Tonogenesis in Southern Cushitic (Common West Rift)

From predictable stress to distinctive pitch accent in Iraqwoid

Roland Kießling

Hamburg

1   Introduction

Although most of the modern Afroasiatic (AA) languages are tone languages (Chadic, Cushitic, Omotic, but not Semitic, Berber, and Egyptian), it has not been possible to reconstruct a tone system at the AA level in a convincing way. While Orel & Stolbova 1995 leave out the issue altogether, Ehret (1995: 67-70) struggles to account for the presence of tone in the modern descendents of both major branches of his AA subclassification (Omotic and Erythraic, the only exception being Boreafrasian (i.e. Egyptian, Berber, and Semitic) at his subgroup level), by reconstructing a three-way tonemic opposition of word-tones (falling, rising, level) for AA which, he concedes, might also reflect a system of three syllable tones (high, low, mid), but discarding the option of an alternative analysis as stress. His reconstruction could only be regarded as highly hypothetical, since – as pointed out in Wolff's review (2000: 135) – the situation in Boreafrasian might as well reflect the original AA state, all the more since it has proved so far impossible to reconstruct tone for the intermediary levels, e.g. Chadic, for which Wolff 1987 rather favours the interpretation of internal independent innovations by tonogenesis. At the present state of knowledge, it is safer to withstand the temptation of historical speculation at great time depth and rather concentrate on efforts at low level historical reconstruction in order to see how far tonological distinctions actually reach back into the past within the individual subgroups of Afroasiatic. In this sense I will explore the Southern Cushitic tonological situation.

2   The tone system of Southern Cushitic

Suprasegmentally, all Southern Cushitic[1] languages have a pitch-accent-system that works on the morphosyntactic level primarily. In this, Southern Cushitic closely resembles most Eastern Cushitic languages, e.g. Afar, Somali, and Rendille. There is a phonemic opposition of tone that has the properties of stress insofar as tone is assigned, mostly, to a larger domain than the mere syllable, often to the word or a whole phrase, where it singles out a prominent syllable. The available synchronic

treatments of Iraqw (Whiteley 1958, Nordbustad 1989 and Mous 1993) have described this kind of system in terms of a two-way tonal opposition of high vs. low in which the distribution of the high tone is subject to severe restrictions, i.e. in most of the cases it forms a paradigmatic contrast with the low tone only in terminal position of specific words or constituents. That is, within the boundaries of a phonological word there is only an opposition of $[L_0 L]$ vs. $[L_0 H]$.[2]

Basically, this approach is justified. But the Iraqw tone system could also be analysed in a slightly different way which would put more emphasis on the accentual properties of its tone opposition, taking better analytical care of the special status of the prominent high tone and its distributional restriction. In this vein, an alternative synchronic description of Iraqw could recognize two distinct phonemic tone **contours** that might be labelled accent 1 and accent 2, following the Scandinavian tradition in descriptions of the tone systems of Swedish or Norwegian (see Haugen 1976: 281ff., Haugen 1982: 22ff.). Accent 1 or "neutral tone" which would be left unmarked assigns level low pitch to all syllables in its domain. At the same time stress, to be understood as heightened muscular tension and air pressure, would be fixed according to position and syllable structure, i.e. to the last heavy syllable in a phonological word which could be the antepenultimate or the penultimate. Accent 2 or "marked tone", on the other hand, assigns prominence which is realised by high pitch fixed on the terminal syllable of a phonological word, regardless of its structural features. Thus, in contrast to the "neutral tone" of accent 1, accent 2 is characterised by a rise in contour, and since this rise is usually localised in the terminal syllable of a word or phrase, it makes sense to indicate accent 2 by a high tone mark ´ on the prominent vowel.

This is illustrated in examples (1a-d). The domain of the pitch-accent is the verbal phrase here, its locus is the terminal syllable of the finite verb. Accent 1, realised as level low pitch, encodes simultaneously non-past tense and agreement with a 3rd person singular masculine subject (1b), whereas accent 2, realised as high pitch on the terminal syllable of the finite verb, marks agreement with a 1st person singular subject in the non-past tense (1a) on the one hand and past tense for all persons (1c-d) on the other hand. Actually it marks all inflectional forms of the past and the non-past paradigms, except 3sgm of the non-past.

(1)   Iraqw tone opposition in verbal inflection (adapted from Mous 1993: 155, 158)
    (a)   à   dóosl[3]   'I cultivate.'
           S1/2   cultivate:1sg.NPAST[4]

    (b)   ì   dòosl   'He cultivates.'
           S3   cultivate:3sgm.NPAST

    (c)   àgà   dóosl   'I cultivated.'
              S1/2:PAST cultivate:1sg.PAST

    (d)   àa   dóosl   'He cultivated.'
              S3:PAST   cultivate:3sgm.PAST

Taking better care of the accentual nature of these tonal distinctions, the same sentences could be represented on a more abstract level as in (2), with superscript numbers indicating the accent and square brackets indicating the boundaries of the accentual domain.

(2)   Iraqw tone opposition in verbal inflection analysed as accent
    (a) ^{2}[a   doosl]   'I cultivate.'

    (b) ^{1}[i   doosl]   'He cultivates.'

    (c) ^{2}[aga   doosl]   'I cultivated.'

    (d) ^{2}[aa   doosl]   'He cultivated.'

Example (3) makes it clear that within the verbal phrase which consists of the preverbal clitic cluster and the finite verb (indicated by square brackets), it is only the **terminal** syllable of the finite verb that displays the tonal contrast.

(3)   Iraqw tone opposition in verbal inflection (adapted from Mous 1993: 155, 158)
    (a)   dàsì   [ì   dòoslàaslít]   'The girl is always cultivating.'
              girl   S3   cultivate:3sgf.NPAST

    (b)   gàrmà [ì   dòoslàaslìit]   'The boy is always cultivating.'
              boy   S3   cultivate:3sgm.NPAST

    (c)   gàrmà [àa   dòoslàaslíit]   'The boy was always cultivating.'
              boy   S3:PAST cultivate:3sgm.PAST

Subject noun phrase and verbal phrase represent two separate phonological words (indicated by square brackets) that act independently with respect to tone, which is evident in that they could both take the marked accent 2 simultaneously in (4a) and (4c).

(4)   Iraqw tone opposition in nominal and verbal inflection
    (a)   [dàsì-r-í]   [ì   dòoslàaslít]   'This girl is always cultivating.'
              girl-F-D1 S3   cultivate:3sgf.NPAST

    (b)   [gàrmà-w-í] [ì   dòoslàaslìit]   'This boy is always cultivating.'
              boy-M-D1 S3   cultivate:3sgm.NPAST

    (c)   [gàrmà-w-í] [àa   dòoslàaslíit]   'This boy was always cultivating.'
              boy-M-D1 S3:PAST cultivate:3sgm.PAST

In these properties, Iraqw resembles what Yip (2002: 257) reports for Roermund Dutch which has "a Germanic-style stress system, with a main stress and secondary stresses on longer words, all assigned on positional grounds. But it also has a lexical tonal contrast, in that words may have no tones, or a single H tone, and this H then

shows up on the last mora of the main stressed syllable. […] It does have lexical tone, but of a very impoverished type both in terms of numbers of tonal contrasts (one versus none) and numbers of possible tones per word (one), and in this particular language (but not all accentual languages) the position of this tone is entirely controlled by the position of main stress."

In Iraqw, tone is independent of vowel length **and** of stress. Its independence of vowel length could be seen in (3) and (4) where it is always the terminal syllable of the finite verb that carries the H tone, irrespective of the length of its vowel. Stress on the other hand "is predictable on the basis of the syllable structure and the tone. Stress is on the penultimate syllable if this syllable contains a long vowel. If the penultimate syllable has a short vowel, stress is on the last syllable, if this syllable has a high tone and otherwise on the first syllable." (Mous 1993: 23).[5]

Basically, in Southern Cushitic these tonal accents are used to encode grammatical information; except for a few items that could be isolated as being of onomastic origin to be discussed below, they do not operate in the lexicon.[6] It is also remarkable that these tonal accents are exploited to a strikingly different extent in the four Southern Cushitic languages. In Burunge and Alagwa it is merely a marginal phenomenon, with the marked tone (accent 2) being restricted to very few categories, whereas in Iraqw and Gorwaa it bears a considerable functional load, with the marked tone (accent 2) operating in extensive parts of the grammar.

2.1 Marked tone (accent 2) in Alagwa and Burunge

In both, Alagwa and Burunge, accent 2 is almost entirely restricted to a couple of nominal suffixes that operate in the derivational system of number and gender marking among which the collective suffixes -*áa*, -*óo*, and –*áy* are the most frequent. List (5) presents them in contrast to their atonal counterparts (i.e. accent 1) in Alagwa nouns, and list (6) does the same for Burunge.

(5) Alagwa tonal contrast in nominal collective suffixes
    (a)   tlaf-oo 'clouds'   daka'-óo 'baobab fruits'
    (b)   baba/-aa 'cockroaches'   'aar-áa 'goats'
    (c)   qwaar-ay 'monkeys'   xuluxuumb-áy 'insects'

(6) Burunge tonal contrast in nominal collective suffixes[7]
    (a)   /atl-oo 'teeth'   /atlar-óo 'stumps, trunks'
    (b)   'aar-aa 'goats'   caxas-áa 'salt'
    (c)   fu'um-ay 'meat'   biing-áy 'cobs without maize'

Since Alagwa also has a high tone collective noun suffix –*i* (accent 2) which is in contrast to the atonal singulative marker –*i* (accent 1), one occasionally finds minimal pairs in morphological paradigms as shown in (7).

(7) Alagwa tonal contrast in singulative marker –*i* vs. collective marker –*í*
     siriir-i 'bird (sp.)'   siriir-í 'birds (sp.)'
     na/an-i 'water melon'   na/an-í 'water melons'

In general it could be concluded that the functional load of tone, i.e. the contrast of accent 1 vs. accent 2, in both Burunge and Alagwa is low.

2.2 Marked tone (accent 2) Iraqw and Gorwaa

In contrast to Alagwa and Burunge, Iraqw and Gorwaa exploit the tonal contrast to a much larger extent. First, both of them also utilize the tone opposition in nominal derivational suffixes, as shown in (8-9).

(8) Iraqw tonal contrast in suffixes -*ay* vs. –*áy* (a), -*u* vs. –*ú* (b), and –*i* vs. –*í* (c)
     (a)   daaq-ay 'boys'   di/-áy 'fat, pieces of fat'
     (b)   das-u 'girls'   duur-ú 'reed'
     (c)   teer-i 'dust'   loos-í 'beans'

(9) Gorwaa tonal contrast in suffixes -*ay* vs. –*áy* (a), -*u* vs. –*ú* (b), –*i* vs. –*í* (c), and -*a(a)* vs. –*á* (d)
     (a)   tiy-ay 'women'   muguugun-áy 'bed bugs'
     (b)   das-u 'girls'   /aam-ú 'fruits ; boils'
     (c)   goo'-i 'writing, ornament'   loos-í 'beans'
     (d)   hayw-aa 'grandchildren'   /aylal-á 'white sorghum'

On top of this, tone operates in a considerable number of grammatical domains. Thus, the verbal inflectional system relies heavily on tonal contrasts, as already indicated in (1-4). Example (10) presents a paradigmatic overview of the finite forms of the verb *doosl* 'cultivate' in the three basic TAM categories of Iraqw, past, non-past and subjunctive. These paradigms reveal a peculiar distribution of tone patterns / accents: the past paradigm is characterised by accent 2 throughout, whereas the entire subjunctive carries accent 1. The non-past has a mixed appearance with 3sgm displaying accent 1, whereas all the other forms come up with accent 2.

(10)   Iraqw verbal stem *doosl* 'cultivate' inflected for subject person and tense / aspect and mood

	non-past	past	subjunctive
1sg	dóosl	dóosl	dòosl
2sg/3sgf	dósl	dósl	dòsl
3sgm	dòosl	dóosl	dòosl
1pl	dòosláan	dòosláan	dòoslàan
2pl	dòslá'	dòslé'	dòslà'
3pl	dòoslìyá'	dòoslìyé'	dòoslìyà'

Attributive adjectives and participles agree with their head nouns in gender and number, and tonal accent is used to code this agreement: feminine agreement is encoded by accent 1, whereas masculine agreement is encoded by accent 2, as illustrated in (11) with the colour adjective */awaak* 'white'.

(11) Iraqw tone opposition as a marker of gender in the attributive adjective

    (a) dángw   /àwáak   'white elephant'
           elephant.GEN.M white.M

    (b) slér   /àwàak   'white cow'
           cow.GEN.F   white.F

Head nouns in genitival or associative constructions, i.e. nouns modified by an attributive adjective, a nominal possessor or a numeral – a state that has been called 'construct form' (Nordbustad 1988: 100ff.) or 'construct case' (Mous 1993: 94) – receive accent 2, as illustrated in (12-14) in contrast to their basic forms that bear accent 1: *hhàrà* 'stick', *hìmà* 'rope', *màr'ì* 'cave', *sàgà* 'head', *mùu* 'people', *dàsù* 'girls'.

(12) Iraqw: accent 2 in the head noun when modified by an attributive adjective
    (a) hhàrtá   tlèer   'long stick'
           stick.GEN.F1   long.F
    (b) hìmúu   tléer   'long rope'
           rope.GEN.M   long.M

(13) Iraqw: accent 2 in the head noun when modified by a nominal possessor

    (a) màr'ír   dìràangw   'lions den'
           cave.GEN.F   lion
    (b) sákw   dìràangw   'lions head'
           head.GEN.M1 lion

(14) Iraqw: accent 2 in the head noun when modified by a numeral

    (a) múk   tám   'three people'
           people.GEN.M1 three
    (b) dàsúu   kòo'án   'five girls'
           girls.GEN.M   five

Nouns modified by determiners, such as the four demonstratives – *-í* (sg) vs. *-ká'* (near speaker), *-síng* (near addressee), *-qá'* (distant, but visible), *-dá'* (distant, not visible) – and the possessives – *-'ée'* (1sg), *-ók* (2sg), *-ós* (3sg), *-rén* and *–tén* (1pl), *-húng* (2pl), *-'ín* (3pl) – receive accent 2. This is to be analysed as a property of the respective suffixes which bring a high tone. Two closed word classes, the independent personal pronouns and the basic numerals 1-9 are also characterised by accent 2.

Table 15 summarizes the distribution of both accents across lexical and grammatical domains in Iraqw and Gorwaa. It could be seen from this overview that, in PIRQ, nominal modification almost always has the effect of conversion to accent 2, with the exception of the adverbial case and the indefinite suffixes. In the finite verb, tone marks oppositions such as indicative vs. subjunctive, past vs. non-past and the distinction of 3sgm vs. all the other persons.

(15) Iraqw and Gorwaa: distribution of both accents across lexicon and grammar

		level tone (accent 1)	rising tone (accent 2)
lexical	nouns	+	+ (lexicalised onomastica)
	verbs	+	-
	ideophones	-	+
grammatical	nominal inflection	indefinite suffixes, adverbial case	demonstrative suffixes, possessive suffixes, possessed noun in genitival constructions, resumptive morpheme
	nominal derivation	+	collective suffixes *-ú, *-áa, *-óo, *-áy; onomastic derivation
	adjectival concord	feminine concord	masculine concord
	closed word classes	?	personal pronouns, numerals
	verbal inflection	non-past (3sgm), subjunctive	past (all persons), non-past (all persons except 3sgm), negation
	verbal derivation	+	-

In spite of its high functional load in PIRQ the tonal contrast retains accentual characteristics. This is manifest in a high tone spreading rule in modern Iraqw which is applied to prevent accent 2 from occurring twice within the boundaries of a phonological word. Thus, it may happen that a noun with accent 2 like *waqát* 'intestines' receives a sequence of a non-high toned suffix plus a high-toned suffix in the course modification for demonstrative or possessive, e.g. the masculine linker *-uu* and the proximal demonstrative suffix *-í* or the possessive suffix *-ós* for 3sg. The underlying structure of the resulting word unites two accents 2 within one phonological word, i.e. two H tones separated by a L tone, which is prohibited: **waqát-uu-í* 'these intestines', **waqát-uu-ós* 'her / his intestines'. There are two options to resolve this dilemma in Iraqw: either the stem-final high tone spreads to the following L tone which separates it from the final H tone, or it is deleted: IR *waqatuuwí ~ waqátúuwí* 'these intestines', *waqatuuwós ~ waqátúuwós* 'her / his intestines'. Both strategies prevent the succession of two accents 2 within the boundaries of a single phonological word.

3   The tone system of Southern Cushitic in a historical perspective

The extensive exploitation of the tonal contrast on the morphosyntactic level in Iraqw and Gorwaa viz-à-viz its marginality in Alagwa and Burunge calls for a historical explanation, and the only way to account for its specific form and interrelationship

with other morphophonological phenomena in a plausible way is to reconstruct PWR, the common predecessor of all modern WR languages, with a marginal tone system and to postulate a process of extensive tonogenesis in the PIRQ subgroup. If we were to think it the other way round, we would face the dilemma to explain why both, Alagwa and Burunge, should have lost a previously operating tone distinction on broad scale, independently of each other in much the same way, without leaving any traces in most of the grammatical subdomains involved. On the other hand, tonogenesis in the PIRQ subgroup could be shown to be linked with other regular phonological innovations such as lenition and vowel elision, also operating in PIRQ, and presents itself in a phonetically plausible way as a by-product of segmental reductions and syllabic loss.

The Proto-West-Rift stage must have been characterised by a largely non-distinctive pitch-accent system, i.e. pitch was predictable on the basis of the accentual pattern, and the position of the accent, i.e. stress, was determined by syllable structure. This is illustrated in the examples in (16). It was basically the penultimate syllable which received stress in PWR, as long as it was heavy, i.e. contained a long vowel or diphthong. If the word was composed of light syllables only, stress was fixed on the penultimate, if it was a disyllabic word such as *fala* 'skin' (16a), otherwise on the antepenultimate, as in *qwaslara* 'traditional doctor' (16d). Tonetically, it was realised as high pitch in penultimate position (16a-b) and as low pitch in antepenultimate position (16c-d). Or put in a different way: the penultimate carried stress realised as high pitch, as soon as it was heavy. If it was light, stress was shifted to the antepenultimate, being realised as low pitch there. Syllables without stress received polar pitch. Thus with only very few exceptions, the tonetic (i.e. intonational) realisation of a word was conditioned by stress and its position which was a result of the syllable structure.

(16)   Tonetic realisation of accentual patterns in PWR

    (a)   PWR disyllabics: stressed light penultimate receives high pitch[8]
            *__fa__la → *__fá__là 'skin'

    (b)   PWR disyllabics and trisyllabics: stressed heavy penultimate receives high pitch
            *__tsaa__qwa → *__tsáa__qwà 'cold, coldness'
            *__day__su → *__dáy__sù 'snake'
            *la__baa__la → *là__báa__là 'spear'

    (c)   PWR trisyllabics: stressed heavy antepenultimate receives low pitch
            *__poo__hamu → *__pòo__hámù 'baboons'
            *__xway__limo → *__xwày__límò 'little boy'

    (d)   PWR trisyllabics: stressed light antepenultimate receives low pitch

*qwaslara → *qwàslárà 'traditional doctor'

It could be suspected that the different tonetic realisations of stress depending on its position might represent the first step of a dissociation or emancipation of tone from the stress pattern. However, it is impossible to say if stress was generally associated with high or with low pitch before that. In any case, in transition to PWR its tonetic realisation must have started to be reversed, and PWR gives us the stage in-between where the tonetic reanalysis has been carried out half-way.

Already in PWR, this structural conditioning of intonation patterns must have been modified by a marginal distinctive tone contrast, i.e. instances where pitch was not predictable on the basis of syllable structure and position of stress. First, there were nominal derivational suffixes which attracted high tone, i.e. the plural suffixes *-óo, *-áa, and *-áy, the collective suffixes *-ú and *-í, and the suffix *-arí for deriving resultative nouns from verb, illustrated in (17); all of them forming nouns which could be analysed as bearing accent 2 which were in contrast to the majority of nouns that have to be reconstructed with neutral tone, i.e. where the pitch pattern was conditioned by stress and syllable structure:

(17)   PWR: accent 2 in nouns with suffixes –ú, -óo, -áy, -í
       *faraxú 'natural gap between teeth'
       *loo/óo 'leaves, foliage'
       *maamáy 'maternal uncle'
       *'umaalí 'hedgehog(s)'

Beside this, PWR must have employed a process of onomastic tone conversion to the marked accent 2, i.e. there was the possibility to derive names of persons and places from nouns by attaching a final high tone, illustrated in (19) below. Furthermore, PWR had at least one so-called tone-integrative suffix, the subjunctive in *-ˋee, which suspended the structurally conditioned intonation pattern by neutralising eventual high tones and converting the pattern to level low tone (accent 1) which is shown in (18).

(18) PWR reconstruction of the verbal stem *doosl* "cultivate" inflected for subject person and tense in the perfective vs. non-perfective vs. subjunctive paradigms

	non-perfective	perfective	subjunctive
1sg	doosla [**dóo**slà]	doosli [**dóo**slì]	**dòo**slèe
2sg/3sgf	dooslta [**dóosl**tà]	dooslti [**dóosl**tì]	**dòosl**tèe
3sgm	doosliya [**dòo**slíyà]	doosli [**dóo**slì]	**dòo**slìyèe
1pl	dooslana [**dòo**slánà]	dooslani [**dòo**slánì]	**dòo**slànèe
2pl	doosltaa'i [**dòosl**táa'ì]	doosltiri [**dòosl**tírì]	dòosl**tèe**'i
3pl	doosliyaa'i [**dòosl**ìyáa'ì]	doosliri [**dòosl**ìlírì]	dòoslì**yèe**'i

The modern WR languages grammaticalised the marginally distinctive tone accent inherited from PWR to a different extent. Alagwa has retained the tonal distinctions in the nominal domain, whereas Burunge seems to have given them up by generalising the low pitch realisation of stress for all positions, while at the same time introducing a tonal distinction in the preverbal clitics (for a detailed discussion see Kießling 2002: 42). The following section is devoted to describing how PIRQ, the predecessor of modern Iraqw and Gorwaa, extended the tonal contrasts inherited from PWR in most of its grammatical domains.

3.1   The mechanisms of tonogenesis in Proto-Iraqwoid

Several mechanisms of tonogenesis must be held responsible for adding up to the effect that PIRQ could boost the functional load of the tonal opposition to such an impressive extent: most important of all, a phonologicization of accentual patterns determined by syllable structure or contrastive intonation; a phonologicization of morphologically conditioned accent patterns in the course of tone spread from a suffix to the root with subsequent deletion of the suffix; and the borrowing of tonally marked morphemes from neighbouring Bantu languages. Furthermore, tone oppositions also penetrated into the lexicon via lexicalisation of onomastically motivated tonal derivations and morphosyntactically determined pitch-accent patterns.

3.1.1   Lexicalisation of the onomastic tone pattern (semantic-onomastic motivation)

In all SC languages there is a productive device to derive names of persons and places from nouns by tonal manipulation, i.e. by replacing accent 1 of the basic noun by accent 2, seen in (19). More examples of this kind of tonal conversion in Iraqw could be found in Mous (1993: 120) and Berger & Kießling (1998: 210ff.).

(19)   Onomastic application of accent 2 in Southern Cushitic

    (a)   IR doosla 'cultivating'   Dooslá (personal name of a man or a woman)
    (b)   BU buuraa 'beer'   Buuráa (personal name of a man)
    (c)   AL humay 'red soil'   Humáy (name of a village)

The synchronic attestation of this function of accent 2 in all modern WR languages suggests that it must already have operated in their predecessor language PWR. In transition from PNWR to PIRQ accent 2 seems to have acquired new functions.

(20)   Iraqw and Gorwaa: lexicalisation of onomastic derivations in accent 2

    (a)   IR slooroo 'foam'   slooró 'mantis; algae'
           IR koonkomo 'cock'   koonkomó 'bean seed borer (kind of insect)'
           IR daqway 'donkey'   daqwáy 'greyish beans'
           IR gongooxi 'knuckle'   gooxí 'pebble game for children, knuckle game'
    (b)   GO xir'ima 'swelling'   xir'imá 'cold, catarrh'

In all cases in (20) the onomastic stage preceding lexicalisation is not attested, but it is clear that the nouns that display accent 1 represent the conceptual base of the derivations that bear accent 2, the partners being related by metaphor (IR *koonkomó*), metonymy-synekdoché (IR *daqwáy*, *gooxí*, GO *xir'imá*) or because the noun with accent 2 represents a subordinate category to its base with accent 1 (GO *xir'imá*).[9]

It could be suspected that, in the long run, the derivational suffixes with high tone (i.e. as carriers of accent 2) in (17) might represent the result of a derivation by onomastic conversion to accent 2 at a historical stage preceding PWR (see Kießling (2002: 126ff.) for further elaboration of this point).

What is important in this context is that in PIRQ a process of regressive tone spread must have contributed to the retention of accent 2 in spite of the loss of terminal vowels by a regular process of apocope. This is illustrated in (21).

(21) Regressive high tone spreading and apocope in PIRQ

PWR	PIRQ: high tone spread	PIRQ: apocope	Iraqw / Gorwaa
*masladú 'fruit trees (sp.)'	*maslárú	*maslár	maslár
*masaasakú 'ants (sp.)'	*masaasákú	*masaasákw	masaasákw
*hharahhará 'white ants'	*hharhhárá	*hharhhár	hharhhár

3.1.2 Phonologicization and morphologicization of contrastive intonation

In nominal inflection, PIRQ could be found to have grammaticalised pragmatically motivated pitch-accent patterns. In the initial stage of this development, demonstrative and possessive suffixes in PIRQ were marked by a contrastive intonation, i.e. the initial syllable of the demonstrative and possessive suffixes was singled out to receive stress as a pragmatic means to highlight a contrast in reference. Since these suffixes had maximally two syllables, stress always fell on the ultimate (monosyllabic suffix) or penultimate syllable (disyllabic suffix) and was spelt out there phonetically as a high tone; it never had the chance to fall on the antepenultimate (and being realised as a low tone) which would have been the case with trisyllabic suffixes. As soon as the process of apocope deleted toneless final vowels in PIRQ, the resulting situation was that all nouns modified by demonstratives or possessives were left with a rising tone contour, i.e. accent 2. The historical development that leads up to this morphologicization of accent 2 as a mark of demonstrative and possessive modification is sketched in (22).

(22) PIRQ development from contrastive stress to accent 2 in the demonstrative and possessive paradigms

	Pre-PIRQ	Contrastive stress	Tonalisation	Apocope
D1	*N-SUB-i	*N-SUB-**i**	*N-SUB-**í**	*N-SUB-**í**
D2	*N-singa	*N-SUB-**sin**ga	*N-SUB-**sín**gà	*N-SUB-**síng**

D3	*N-SUB-qa'i	*N-SUB-**qa**'i	*N-SUB-**qá**'ì	*N-SUB-**qá'**
D4	*N-SUB-da'i	*N-SUB-**da**'i	*N-SUB-**dá**'ì	*N-SUB-**dá'**
1sg	*N-SUB-'ee'i	*N-SUB-**'ee**'i	*N-SUB-**'ée**'ì	*N-SUB-**'ée'**
2sgf	*N-SUB-oki	*N-SUB-**o**ki	*N-SUB-**ó**kì	*N-SUB-**ók**
2sgm	*N-SUB-oku	*N-SUB-**o**ku	*N-SUB-**ó**kù	*N-SUB-**ók**
3sg	*N-SUB-osi	*N-SUB-**o**si	*N-SUB-**ó**sì	*N-SUB-**ós**
1pl	*N-SUB-rena	*N-SUB-**re**na	*N-SUB-**ré**nà	*N-SUB-**rén**
2pl	*N-SUB-hunga	*N-SUB-**hun**ga	*N-SUB-**hún**gà	*N-SUB-**húng**
3pl	*N-SUB-'ina	*N-SUB-**'i**na	*N-SUB-**'í**nà	*N-SUB-**'ín**

This kind of sedimentation of a contrastive intonation pattern is tied to the semantic feature of definiteness which could be seen most clearly from the fact that it was only demonstratives, possessives (and personal pronouns) that were affected by accent 2, but not the indefinites.

3.1.3 Morphologicization of syntactic intonation patterns

In PWR the NP seems to have been characterised by an intonation pattern which could be observed in modern Burunge still, i.e. the pitch level was slightly raised in front of every single lexical constituent. As a consequence the linker clitic that is used in genitival constructions to connect the possessed head noun with its subsequent modifier, e.g. nominal possessor or attributive adjective, always received morphosyntactically predictable high pitch, as shown in (23).

(23)   PWR morphosyntactic high pitch on the linker clitic

$$*[XCV]_{PSSD} + [C_iV]_{SUB} + [N]_{PSOR} \rightarrow *[XCV]_{PSSD} + [C_i\acute{V}]_{SUB} + [N]_{PSOR}$$
$$*[XCV]_{N} + [C_iV]_{SUB} + [ADJ] \rightarrow *[XCV]_{N} + [C_i\acute{V}]_{SUB} + [ADJ]$$

This high pitch must have spread regressively to the terminal vowel of the preceding head noun, a process which is also attested in modern Burunge (Kießling 1994: 27):

(24)   PWR regressive spread of phrase internal high pitch

$$*[XCV]_{PSUM} + [C_i\acute{V}]_{SUB} + [N]_{PSOR} \rightarrow *[XC\acute{V}]_{PSUM} + [C_i\acute{V}]_{SUB} + [N]_{PSOR}$$
$$*[XCV]_{N} + [C_i\acute{V}]_{SUB} + [ADJ] \rightarrow *[XC\acute{V}]_{N} + [C_i\acute{V}]_{SUB} + [ADJ]$$

The transition to PIRQ was marked by a fusion of the linker clitic with the preceding head noun which was accompanied by a loss of the final vowel in the linker:

(25)   PIRQ erosion and fusion of the linker clitic

$$*[XC\acute{V}]_{PSUM} + [C_i\acute{V}]_{SUB} + [N]_{PSOR} \rightarrow *[XC\acute{V}C_i]_{PSUM} + [N]_{PSOR}$$
$$*[XC\acute{V}]_{N} + [C_i\acute{V}]_{SUB} + [ADJ] \rightarrow *[XC\acute{V}C_i]_{N} + [ADJ]$$

This fusion transfers two items from the syntactic to the morphological level. On the one hand, the initial consonant of the previously independent linker was turned into a nominal suffix, and the phrasal intonation on the other hand developed into accent 2 as a distinctive marker of the modified form of the noun. As a consequence, the

contrast of atonal accent 1 (unmodified form of the noun) vs. accent 2 (modified form of the noun) has been established in the inflectional paradigm of the noun.

3.1.4 Phonologicization and morphologicization of phonotactically determined pitch-accent patterns

Apart from these rather restricted processes of tonal reanalysis, PIRQ is characterised by tonogenesis of the type of tonal compensation of syllable loss (Hock 1988: 101ff.) which had the most dramatic impact on the overall grammatical structure – verbal, nominal, and adjectival – of modern Iraqw and Gorwaa. Starting from a PWR situation where stress and its tonal realisation were largely predictable from syllable structure, terminal erosion caused the shift of inflectional oppositions, previously marked by segmental affixes, into the suprasegmental sector. In this context tonogenesis presents itself as the result of a lack of readjustment of the pitch-accent pattern to altered phonotactic conditions. Syncope and apocope repeatedly changed the syllabic structure of almost all inflectional forms of the verb, but the intonation pattern was not readjusted to the new syllabic makeup; on the contrary, the newly emerging tonal patterns became established as features of a tonal inflection, and stress lost its priority with respect to tone.

The reorganisation of the PWR accentual system in PIRQ must have taken place passing the following stages. Starting point was a system in which stress was fixed, its tonal realisation being predictable, depending on the position of stress: the stressed antepenultimate received low pitch, whereas the stressed penultimate received high pitch. (26) illustrates this kind of tonalisation of stress with its various manifestations according to the possible phonotactic structures of the words.

(26) Pre-PIRQ starting point of the tonalisation of stress patterns

	basic syllable pattern	stress assignment	tonetic realisation
(a)	CVCV →	**CVCV** →	**CV́CV**
(b)	CVCCV →	**CVCCV** →	**CV́CCV**
(c)	CVV(C)CV →	**CVV(C)CV** →	**CV́V(C)CV**
(d)	CVV(C)CVCV →	**CVV(C)CVCV** →	**CV̀V(C)CVCV**
(e)	CVCVCV →	**CVCVCV** →	**CV̀CVCV**

Operating on the basis of these syllable structures, a rule of terminal postpalatal erosion affecting the forms of the 3sgm in the imperfective aspect (which were characterised by a short palatal vowel in a light penultimate syllable) created the following structures:

(27) PIRQ terminal postpalatal erosion, affecting 3sgm imperfective

    CV̀Cí(y)à → CV̀Cí

    CV̀VCí(y)à → CV̀VCí

Two further rules, anticipatory lengthening of vowels plus general terminal erosion, then started operating, affecting all the other inflectional forms; the former caused the convergence of previously short-vowel roots with long-vowel roots, the latter had the effect of creating structures with a final high tone from almost all input forms.

(28) PIRQ anticipatory lengthening of vowels plus general terminal erosion, operating on all forms except 3sgm imperfective

CV́CV → CV́VCV → CV́VC

CV́CCV → CV́VCCV → CV́VCC

CV́V(C)CV → CV́V(C)C

The same rules also operated on the output of the terminal postpalatal erosion in (27) above, i.e. the 3sgm imperfective, but in contrast to (28) and due to the low tonalisation of the previously antepenultimate root syllable, they created structures with a final low tone as indicated in (29):

(29) PIRQ anticipatory lengthening of vowels plus general terminal erosion, operating on 3sgm imperfective

CV̀Cí → CV̀VCí → CV̀VC

CV̀VCí → CV̀VC

Further low tone structures were created by terminal postpalatal erosion and general terminal erosion operating on the forms of the subjunctive paradigm that started off in PWR with a low tone structure throughout, due to the tone-integrative nature of the subjuncitve suffix *-`ee*.

(30) PIRQ terminal postpalatal erosion, anticipatory lengthening of vowels plus general terminal erosion, operating on the subjunctive forms

CV̀Cèe → CV̀VCèe → CV̀VC

CV̀CCèe → CV̀VCCèe → CV̀VCC

CV̀V(C)Cèe → CV̀VCC

CV̀Cì(y)èe → CV̀Cìyè → CV̀Cì

CV̀VCì(y)èe → CV̀VCìyè → CV̀VCì

Further rules such as vowel reduction in super-heavy syllables and cluster simplification operated to produce the following distinctive tone patterns in finite verbs:

(31) PIRQ distinctive tone patterns in verbal inflection

    CV̀VC

    CV́VC

    CV̀C

    CV́C

    CV̀Cì

    CV̀VCì

It could be seen clearly now how a series of terminal erosions, compensations, simplifications and reductions radically changed the segmental and syllabic structure of words, turning previously trisyllabics into disyllabics and even monosyllabics. In spite of these drastic changes, the intonation patterns of these words, predictable in the beginning, were not adjusted to the altered phonotactic structure, thereby losing their phonetic motivation, becoming unpredictable and distinctive. As a result the pitch contours, initially predictable by syllable structure and the position of stress, penetrated into the phonological domain and became established as a distinctive opposition, no longer mere tonetic realisations of a fixed stress pattern, but representing two distinctive contour tone patterns:

In most cases in PIRQ, the final high tone started to attract stress, indicating a transition from a former accent system to a tone system, since it was the tone now that affected the stress pattern.

(32) PIRQ reanalysis of stress as a function of tone

    CV̀CV́C → CV̀CV́C

The following tables (33a-b) select a couple of inflectional forms of the verbs *doosl 'cultivate' und *daq 'skin' (taken to represent long and short vowel group of the major verb class), keeping track of their changes in a step-by-step fashion to make explicit how inflectional marking based on the affixation of segmental morphemes in the frame of a previously predictable stress pattern was shifted to the suprasegmental sector as a result of various segmental reductions which were not followed by intonational readjustment to altered syllable shapes, in short how the system of verbal tone inflection arose in PIRQ.[10]

(33a) Development of tonal contrasts in the verbal inflectional system of PIRQ				
	PWR	predental syncope	Tonalisation of the stress pattern	Terminal post-palatal erosion
1sg.NPF	*doosl-a	*doosla	*doosla → *dóoslà	*dóoslà
2sg/3sgf.NPF	*doosl-it-a	*dooslta	*dooslta → *dóosltà	*dóosltà
3sgm.NPF	*doosl-i(y)-a	*doosliya	*doosliya → *dòoslíyà	*dòoslí
3sgm.PF	*doosl-i(y)-i	*dooslii	*dooslii → *dóoslìi	*dóoslì

1sg.SJN	*doosl-Ø-èe	*dooslèe	*doo̲slèe → *dòo̲slèe	*dòoslè
2sg/3sgf.SJN	*doosl-it-èe	*doosltèe	*doo̲sltèe → *dòo̲sltèe	*dòosltè
3sgm.SJN	*doosl-i(y)-èe	*doosliyèe	*doo̲sliyèe → *dòo̲slìyèe	*dòoslìyè
1sg.NPF	*daq-a	*daqa	*da̲qa → *dá̲qà	*dáqà
2sg/3sgf.NPF	*daq-it-a	*daqta	*da̲qta → *dá̲qtà	*dáqtà
3sgm.NPF	*daq-i(y)-a	*daqiya	*da̲qiya → *dà̲qíyà	*dàqí
3sgm.PF	*daq-i(y)-i	*daqii	*da̲qii → *dá̲qìi	*dáqì
1sg.SJN	*daq-Ø-èe	*daqèe	*da̲qèe → *dà̲qèe	*dàqè
2sg/3sgf.SJN	*daq-it-èe	*daqtèe	*da̲qtèe → *dà̲qtèe	*dàqtè
3sgm.SJN	*daq-i(y)-èe	*daqiyèe	*da̲qiyèe → *dà̲qìyèe	*dàqìyè

(33b) Development of tonal contrasts in the verbal inflectional system of PIRQ (continued)						
		Vowel reduction	anticipatory lengthening	Postconsonantal deletion of dentals	terminal erosion	PIRQ
1sg.NPF	*dóoslà	*dóoslà	*dóoslà	*dóoslà	*dóosl	*dóosl
2sg/3sgf.NPF	*dóosltà	*dósltà	*dósltà	*dóslà	*dósl	*dósl
3sgm.NPF	*dòoslí	*dòoslí	*dòoslí	*dòoslí	*dòosl	*dòosl
3sgm.PF	*dóoslì	*dóoslì	*dóoslì	*dóoslì	*dóosl	*dóosl
1sg.SJN	*dòoslè	*dòoslè	*dòoslè	*dòoslè	*dòosl	*dòosl
2sg/3sgf.SJN	*dòosltè	*dòsltè	*dòsltè	*dòslè	*dòsl	*dòsl
3sgm.SJN	*dòoslìyè	*dòoslìyè	*dòoslìyè	*dòoslìyè	*dòoslì	*dòoslì
1sg.NPF	*dáqà	*dáqà	*dáaqà	*dáaqà	*dáaq	*dáaq
2sg/3sgf.NPF	*dáqtà	*dáqtà	*dáqtà	*dáqà	*dáq	*dáq
3sgm.NPF	*dàqí	*dàqí	*dàaqí	*dàaqí	*dàaq	*dàaq
3sgm.PF	*dáqì	*dáqì	*dáaqì	*dáaqì	*dáaq	*dáaq
1sg.SJN	*dàqè	*dàqè	*dàaqè	*dàaqè	*dàaq	*dàaq
2sg/3sgf.SJN	*dàqtè	*dàqtè	*dàqtè	*dàqè	*dàq	*dàq
3sgm.SJN	*dàqìyè	*dàqìyè	*dàqìyè	*dàqìyè	*dàqì	*dàqì

The most important effects to be observed here are the following: the low tone which is characteristic of 3sgm.NPF (*dàaq, *dòosl) reflects the low pitch realisation of the stem syllable, in accordance with the rule of tonalisation of the stress pattern which fixes low pitch on a stressed antepenultimate. Even after two cycles of apocope (terminal postpalatal erosion and (general) terminal erosion) this low pitch has been retained. The low tone in the subjunctive forms is a result of the low tone spread from the subjunctive suffix *-ˋee; and the high tone in all the other inflectional forms of PF and NPF reflects the original intonation determined by stress after the operation of terminal erosion.

It is obvious that this model hinges on the assumption of a decisive difference in syllable number that is to be held responsible for the assignment of different intonation patterns which became tonalized and morphologicized in the course of subsequent syllable reductions. Thus, it is crucial that 3sg.NPF must have been trisyllabic at the time when tonalisation of the stress pattern took place. Only this configuration guarantees that the final stem syllable – as the stressed antepenultimate – could receive the low pitch realisation of the accent. On the other hand, predental syncope (PIRQ.3) must have already operated on 2/3sgf, so that the final stem syllable – as the penultimate – could attract the high pitch realisation of the accent. In this way, PIRQ could be seen to retain the original paradigmatic oppositions of 3sgm.NPF, 3sgm.PF, 2/3sgf.PF/NPF and 1sg.NPF as a result of compensation in tonology and vowel quantity, in spite of dramatic reductions and syllable loss.

The gender-differentiating contrast of tone in adjectives and participles, i.e. low tone (accent 1) for feminine concord vs. high tone (accent 2) for masculine concord (see (11) above), originates in the same set of phonological and phonotactic rules, see Kießling (2002: 140f.) for a detailed discussion.

4 Outlook and conclusion

Several processes have been found to cooperate in transition from PWR to PIRQ which were responsible for the establishment of a tone system of the pitch-accent type: (a) the functional extension of a previously established strategy of onomastic derivation, (b) the tonal reanalysis of pragmatically motivated contrastive stress, and (c) purely phonotactic developments affecting syllable structure on word and phrase level and leading to the tonalisation of intonation patterns. Among these, the last factor seems to be the most important of all in that it had the most drastic effects. In a former stage of the language at the PWR level, intonation patterns of phonological words were largely predictable by their syllabic structures. As soon as segmental loss on the PIRQ level affected syllable structure on grand scale without the intonation patterns becoming readjusted, the previously predictable patterns became unpredictable and distinctive.

In its synchronic typological appearance, the tone system of modern Southern Cushitic Iraqw and Gorwaa is quite similar to the situation in the "moderate" tone languages of Europe, such as Latvian, Lithuanian, Estonian, Swedish, Norwegian, Scottish-Gaelic, Slovenian and Serbo-Croatian. In all cases, the tone opposition operates on word level or above, but not below on the syllable level. This synchronic parallel is due to a typologically similar origin. In Europe it is associated with the phenomenon of polytonicity within the Baltic language alliance, therefore also called the "Language alliance of politonicity in northern Europe" by Ternes (1980: 86):

beside the introduction of a prosodic glottal stop (Danish, Latvian) and the development of vocalic overlength (North Saxon, Rhenish), tonalisation in Swedish, Norwegian and Scottish-Gaelic was one of the strategies to compensate suprasegmentally for syllable loss, probably reflecting a more archaic predisposition of Indo-European for developing moderate tonal phenomena (Ternes 2001). Typologically the same process has been demonstrated to be responsible for tonogenesis in Iraqw and Gorwaa above. The Southern Cushitic course of tonogenesis, however, differs from the tonal manifestations of polytonicity in Europe in that it is exclusively caused by the loss of **terminal** syllables due to apocope, but not by internal syllable loss due to syncope.

Within Cushitic, the process of phonologicization of intonation patterns by terminal erosion seems to be a common path of tonogenesis. For Eastern Cushitic Rendille, Oomen 1981 reports the same process with a similar outcome: due to the elision of a feminine gender marker in nouns and the resulting reduction by one syllable, a former pitch-accent system with predictable penultimate stress becomes phonemicized in the domain of gender marking. According to her, in pre-Rendille, there was predictable stress (= high pitch) on the penultimate mora in nouns, with the effect that in most cases the addition of a former feminine gender suffix *-et* had the effect of shifting the accent to the terminal root syllable since it became the penultimate stem syllable by then:

(34) Rendille: creation of accent opposition in nominal gender marking
      masculine nouns (unmarked for gender)   *ŚS̀ → ŚS̀ (no change)
      feminine nouns (marked by *-et)   *S̀Ś-èt → S̀Ś (syllable loss)

By this process, a former noun *ínàm 'boy' remains unchanged, whereas the derived feminine *ìnám-èt 'girl', by losing its terminal syllable, is left as ìnám, creating a paradigmatic opposition ínàm 'boy' vs. ìnám 'girl' where the loss of the feminine marker has been compensated by the different accent. A similar synchronic state of affairs, with respect to the tonal marking of a gender distinction, is attested in several Eastern Cushitic languages ranging from Afar (Bliese 1981: 181) and Somali (Saeed 1999: 17) to Arbore (Hayward 1984: 96) and Dhaasanac (Tosco 2001: 37, 73) and has been reconstructed for Proto-Sam (Heine 1978: 23, 25), which suggests that all of these phenomena call for a historical interpretation on the same line, probably reaching back to Proto-Omo-Tana level, maybe Proto-Eastern Cushitic level, but not beyond.

With observations like these, the evidence of a phonemic tone distinction at Proto-Cushitic level dwindles away. Two subgroups of Cushitic, Eastern and Southern, have been shown to innovate distinctive tone oppositions independently of each other

in different grammatical domains – nominal gender marking and verbal inflection, respectively –, applying a typologically identical mechanism of tonogenesis by suprasegmental compensation of syllable loss. These strands of evidence reaffirm the hypothesis of tonogenesis as a recurrent innovation on different historical levels within the Cushitic subbranch of AA. Future efforts of reconstruction at the general Cushitic level will have to prove if this model of tonogenesis might dispense with the necessity of reconstructing a phonemic tone opposition at Proto-Cushitic level altogether as implied in Ehret 1987, or if a residuum of tonal phenomena will force us to postulate phonemic tone for PC as advocated by Ehret 1995.[11]

Notes

(Your endnotes should automatically appear **below** this paragraph. Feel free to edit them, but do not delete this paragraph or try to remove the line which follows it!)

[1]   In contrast to Ehret 1980, the term Southern Cushitic is taken here in a restricted sense to refer to what has formerly been called West-Rift, i.e. four closely related languages of Tanzania which represent the uncontroversial core of Southern Cushitic: Iraqw, Gorwaa, Alagwa and Burunge (Kießling 2002).

[2] L_0 indicates a succession of any number of low tones.

[3]   All examples from Southern Cushitic languages apply the current Southern Cushitic orthography which uses the following conventions: sl IPA [ɬ], hh IPA [ħ], / IPA [ʕ], ts IPA [ts'], c IPA [tʃ'], tl IPA [tɬ'], ' IPA [ʔ]. For the sake of clarity of tonological arguments, low tone (otherwise left unmarked) will sometimes be marked by `; high tone is always marked by ´.

[4]   Abbreviations: AA Afroasiatic, ADJ adjective, AL Alagwa, BU Burunge, COL collective, D1 proximal demonstrative: near speaker, D2 proximal demonstrative: near addressee, D3 distal demonstrative: near neither of them, but still visible, D4 distal demonstrative: not visible, F feminine linker clitic, F1 linker clitic of a restricted feminine subclass, GEN genitival marker, GO Gorwaa, H high tone, IPF imperfective, IR Iraqw, L low tone, M masculine linker clitic, M1 linker clitic of a restricted masculine subclass, N noun, NPAST non-past tense, NPF non-perfective, PAST past tense, PF perfective, PIRQ Proto-Iraqwoid, POSS possessive, PSOR possessor noun, PSSD possessed noun, PWR Proto-West-Rift, SJN subjunctive, SUB subordinating gender linker.

[5]   This is different in both, Alagwa and Burunge, where the high tone of accent 2 always attracts stress; in the absence of accent 2, i.e. with accent 1, the position of stress is predictable on the basis of syllable structure, as has been described for Burunge by Kießling (1994: 25ff.): the penultimate receives stress if it is heavy, i.e. contains a long vowel or a diphthong; otherwise the antepenultimate is stressed.

[6]   Given the restriction to word and phrase level, the Southern Cushitic tone system must be analysed as tonal accent. But its operative restriction to morphosyntactic categories with the almost complete exemption of the lexical domain is at odds with Yip's (2002: 258) concise definition of an accentual language (emphasis R.K.): "Accentual languages typically have a **lexical** contrast between tone and no tone, with each morpheme having a maximum of one tone

or tonal complex whose location must be *lexically* specified, and even morphologically complex words often allowing only one tone to surface. […] Accented morphemes are those that have tones, unaccented morphemes are those that do not. This makes accentual languages look like tone languages, albeit ones of a fairly impoverished sort." From the Southern Cushitic point of view Yip's definition might have to be slightly modified with regard to the condition of "lexical specification" of the location of the tone or tonal complex, since the SC languages come up with a system in which the tonal assignment is largely determined by morphological and morphosyntactic criteria, while the location of the tone is restricted to the terminal syllable of the phonological word, and thus either conditioned by phonotactic criteria or by morphosyntactic criteria, but not by lexical ones.

[7] The issue of high tone collective suffixes in Burunge is controversial. Kießling 1994 has not recognised them. All the examples in the second column are taken from Endl's unpublished Burunge data (2000) which is at odds with Kießling's data who notes them with accent 1 throughout. The problem needs more attention and in-depth research.

[8] The position of stress is indicated by bold face throughout where necessary; the IPA symbol ' is avoided here because it could easily be confused with the glottal stop sign '.

[9] Conversion to accent 2 also acts as an onomastic derivation in connection with compounding. Thus the compound nouns PIRQ *'Ama'irmí* (name of a female ogre), PIRQ **'aysigá* 'father's sister' and GO **'ii'atlakú* 'antilope (sp.)' could be traced back to compounds of PWR **'aama* 'mother' (also used as a respectful form of address for women in general) and **'irimi* 'ancestral spirit', PWR **'ayi* 'mother' and **saga* 'head', **'ii'a* 'ear' and **tlakw* 'bad' that received accent 2 in the course of compounding. Further examples of accent 2, operating in compounding, could be found in Kießling (2002: 125).

[10] Organisation of the tables: shaded display is used to background those forms that are not affected by the specific rule.

[11] It goes without saying that I do not claim that this model of tonogenesis will account neatly and easily for all modern tonal phenomena in Cushitic languages. Of course, Dahalo and Ma'a are tonal, and there might be tonal correspondences between Ma'a and Dahalo roots (Ehret 1980: 41f.), as one anonymous reviewer has rightly observed. However, it has not been demonstrated convincingly that these correspondences are regular and that the roots they connect are really cognate on the Proto-Southern Cushitic level. The linguistic history and affiliation of both Ma'a and Dahalo, is not at all uncontroversial (Mous 1994, Tosco 1989, Tosco 2000: 99-107), and this brings about that shared retention from a Proto-Southern Cushitic ancestor is only one possible interpretation of Dahalo-Ma'a correspondences. In both cases, Ma'a and Dahalo, there has been considerable input from an Eastern Cushitic, probably Oromoid, source (Mous 1996), and also from a number of other sources. In any case I think that much more serious low-level reconstruction involving Ma'a and Dahalo will have to be done, before one could embark on something which will be more than a mere guess at their tonal history and its implications for wider Southern Cushitic.

(Your endnotes should automatically appear **above** this paragraph. Please do not change or delete this paragraph.)

Bibliography

Please do not put any tabs, linefeeds or paragraph marks into any entry in your bibliography. Just write the text, and it will automatically format itself with the correct hanging indent. If your bibliography is not indented in the same way as this paragraph, then you are not using the right style ("Bibliographie").

Berger, Paul & Roland Kießling. 1998. *Iraqw texts*. Rüdiger Köppe: Cologne.

Bliese, Loren. 1981. *A generative grammar of Afar*. Dallas: Summer Institute of Linguistics.

Ehret, Christopher. 1980. *The historical reconstruction of Southern Cushitic phonology and vocabulary*. Berlin: Dietrich Reimer.

Ehret, Christopher. 1987. Proto-Cushitic Reconstruction. *Sprache und Geschichte in Afrika* 8: 7-181.

Ehret, Christopher. 1995. *Reconstructing Proto-Afroasiatic (Proto-Afrasian)*. Berkeley & Los Angeles: University of California Press.

Endl, Michael. 2000. *Burunge data base*. Goima: computer file.

Haugen, Einar. 1976. *The Scandinavian languages. An introduction to their history*. London: Faber and Faber.

Haugen, Einar. 1982. *Scandinavian language structures*. Tübingen: Max Niemeyer.

Hayward, Dick. 1984. *The Arbore language*. Hamburg: Buske.

Heine, Bernd. 1978. The Sam languages. A history of Rendille, Boni and Somali. *Afroasiatic Linguistics* 6,2: 1-93.

Hock, Hans Henrich. 1988. *Principles of historical linguistics*. Berlin & New York & Amsterdam: Mouton de Gruyter.

Kießling, Roland. 1994. *Eine Grammatik des Burunge*. Rüdiger Köppe: Cologne.

Kießling, Roland. 2002. *Die Rekonstruktion der südkuschitischen Sprachen (West-Rift): von den systemlinguistischen Manifestationen zum gesellschaftlichen Rahmen des Sprachwandels*. Rüdiger Köppe: Cologne.

Mous, Maarten. 1993. *A Grammar of Iraqw*. Hamburg: Buske.

Mous, Maarten. 1994. Ma'a or Mbugu. In: Peter Bakker and Maarten Mous (eds.) *Mixed languages*. Amsterdam: IFOTT, 175-200.

Mous, Maarten. 1996. Was there ever a Southern Cushitic Language (Pre-) Ma'a? In: Catherine Griefenow-Mewis & Rainer Voigt (eds.) *Cushitic and Omotic languages: proceedings of the third international symposium, Berlin, March 17-19, 1994*. Köln: Rüdiger Köppe, 201-211.

Mous, Maarten, & Roland Kießling. 2003. *The reconstruction of Proto-West Rift phonology and lexicon*. Rüdiger Köppe: Cologne.

Nordbustad, Frøydis. 1988. *Iraqw grammar: an analytical study of the Iraqw language*. Berlin.

Oomen, Antoinette. 1981. Gender and Plurality in Rendille. *Afroasiatic Lingusitics* 8,1: 35-75.

Orel, Vladimir E. & Olga V. Stolbova. 1995. *Hamito-Semitic etymological dictionary*. Leiden & al.: Brill.

Saeed, John Ibrahim. 1999. *Somali*. Amsterdam & Philadelphia: John Benjamins.

Ternes, Elmar. 1980. Scottish Gaelic phonemics viewed in a typological perspective. *Lingua* 52: 73-88.

Ternes, Elmar, 2001. Indogermanisch eine Tonsprache? *Münchner Studien zur Sprachwissenschaft* 61: 169-184.

Tosco, Mauro. 2000. Cushitic overview. *Journal of Ethiopian Studies* 33,2: 87-121.

Tosco, Mauro. 2001. *The Dhaasanac language*. Cologne. Rüdiger Köppe.

Whiteley, Wilfred H. 1958. *A short description of item categories in Iraqw*. Kampala: East African Institute of Social Research.

Wolff, Ekkehard. 2000. Ein Meilenstein der komparativen Afroasiatistik? Christopher Ehrets (1995) Rekonstruktion des Proto-Afroasiatischen. *Afrika und Übersee* 83: 115-139.

Yip, Moira. 2002. *Tone*. Cambridge & al.: Cambridge University Press.