compounds, and verb paradigms combine segmental morphology with specific tone patterns.

3.2.1 Tones and allotones

Tucker identified three 'significant' level tones, two falling tones, and one rising tone for Ik (1971:342). Years later, Heine reduced the number of contrastive tones to two, noting that Tucker's three levels can be derived from an underlying high and low (1999:18). In fact, both accounts are basically correct, but in different ways. In isolation, Ik words do exhibit two level, two falling, and one rising pitch. Since these pitches are found on words in isolation, they are 'significant' or 'phonemic' in the classic structuralist sense. While in a generativist sense, all this variation can be plausibly boiled down to two underlying tones (Keith Snider, p.c.). To see this, let us first look at pitch contrasts on some nouns and verbs in isolation:

(38) *Ik pitch contrasts on isolated nouns and verbs*

Pitch	Nouns		Verbs	
Level				
H	ɓór	‘corral’	fút^{a}	‘S/he blows.’
	ŋók^{a}	‘dog’	séɓ^{a}	‘S/he sweeps.’
M	cēk^{a}	‘woman’	līƙ^{e}	‘Nod!’
	ɟūm	‘soil’	tēr	‘Divide!’
Falling				
HL	môg^{a}	‘uncut forest’	ƙâd^{a}	‘S/he shoots.’
	sêd^{a}	‘garden’	ŋ̂z	‘S/he glares.’
LL	kɛ̀ɗ^{a}	‘reed’	kɔ̀k^{a}	‘S/he closes.’
	tùk^{a}	‘feather’	ŋ̀ùs	‘S/he grabs.’
Rising				
MH	dǒm	‘pot’	bɛ̌ɗ^{a}	‘S/he wants.’
	gŭr	‘heart’	dǒn	‘S/he distributes.’

At one’s first glance over the data in (38), it would appear that Ik has quite a few distinctive tones. But all the pitch contrasts shown there can be analyzed as deriving from two underlying tones: High (H) and Low (L). In other words, the various levels, falls, and rises are predictable based on modifications made to H and L in particular phonological environments. These variants, or ‘allotones’, are described in detail in (39) below:

(39) *Allotones of H and L*

Tone	#	Allotone		IPA
H	(1)	High level pitch, in general	ˉ	[v́]
	(2)	High-falling-to-low pitch before a depressor consonant (see §3.2.3), when no H follows again in the same word	\	[v̂]
	(3)	High-falling-to-mid pitch before a depressor consonant when an H follows in the same word	˖	[v̄]
	(4)	Mid-rising-to-high pitch after a depressor consonant	ˊ	[v́]
L	(1)	Low level pitch after H and with no following H in the same tonal domain, and not at the right edge of the domain	_	[v̀]
	(2)	Low-falling pitch if last TBU of tonal domain, with no floating H after it	˖	[v̀]
	(3)	Mid pitch before any H in the same tonal domain, whether word or phrase; the H may be floating at domain edge	–	[v̄]
	(4)	High-falling-to-low pitch directly after a H with no intervening consonant	\	[v̂]

Using (39) as a key, the pitch variations back in (38) can now be explained in the following manner: In neutral environments, a H tone on a noun or verb will surface as a high level pitch. But if a H directly precedes a depressor consonant (/b, d, dz, g, h, j, z, ʒ/), that consonant will depress the pitch giving the H tone a high-falling to low or mid, depending on whether another H follows in the same word. And if the H directly follows a depressor consonant, the consonant will delay the pitch rise to high, thereby creating a mid-to-high rising pitch on the TBU bearing the H tone.

As for L tone, on nouns and verb in isolation (e.g. the monosyllabic forms in 38), the L surfaces as low-falling pitch before a pause. Otherwise, if any H tone—whether linked or floating—follows the L in the same tonal domain, the L surfaces with a mid level pitch (L is realized in similar fashion in Somali; Hyman 2007:485). The extent of the relevant tonal domain is syntactically and pragmatically defined: It can consist of a single morpheme/word, a phrase, or a whole clause. The Ik prosodic template 'scans' ahead for any H that signals the speaker to raise all intervening L tones to mid pitch. In this way, mid pitch acts as the baseline of Ik prosody—pitch deviates up and down off the baseline mid.

What is not clear from (38) is that those nouns with a mid pitch have a lexical LH tonal pattern. In other words, the nouns surface with mid pitch because there is a floating H after them. And for the verbs with mid pitch, the imperative singular suffix {-ɛ́} has an associated floating H that raises the preceding L to mid pitch at the surface level (see §7.6.6 on imperatives).

In summary, as Heine claimed, all pitch variations in Ik can be derived from only two underlying tones: H and L. This provides a simple and elegant analysis of the tonal phenomena. The main drawback to this analysis, however, is its abstractness. There is considerable conceptual distance between the two underlying tones and their allotonic realizations. Nevertheless, in the example sentences and texts outside the present chapter on tone, only H tone will be marked with an acute accent (ý), while L tone will be left unmarked (except to indicate the L boundary tone of the interrogative intonational tune; see §3.3.5).

3.2.2 Lexical tone

Unlike pitch or tonal accent languages, Ik exhibits a wide range of lexical tone patterns or 'melodies'. These melodies may or may not include a H tone, but there are no known restrictions on the number of H tones that may occur in a single word (tonal processes nothwithstanding; see §3.2.4 below).

Since much of the Ik lexicon can be traced to Teso-Turkana, no doubt the tonologies of those languages have left an indelible mark on Ik. What follows here below is a basic inventory of tonal melodies on noun roots. This is given to show the full range of tonal possibilties. The tonal melodies of verbs, slightly more restricted, are presented in Chapter 7 on Verbs.

The lexical tone melodies given here are at the underlying level discussed in the previous section: H(igh) and L(ow). H is marked with an acute accent (ˊ), and L is left unmarked. For details of surface realization (and pronunciation), please refer to the guide to allotones in (39) above.

On bisyllabic noun roots, all four possible melodic combinations are attested—H(H), HL, L(L), LH. Note the effect of depressor consonants in creating HL and the fact that with LH, the L will surface as mid pitch:

(40) *Tone melodes on disyllabic noun roots*

H(H)		HL	
bɔ́lɛ́-	‘shin’	dɔ́ba-	‘mud’
ɓóré-	‘corral’	fádo-	‘scale’
dómá-	‘pot’	nébu-	‘body’
fɔ́ɗɛ́-	‘loincloth’	rágo-	‘ox’
gúró-	‘heart’	rɛ́bɛ-	‘millet’
ɟáká-	‘elders’	séda-	‘garden’
ƙwárá-	‘scar’	síbo-	‘yeast’
ŋúnó-	‘rope’	tóda-	‘speech’
sátá-	‘rock pool’	ts’úde-	‘smoke’
tsítsá-	‘honey-guide’	wídzo-	‘evening’
L(L)		**LH**	
baro-	‘herd’	bɛfá-	‘puff adder’
ɓiɓa-	‘egg’	ɓısá-	‘spear’
dzoni-	‘well’	cekí-	‘woman’
ɗɛka-	‘butter-churn’	deké-	‘hind-apron’

gwaɟɪ-	‘belly’	ɗamú-	‘brain’
kafʊ-	‘thorn’	gwaní-	‘Lesser galago’
lɛɓa-	‘liquid honey’	ɟʊmú-	‘soil’
ɲera-	‘girls’	kurí-	‘shade’
riko-	‘long pole’	rʊkú-	‘hump (of animal)’
tuka-	‘feather’	zɪnɔ́-	‘zebra’

On trisyllabic noun roots, all eight possible melodies are attested:

(41) *Tone melodies on trisyllabic noun roots*

HHH	dúlélí-	‘Dulel River’
HHL	kásíta-	‘Hook-thorn acacia’
HLH	mókoló-	‘*Ozoroa insignis* tree’
HLL	múmuta-	‘*Selaginella phillipsiana* moss’
LLL	poposa-	‘Agama lizard’
LLH	tsɪrɪmú-	‘metal’
LHL	tiléŋi-	‘eye pupil’
LHH	ɟolílé-	‘Black kite (bird sp.)’

On nouns with four syllables, all sixteen possible tone melodies are attested. Even though these nouns are monomorphemic in today’s Ik, they most likely consisted of more than one morpheme in older Ik, or at least in the languages from which they were borrowed. For instance, many nouns with four or more syllables have the Teso-Turkana prefix {ɲV-}—still a gender marker in Toposa and Northern Turkana—which has no function in Ik.

(42) *Tone melodies on quadrisyllabic (4) noun roots*

HHHH	lódíkóró-	‘scorpion’
HHHL	ɲícwéŋée-	‘Sugar-bush tree’
HHLH	ɲéɓéɓutí-	‘waterbuck’
HHLL	pɛ́lɛ́ɗɛkɛ-	‘tobacco variety’
HLHH	ts’úbʊlátí-	‘lip-plug’
HLHL	fírits’ári-	‘bird sp.’

HLLH	ŋíɓalɛlé-	‘mushroom sp.’
HLLL	lósuaɲa-	‘stone anvil’
LHHH	gomóíá-	‘*Maerua pseudopetalosa* tree’
LHHL	kılɔ́ríta-	‘Egyptian thorn tree’
LHLH	lopérení-	‘ghost’
LHLL	rutúduma-	‘pigeon’
LLHH	basawúré-	‘eland’
LLHL	gaɗukúɲu-	‘Gad’ukuny clan’
LLLH	mozokoɗí-	‘*Ormocarpum trichocarpum* tree’
LLLL	tɔrɔmıɲa-	‘porcupine’

On nouns with five syllables, only twenty-five of the possible thirty-two melodies are attested. The missing melodies may be from a statistical gap or a limitation on tonal melodies in the source languages. In (43), note the high concentration of words borrowed from Teso-Turkana as evidenced by the gender prefix {ɲV-} and the locative gender prefixes {na-} and {lo-}:

(43) *Tone melodies on pentasyllabic (5) noun roots*

HHHHH	lókílóróŋó-	‘queen bee’
HHHHL	ɲɛ́kɔ́kɔ́tɛ́ɛ-	‘aggregate stone’
HHHLH	ɲɔ́sɔ́ɔ́katá-	‘animal hole-trap’
HHHLL	ɲókólíketi-	‘tooth-paste (Colgate)’
HHLHH	lótórobétí-	‘plant species’
HHLHL	ɲɛ́ɛ́kıɛ́kı-	‘rattle (musical instrument)’
HHLLH	ɲɛ́kúraraá-	‘skin disease’
HLHHL	ɲákalááta-	‘metal basin’
HLHLH	ɲásaŋáɲoó-	‘ground-bee species’
HLHLL	ɲóvakáɗoo-	‘avocado’
HLLHH	kílootóró-	‘bird species’
HLLHL	kíryooróo-	‘White-crested helmet shrike’
HLLLL	tíbolokoɲi-	‘finger/toe-nail’
LHHHL	lokítóɲíi-	‘hard black stone’
LHHLH	napéélemú-	‘bird species’

LHHLL	loɓúrútutu-	‘bird species’
LHLHL	natsíɓılíı-	‘female bushbuck’
LHLLL	kaɲíkaalı-	‘Kanyikaal River’
LLHHL	lolatíɓóni-	‘stone granary cover’
LLHLH	logeréɲoó-	‘weevil’
LLHLL	loiɓóroku-	‘grass species’
LLLHH	tikorotótó-	‘aloe vera’
LLLHL	tsorokoníi-	‘insect species’
LLLLH	oŋoroɓoɓó-	‘cartilage’
LLLLL	lotabuseni-	‘whirlwind’

Lastly, in nouns with six syllables, only twenty-nine of sixty-four possible tone melodies are attested. Nouns of this length are comparatively rare, and some of the melodies only have one representative that has been found.

(44) *Tone melodies on sextisyllabic (6) noun roots*

HHHHLL	ɲásáɓúpáriʃi-	‘sub-parish’
HHHLLH	ɲákááɗoŋotí-	‘cowbell’
HHHLLL	ɲéɗísíturiki-	‘district’
HHLHLH	ɲákátıríɓaá-	‘wild fruit tree species’
HHLLHL	bílíkɛrɛtɛ́ɛ-	‘spurfowl’
HHLLLH	ɲákálırıkıtí-	‘metal-tipped stick’
HLHHLL	ɲépiskóópii-	‘bishop’
HLHLLL	ɲéɗifíʒioni-	‘military division’
HLLHHH	ɲákaɓɔɓwáátá-	‘finger-ring’
HLLHHL	ɲétɔɔkíɗɛ́ɛ-	‘sunflower’
HLLHLH	ɲálukutúu̱juú-	‘caracal’
HLLHLL	ɲémusaláɓaa-	‘cross’
HLLLHH	ɲókoloƙolétí-	‘wild fruit tree species’
HLLLHL	ɲɔ́kɔɗɔɔŋɔ́rı-	‘bird species’
HLLLLL	ɲóɗomoŋolee-	‘maize variety’
LHHHLH	loríónómorí-	‘tobacco variety’
LHHHLL	ɲeúríánete-	‘animal resting place’

LHHLHL	naɓálámorúu-	‘mouse species’
LHHLLH	naúyóŋoleé-	‘animal species’
LLHHHL	kaatíríámʊ-	‘Kaatiriam Mountain’
LLHHLH	natɔkɔ́ɔ́ŋɔrí-	‘Natokoong’or River’
LLHHLL	ɲɛtʊréélaa-	‘trailer’
LLHLLL	penitésiyaa-	‘penance (Catholic doctrine)’
LLLHHH	boʃoƙoréétí-	‘*Cussonia arborea* tree’
LLLHHL	dodĩkokóróo-	‘yellow-necked lizard species’
LLLHLH	lɔmaaníkɔ́-	‘Lomaaniko River’
LLLLHL	ɲesoƙolokée-	‘shorts’
LLLLLH	ɲewuruŋorokó-	‘zorilla’
LLLLLL	nalemudzoɗaa-	‘bird species’

3.2.3 Depressor consonants

Besides the underlying H-L tone contrast, another key facet of Ik tone is ‘depressor’ consonants. These consonants are those that behave as if they had L tone. In Africa, they usually comprise voiced obstruents (Yip 2002:157). This is true of Ik, where voiced obstruents /b, d, dz, g, j, z, ʒ/ and the glottal fricative /h/ make up a depressor consonant class. These consonants (hereafter ‘depressors’) depress pitch, causing ripples and cascades between otherwise relatively level pitch peaks on tone-bearing segments. Their effects are widespread, in some cases the pitch perturbations being so great that the tone system has phonologized them.

Phonetic effects of Ik depressors include 1) super-allotonic rises and falls on L tones and 2) allotonic rises and falls on H tones. The great pitch difference between that of a H tone and that of depressor has over time also led to *phonological* effects: 1) special lexical tone melodies, 2) downstep, and 3) high-tone repellence. These effects are all described in this section.

When a depressor is followed by a L tone, it simply creates a mini-rise as the pitch strives toward the syllable peak. And if a L tone is followed by a

depressor, the pitch takes a mini-dive after the syllabic peak. Depressor effects like these are minute, almost imperceptible except with speech analysis software. This is most likely because depressors themselves are associated with low pitch. However, a native speaker trained to whistle tone will produce very slight contour pitches even in these L tone enviroments. Nonetheless, the effects are so slight they are not even counted as allotonic.

In the following examples, contours are relative to the underlying tone. That is to say, [v̂] is meant to represent a 'lower-low-lower' pitch contour, and [v̌̂] is meant to represent a 'low-mid-low' pitch contour. The notation here is necessarily a bit exaggerated in order to represent the ripples in pitch:

(45) *Depressor effects on L tones*

LL	baba	[bâbâ]	'armpit'
	bubu	[bûbû]	'abdomen'
LL(H)	ŋabit[a]	[ŋa᷅bi᷅tḁ]	'beads'
	gubes	[gǔ̂bè̄s]	'thigh'

But, when a depressor is adjacent to a H-tone bearing segment, the effects are much more dramatic. This is because more of the pitch range is utilized going from a depressor to a high pitch and vice versa. As shown in (39), a H tone following a depressor is realized as a mid-to-high rising contour. This contour is considered allotonic due to its greater perceptibility:

(46) *Depressor effects on following H tones*

H	bóʃ	[bo᷄ʃ]	'nightjar'
	dóm	[do᷄m̥]	'pot'
	gúr	[gu᷄r̥]	'heart'
	zít[a]	[zi᷄tḁ]	'basket'

The most dramatic effects, though, happen when a depressor comes between a H and a L tone. Because the pitch produced with a depressor is low or

extra low, a great fall in pitch occurs going from the peak of a H-tone syllable through the depressor and on to the following L tone vowel, as in:

(47) *Depressor effects on preceding H tones*

H	ɗɛ́g[a]	[ɗɛ̂g̰a̰]	'Tamarind seeds'
	kázw[a]	[kâʒw̰a̰]	'torch, tassle'
	néb[a]	[nêb̰a̰]	'body'
	ts'úd[a]	[ts'ûɗ̰a̰]	'smoke'

This kind of effect—a falling contour from high to low or extra-low through a depressor—is one of those that have been phonologized in the system. Consider the fact that in the Ik lexicon, there is not a single instance of two syllables with H tone separated by a depressor. This means that at an underlying level, a H followed by a depressor must then be followed by a L tone. For example, the nouns in (48) all have a HL underlying tone melody:

(48) *Nouns with a HL melody*

HL	ɗéga-	**ɗɛ́gá-	'Tamarind seeds'
	kázo-	**kázó-	'torch, tassle'
	nébu-	**nébú-	'body'
	ts'úde-	**ts'údé-	'smoke'

Except for the marginal children's words like *ɓáa-* 'food' and *kóo-* 'water', only bisyllabic noun roots with depressors show a HL melody. This suggests that the HL melody itself was created by depressors. This may not be tonogenesis *per se*, but it is the genesis of certain tone combinations. The HL melody is also found only with depressors on verbs roots of particular syllabic structures, for example VCVC-. Compare the following roots:

(49) *Tone melodies on VCVC- noun roots*

HL	íban-	'go in the evening'
	íbot-	'jump'
	íɡom-	'bark (v)'

	ízidˀ-	‘speak little’
LH	iɓúr-	‘replant’
	iɟók-	‘lend’
	ikúts-	‘ostracize’
	isír-	‘decorate’
LL	idˀok-	‘multiply’
	ilaŋ-	‘evade’
	imets-	‘take over’
	itiŋ-	‘cook’

Although the verbs in (49) are only a sample, they illustrate that the HL melody on VCVC- verbal roots is found only with depressor consonants. Other lexical melodies found only with depressors include the following:

(50) *Depressor-only lexical tone melodies*

HLL (verbs)	ígulaɟ-	‘to bubble up’
	tíbɪdˀɪl-	‘to summersault’
HLLLL (nouns)	tíbolokoɲi-	‘finger/toe-nail’
	tígaramatsɪ-	‘elder child’

To summarize, the pitch depression caused by depressor consonants between a H tone and a L tone has been phonologized in the form of certain *lexical* tone melodies. It has also been phonologized as downstep:

At a *post-lexical* level, depressors may occur between two H tones, but when they do, the second H is downstepped. The conditions for this arise from at least two sources: 1) high-tone anticipation (see §3.2.4) and 2) the presence of the anaphoric demonstratives (see §8.2.3). High-tone anticipation is when a tone-bearing unit (TBU) with L tone gets a H tone before a second TBU with H tone, so long as no consonant intervenes, as in:

(51) *Downstep with high-tone anticipaton*

kédié da	→	kéꜜdíé da	[kêꜜđîê dȁ]	'in a nice way'
ts'ɛ́dɛɔ́	→	ts'ɛ́ꜜdɔ́ɔ́	[ts'ɛ̂ꜜdɔ̃ɔ́]	'from there'

In these two examples, the depressor /d/ falls between two H tones. In addition to causing a fall on the preceding vowel, the depressor lowers the pitch so much that the following H tone is downstepped (ꜜ). Similar effects arise in the presence of the anaphoric demonstratives, as in the following:

(52) *Downstep with anaphoric demonstratives*

awéé = déé	→	awéé = ꜜdéé	[āwéê dꜜĕé]	'at that home'
ɲɔtóó = díí	→	ɲɔtóó = ꜜdíí	[ɲɔ̄tóô dꜜĭí]	'from those men'

Again, in these two examples, a depressor is found between two H tones, this time at the boundary between two words. The effect is that the fall in pitch caused by the depressor is too great for the second H to recover its full height. And so the depressor instigates downstep of any following H tones. This and other depressor effects reveal an important tonological fact about Ik—its strong intolerance for high pitch (H tone) after a depressor consonant. The phonetic motivation is obvious: The articulatory effort needed to climb out of an extra-low pitch trough to the pitch height prescribed by an underlying H tone is too inconvenient.

Also at the post-lexical level, the need to avoid depressor + H-tone sequences shows up in another way—through high-tone repellence. When word-level tone assignment or phrase-level tone sandhi places a H tone after a depressor, the H tone is automatically repelled to the preceding TBU. This is illustrated below in verb stems and simple clauses. In the first example, the 2PL subject-agreement marker {-ít(í)} contrasts with the 2SG marker {-íd(i)} in that the latter contains the depressor /d/. The word-level assignment of H tones gets thwarted in the 2SG form because of /d/:

(53)	H-HL-HH	H-HH-HL
	fút-úƙo-ítí-k^{e}	fút-úƙó-ídi-k^{e}
	blow-AND-2PL-SIML	blow-AND-2SG-SIML
	...as you (pl) blow.	...as you (sg) blow.

In the first place, the verb stem in (53) combines the verb root *fút-* 'blow' with the andative directional suffix {-ʊƙɔ(tí)-}. This combination normally yields the tone melody HHL, as it does with the 2PL form above. Adding then the subject-agreement marker, with its H tones, the full stem melody surfaces as HHLHH. In the 2SG form, however, the HH tone sequence on the subject-agreement suffix is repelled by the presence of /d/, bouncing the HH sequence back on TBU. This results in a stem melody of HHHHL.

High-tone repellence often interacts with high-tone insertion (see §3.2.4). High-tone insertion stipulates that upon a sequence of four L tones across morpheme boundaries, a H tone must be inserted on the third TBU. If no depressor is involved, the H insertion has no obstacle. But if the consonant before the third TBU is a depressor, the inserted H gets repelled back onto the second TBU instead. In this light, compare the following two sentences:

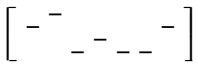
(54)	i-a	kuwa-k^{e}	→	ia kúwak^{e}	[– – ¯ ◟]
	be-REAL	grass-DAT			
	It's in the grass.				

(55)	i-a	bosi-k^{e}	→	iá bosik^{e}	[– \ _ ◟]
	be-REAL	ear-DAT			
	It's in the ear.				

Before leaving the topic of consonant-tone interaction, a comment is in order about the ejectives /ƙ/ and /ts'/. While depressor consonants lower pitch significantly, these ejectives raise pitch slightly. It seems that the glottalic release of pressure of an ejective, accompanied by voicing in

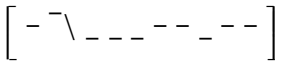
following vowels, creates a slight rise in phonetic pitch. In the following examples, the phonetic pitch notation is only approximate:

(56) *Enia ƙɔɓa ntsi.*



en-í-aˡ ƙɔɓ-a ntsí-∅
see-1SG-REAL navel-NOM he-GEN
I see his navel.

(57) *Ats'oo ntsa sakamaa inoe.*



áts'-ɔ́-ɔ nts-a sakámá-a ínó-ᵉ
eat-3SG-SEQ he-NOM liver-ACC animal-GEN
And he ate the animal's liver.

3.2.4 Tone processes

The analysis of Ik tone processes presented in this section is preliminary. Ik tone, particularly at the post-lexical and phrasal levels, deserves a book-length treatment of its own. However, this section does present a few insights gained in the course of the grammatical study. Hopefully these insights will act as a springboard for whoever may take up the tonal mantle.

As shown back in §3.2.2, lexical roots in Ik have their own underlying tone melodies. Affixes do too, and these are revealed on an affix by affix basis in the following chapters. But when roots and affixes are put together in word, their tones may change in the local morpho-tonological environment. The present section summarizes some of the known—though surely not all—Ik tone processes, including the ones already mentioned in §3.2.3 that are caused by depressor consonants. Some of these processes have the feeling of being ad hoc, of not reflecting the core characteristics of the Ik tone system. Nonetheless, they represent the knowledge acquired up to this point.

These processes are summarized in the table in (58) below:

(58) *Ik tone processes (T)*

#	Name	Description
T1	Downdrift	"After an overt (linked) L at a tone-phrase boundary, the pitch register may be lowered for following tones."
T2	Downstep	"After 1) a depressor-induced HL fall or 2) a floating L, the pitch register may be lowered for following tones."
T3	High-tone insertion	"In a sequence of four or more L tones across word boundaries, a H may be inserted on the third TBU."
T4	High-tone repellence	"When tonal phonology assigns a H to a TBU whose onset is a depressor, the H is repelled leftward one TBU."
T5	High-tone anticipation	"When a L precedes a H across a morpheme boundary with no consonant intervening, the L changes to a H resulting in a HH sequence."
T6	High-tone suppression	"In a sequence of two or more Hs across root-suffix(es) boundaries, the Hs may all delink and become floating or disappear entirely."
T7	Melodic template completion	"A root's tone melody determines the surface tone of any suffix."
T8	Replacive grammatical tone	"An affix or paradigm may cause tone changes to a word not explainable in terms of T1-T7."

The last 'process', replacive grammatical tone (T8), is a catch-all category for tonal changes that take place with certain affixes or in certain verbal paradigms. For example, the plurative I suffix {-íkó-} inexplicably gives a preceding L-toned noun root H tone, e.g. *padɔ-* → *pád-íkó-* 'small caves'.

Downdrift (T1), or 'automatic downstep', describes the lowering of the pitch register or 'ceiling' after an overt L tone. The result is that a H tone after a L tone will be lower in pitch than preceding H tones. Ik downdrift must be qualified in two ways: 1) In order to cause downdrift, the L tone must surface as a low or low-falling pitch, not a mid pitch. This means that an L surfacing as mid pitch cannot cause downdrift. So it is not any L, but a L near a tone phrasal boundary that causes downdrift. And 2), a L tone does not cause downdrift if no H tones precede it. This is by definition, since 'downdrift' implies lowering of successive Hs:

(59) *Sukuta akatikaa ntsi.*

súk-út-aˡ	akát-ika-aˡ	ntsí-∅
itch-CAUS-REAL	nostril-PL-ACC	he-GEN

He's scratching his nose (pl. in Ik).

In (59), prosody and syntax align to define the relevant tonal phrase as made up of a clause constituent: verb, object NP, genitive NP. Because of this phrasal domain so defined, the realis suffix on the verb surfaces as low pitch, causing downdrift on the following object NP. Then, after the L tones on the subject NP (*akátikaa*) which surface with low pitch before the tone phrase boundary, downdrift lowers the H tone on the genitive NP.

(60) *Ɗoɗetio oɟa inoe ariikaa eɗa.*

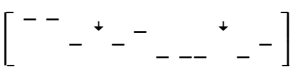
ɗoɗ-ét-i-oˡ	ɔ́ɟ-á	ínó-eˡ	arí-íka-aˡ	ɛɗá
show-VEN-3SG-SEQ	wound-NOM	animal-GEN	intestine-PL-ACC	only

The animal's wound showed only intestines.

Likewise in (60), after each major clause constituent—verb, subject NP, object NP—the downdrift occurs when the preceding contituent ends with a L tone. The head of the subject NP (*ɔ́ɟá*) does not cause downdrift in the following genitive modifier because *ɔ́ɟá* has no L tone.

When downdrift has been caused by a L tone at a tone phrasal boundary, the first L tone in the next tonal phrase (before any Hs) is at the same basic pitch level as the preceding L tone. But central to this analysis is the claim that the downdrifted L is actually a new mid pitch on a lower pitch register. This goes back to the analysis of underlying tones give in §3.2.1: Any L before a H in the same tone phrase surfaces with mid pitch. To illustrate this, the Downdrift in (59) is given here with a more phonetic notation:

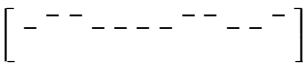
(61) súkúta$^{\downarrow}$ akátikaa$^{\downarrow}$ ntsí



Relative to each downdrifted H tone, the L tones(s) before it bear relatively mid pitch. Only that, because the whole pitch register has been lowered, downdrifted mid pitch is more or less the same height as the preceding L tone responsible for the downdrift in the first place. As shown, then, in (61), this is repeated as many times in the clause as downdrift occurs.

Despite these clear examples, downdrift is not such a hard and fast rule as to be completely predictable. There in fact many counter-examples where downdrift does not happen in what would seem to be applicable circumstances. Consider that, in the following example, neither the L at the end of the verb nor the one at the end of the head of the object NP seem to cause downdrift on any following H tones:

(62) *Irikaini ekwitnia nti.*



iríká-ini ekw-itíní-a ntí-∅
rub-SEQ eye-PL-ACC they-GEN
And they rubbed their eyes.

The example in (62) and many others like it suggest that prosodically defined tone phrases may vary in terms of the syntactic units they align with. In some cases, like in (59) and (60) above, the tone phrase matches the core clausal constituents. In other cases, like in (62), the tone phrase

matches the entire clause, such that tonal prosody ‘scans’ ahead across syntactic boundaries to find H tones that maintain the mid pitch of all Ls. This observation matches one made earlier, namely that mid pitch acts as a baseline in Ik discourse. All kinds of factors, yet largely unexplored, may affect the linking of the tonal tier to syntactic structure—from pragmatic considerations to discourse structure, semantics, speech rate, emotion, etc.

Downstep (T2), or ‘non-automatic downstep’, is the lowering of the pitch register after an unlinked or ‘floating’ L tone. Ik downstep was already mentioned under §3.2.3 in the discussion of depressor consonants. Those voiced obstruents (excluding /h/ for the moment), act as if they bear L tone. How one handles this depends on one’s theoretical orientation. It could be seen as a L linked to the depressor or floating in association with it instead. Either way, from a descriptive point of view, depressors cause downstep:

(63) *Toyaa dea ntsi.* [– ¯\ꜜ_ _ _ –]

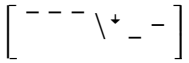
tɔyá-á ˈdɛ-a ntsí-∅
bleed-REAL foot-NOM he-GEN
Her foot is bleeding.

(64) *Iya nda aka na kwats.* [– – \ꜜ_ _ _ _ –]

i-a ńˈda aka = na kwáts-∅
be-REAL with mouth[OBL] = REL.SG small-REAL
It has a small mouth.

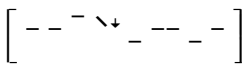
In both (63) and (64), the depressor /d/ lowers the pitch register such that any following H tones are roughly the same height as a mid-pitch L tone before the depressor. But downstep is also found in the absence of depressor consonants. Observe the following instances:

(65) *Ats'a ŋoka okak.*



áts'-á ŋók-á↓ ɔká-k^{a}
chew-REAL dog-NOM bone-ACC
The dog chews the bone.

(66) *Iya oja kwetee ntsi.*

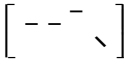


i-a ɔ́j-á↓ kwɛtɛ́-ɛ́ ntsí-∅
be-REAL wound-NOM arm-DAT he-GEN
There is a wound on his arm.

In both of these examples, there is a lowering of pitch register after an overt H tone. From a phonetic perspective, this could be understood as an instance of the cross-linguistic tendency of a falling contour to utilize the full available pitch range (Yip 2002:49): The transition from H to L goes a little lower than previous Ls, so low that following Hs do not fully recover. But from a phonological perspective, whence the L causing downstep? Possible answers seem to be that a) there is a L boundary tone between the subject NP and further arguments or b) that the tonal melody of nouns like *ŋókí-* 'dog' and *ɔ́já-* is actually HHL rather than simply HH. With no TBU to dock to, the L in HHL floats and causes downstep on the following TBUs.

High-tone insertion (T3) describes the tonal process of breaking up a sequence of four L tones with a H tone on the third TBU, as for example in:

(67) *Xeɓa seao.*

ʃɛɓ-a sea-^{o} → ʃɛɓa séa^{o} 

fear-REAL blood-ABL
He fears blood.

(68) *moo fiyei toimɛnaa...*

mo-o	fiye-i	toimɛna-a	→	fiyei tóimɛnaa	[– – ¯ – – –]
not-SEQ	know-3SG	COMPL-ACC			

and he did not know that...

In both of these clauses, a L-tone verb is followed by a L-tone argument and so a H tone is inserted on the first TBU of the argument. The L tones in (68) after the inserted H remain mid pitch because it is a continuing sentence. According to some older Ik speakers, high-tone insertion is a more recent tonological development. As such, the examples above are also grammatical without the inserted H tone. It seems likely that floating-H docking on following syllables is being generalized and extended into domains such as these, but this remains to be seen from further investigations.

High-tone repellence (T4) describes the tonal process in which a H tone assigned to a TBU gets repelled leftward one TBU. This only happens when the onset of the syllable designated for the H is a depressor. In this way, the antinomy between high pitch and depressor consonants has been phonologized. High-tone repellence is illustrated below in two contexts: 1) when an inserted H gets repelled and 2) when a floating H gets repelled.

First, if an inserted H is assigned to a TBU directly preceded by a depressor, the inserted H is repelled one TBU leftward. In the example below, conditions for high-tone insertion arise, assigning H tone to the first syllable of *badon* 'dying'. But because the onset of that syllable is /b/, the H tone gets repelled back onto the last syllable of the verb:

(69) *Xeɓa badonu.*

ʃɛɓ-a	bad-onu-∅	↛	**ʃɛɓa bádonu	
fear-REAL	die-INF-ABL	→	ʃɛɓá badonu	[– \ _ _ ˎ]

He fears dying.

Second, a floating H may be repelled by a depressor consonant. The subordinating conjunction *na´* = 'if/when' has a floating H. This is deduced from the fact that when a L-tone verb follows it, the first TBU of the verb gets a H tone. But if the onset of the H-bearing TBU is a depressor like /g/, then H gets repelled back to the conjunction. Compare these examples:

(70)	na = ŋ̀k-ese…	na = kɔ́k-ɛsɛ	ná = gon-ese
	CONJ = eat-SPS	CONJ = close-SPS	CONJ = look-SPS
	If____is eaten…	If____is tied…	If____is looked at…

High-tone anticipation (T5) is a tonal process in which a L-linked TBU directly before a H tone across a morpheme boundary also gets H tone, but only if no consonant intervenes. This is an example of 'bonded spread' or 'tone doubling' which is reportedly common in Africa (Yip 2002:69). In Ik, this process is observed both within and between words, as shown below:

(71) *…ƙaatie…*

ƙa-áti-e → ƙáátie [¯¯ ¯¯]

go-3PL-SIML

…as they go…

(72) *ɗiimee*

ɗi-íme-e → ɗí-íme-e [¯¯ ¯¯]

one.SG-DIM.SG-DAT

to this little one

(73) *Na atsie,…*

na´ = ats-i-e → na átsie → ná átsie [¯¯ ¯¯]

CONJ = come-3SG-SIML

When s/he came,…

High-tone suppression (T6) describes a tonal process in which the distance between tones or pitches is reduced. In Ik, this is already evident from the lexical and phrasal tone suppression that raises L tone to a mid pitch before a H tone. But a kind of 'double tone suppression' is also evident in Ik (Hyman 2007:503). After raising L tones to mid pitch before H, the H tone is then delinked. If another H follows the delinked H in the same tonal span, then nothing further happens. But if no other H follows the delinked H, it becomes a floating H at the end of the span (word, phrase, etc.). Double H-tone suppression is most evident in a variety of verb forms.

The sequential (§7.8.1) and optative (§7.7.4) verb paradigms, both partly irregular, exemplify high-tone suppression. This comes out particulary well in the 2PL forms: The 2PL subject-marker {-ítí} gets suppressed to {-iti´}, with its H tones delinked and sent floating at the right-edge boundary, as in:

(74) *Na ŋusitio,...*

na´=ŋus-ítí-o	→	na ŋúsitio´	[– ¯ – ––]
CONJ=grab-2PL-SEQ			
If you (pl.) grab (sth.),...			

(75) *Alake ŋusiti...*

aláké ŋus-ítí	→	aláké ŋusiti´	[– ¯ ¯ – – –]
then grab-2PL[OPT]			
Then you grabbed...			

The chief difficulty with this analysis is that the floating H need not ever relink to any TBU. That is, even if one of these verbs is followed by an object with L tone, the putative floating H does not reappear. Perhaps it is sent to the right edge of the entire tonal phrase, however large it may be. Or perhaps the suppressed and delinked H disappears altogether. If the latter is true, this could mark the emergence of a third underlying tone, namely Mid, since the conditioning environment (floating H) may be being lost.

Another instance of high-tone suppression is found in the infinitive form of verbs with a LH lexical tone melody. In the isolation form of the infinitive (nominative case), transitive verbs with the melody LH, combined with the transitive infinitive suffix {-ésí-}, surface with a M-M-M pitch. That is, the melody of the root (LH) combined with that of a suffix (HH) yield the melody LLL(H) instead of LHH(H) because of high-tone suppression:

(76) *High-tone suppression in transitive infinitives*

aŋír-ésí-	→	aŋiresˊ	[– – –]	‘to turn’
ɪtsán-ésí-	→	ɪtsanɛsˊ	[– – –]	‘to disturb’
tʊlúŋ-ésí	→	tʊlʊŋɛsˊ	[– – –]	‘to abhor’

Melodic template completion (T7) refers to a tonal process in which a lexical tone melody that is greater than then number of TBUs offered by a certain lexeme gets completed or fully linked over a polymorphemic stem. For example, shorter tone melodies like HH, LL, and LH, shown above in (40), can arguably be analyzed as truncated versions of HHL, LLL, and LHH found on trisyllabic nouns. This analysis explored in detail in Schrock 2012a.

The idea behind melodic template completion, then, is that the longer, three-tone melodies determine the tone pattern of a bisyllabic noun root combined with a monosyllabic case suffix. In other words, the case suffixes—all having L tone underlyingly—will take a H or L tone according to a three-place tone melody. Consider the following examples:

(77) *Melodic template completion*

HH	ámá-	‘person’	→	HHL	ámé-e	‘of a person’
HL	édi-	‘name’	→	HLL	édi-e	‘of a name’
LL	roɓa-	‘people’	→	LLL	roɓe-e	‘of people’
LH	imá-	‘child’	→	LHH	imé-é	‘of a child’

In (77), the genitive suffix {-ɛ} surfaces with a H or L tone depending on the lexical tone melody of the noun to which it attaches. This type of tone process cannot simply be a case of H-tone or L-tone spreading because the tone of the case suffix need not be the same as the preceding root syllable. In principle, all the lexical melodies presented above in §3.2.2 could be extended by one tone to get the full underlying melody that is only realized on a case-inflected form. Then the melodies for trisyllabic nouns would provide the case-tone templates for the bisyllabic nouns; the quadrisyllabic nouns would provide the template for the trisyllabic nouns, etc.

Although case inflection is used here to exemplify melodic template completion, the process is observed in other areas of the grammar including compound nouns and verb infinitive formation. The factors governing the diachronic formation of these melodic templates are not yet discovered. Most likely, clues will be found in further historical comparative work in East African languages. It has been suggested that a metrical approach to Ik tone assignment may be a fruitful line of research (Mary Pearce, p.c.). There does seem to be some interaction between, for example, syllable weight and tone assignment, but any applicable rules have yet to be discovered.

Pitch-accent, ‘musical stress’, and ‘rule-governed prominence’ seem to be an areal feature of East Africa. For example, in Turkana, “tonal inflection is obligatory regardless of the underlying tone pattern of the noun stem (Dimmendaal 1983:52). Evidence suggests that in wider Nilotic—languages that have had a deep impact in Ik—‘quantitative’ metrical units based on syllable weight or mora-counting interact with tone assignment (Dimmendaal 2012). Despite recent strides in understanding Ik tonology, one still gets the impression that the key to the system lies just out of reach.

3.3.5 Intonation

In addition to lexical and phrasal tone, Ik also uses sentence-level tone or 'intonation' to express meaning. Intonation is understood here as the "the use of *suprasegmental* features to convey 'postlexical' or *sentence-level* pragmatic meanings in a *linguistically structured* way" (Ladd 1996:6, italics in the original). The suprasegmental feature Ik uses to alter pragmatic meaning is a boundary tone at the right edge of the relevant syntactic unit. Three intonational boundary tones (or lack thereof) create the following three 'tunes' (the symbol <%> being borrowed from Ladd 1996:80):

(78) *Ik intonational tunes*

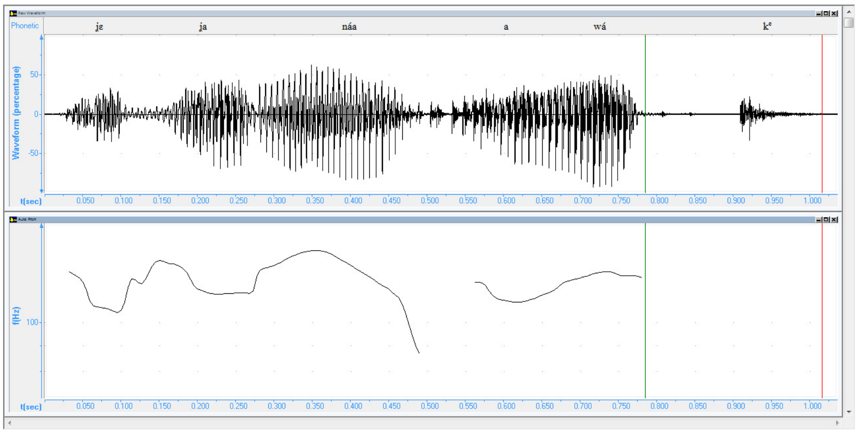
#	Name	Defining boundary tone
1	Indicative Tune	……Ø%
2	Interrogative Tune	……L%
3	Solicitive Tune	……LH%

The *indicative tune* is the default, unmarked intonational pattern used for declarative statements. This tune is defined by an absence of change on the tone of a clause's final word. A morpho-syntactic correlate of this tune is that the final morpheme of the sentence will be in its final form. Take for example the two basic statements below, each with their pitch profiles:

(79) *J'ɛja naa awak.*

jɛj-a = náa$^{↓}$	awá-k^{e}
stay-REAL = PST1	home-DAT
S/he stayed at home.	

[ʝe ʝa náa a wá k^e]



In this example, the focus is on the final word, *awák^e* ‘at home’. With the indicative tune, this word, declined in the dative case, takes the normal pitch that its tone melody calls for: mid followed by high.

The following sentence gives another example of the indicative tune:

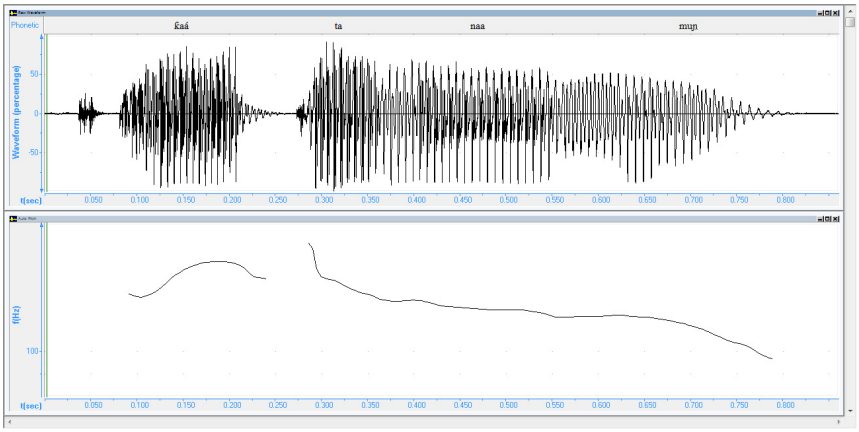
(80) *Kaata naa muɲ.*

ƙa-át-a=naa muɲ

go-3PL-REAL =PST1 all

They all went.

[ƙaá ta naa muŋ]



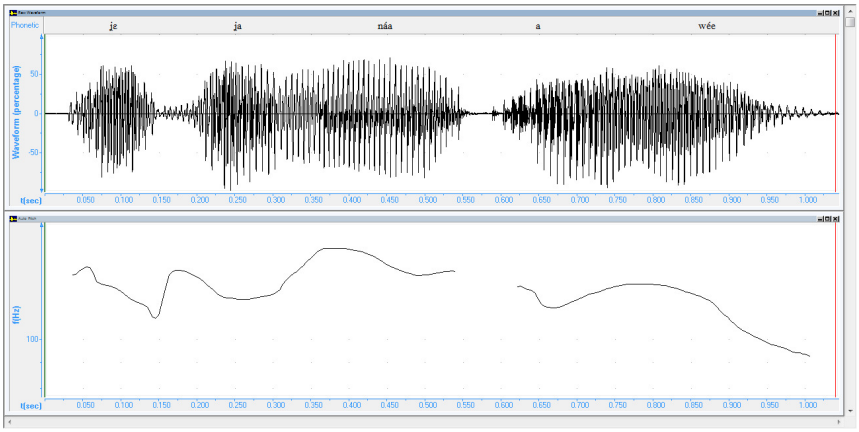
In (80), apart from the third person plural subject suffix {-át(i)-}, all the morphemes in this sentence have low tones. So here the indicative tune surfaces as a gradual declination of low tones ending on *muŋ* 'all'.

The *interrogative tune* is the intonational pattern used for yes/no questions. This tune is defined by a low boundary tone that replaces any high tone on the final syllable. As a morpho-syntactic correlate of this tune, the final morpheme of the sentence must occur in its non-final form. This morphological open-endedness can be viewed as iconic of the fact that a question is pragmatically open-ended, expecting a response.

(81) *J'ɟa naa awee?*

ɟɛɟ-a = náa^{L}	awé-e	(**awé-é)
stay-REAL = PST1	home-DAT	
Did s/he stay at home?		

[jɛ ja náa a wée]



The final form of ‘at home’ is *awák*^{e}, as seen above in (81), while the usual non-final form is *awéé*. However, in questions with the interrogative tune, the low boundary tone replaces the high tone on the dative case suffix {-ɛ}.

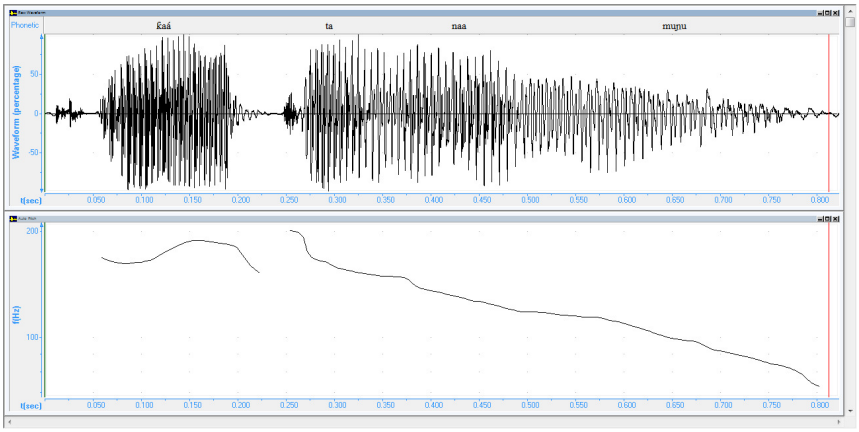
On words like *mʉn* ‘all’ that already have a low tone, the interrogative tune’s low boundary tone leads to an extra-low decline at the end:

(82) *Kaata naa mʉnu?*

ƙa-át-a = naa	mʉnu
go-3PL-REAL = PST1	all

Did they all go?

[ƙaá ta naa muŋu]



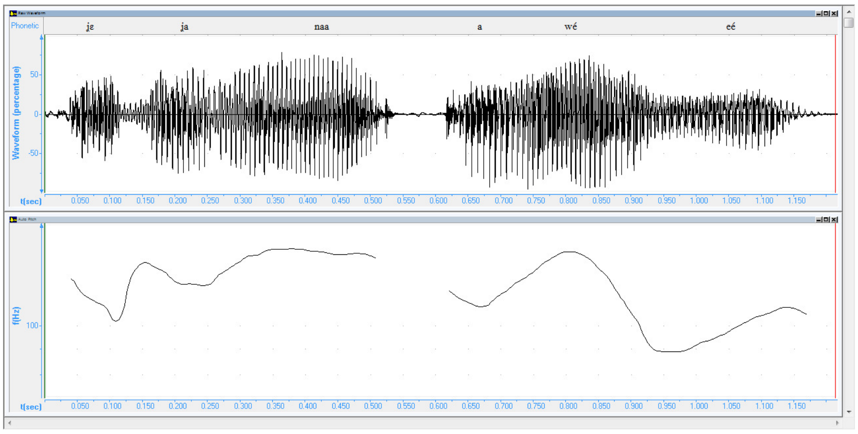
The third intonational pattern, called the *solicitive tune*, is used to solicit agreement from the hearer. It is often heard in the following contexts: 1) making polite requests or gentle commands, 2) making statements subject to the hearer's approval, and 3) ensuring the hearer's attention. The solicitive tune can apply to both main clauses and subordinate clauses (even ones preceding the main clauses of declarative statements or questions.)

The solicitive tune is marked by a low-rising (LH) boundary tone. Unlike the indicative and interrogative tunes, the final morpheme of a clause can appear in either its non-final or final form. When the final form occurs, vowels normally devoiced surface as voiced so as to link to the low-rising tone to a tone-bearing unit. But because a) the LH boundary tone applies only to the clauses's final vowel and b) contour tones in Ik must link to two phonological TBUs, the final vowel is doubled for the solicitive tune:

(83) *J'ɛɟa naa aweee?*

jɛɟ-a = náá	awé-eé	(awá-keé)
stay-REAL = PST1	home-DAT	
S/he stayed at home, (okay)?		

[ʝɛ ʝa náá a wé eé]



Just as (83) shows the solicitive tune operating on a high-toned morpheme, (84) shows the same tune applying to the low-toned *muɲu* 'all':

(84) *Kaata na muɲuu?*
ƙa-át-a = naa muɲuú
go-3PL-REAL = PST1 all
They all went, (okay)?

[ƙaá ta naa muɲuú]