

Thoughts when Drawing a Map of Tone Languages

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A map of African tone languages¹ - of what use could it be and what would be its theoretical status?

Geographers were smugly satisfied when recently they found themselves able to step back and look at their work from a distance: what had been a web of isolated measurements highs and lows, slopes and levels, area features, borders and all - the space photograph showed it to be correct and coherent.

In tonology, a point from where to view the tonal landscape would be very welcome. But from which perspective can a tone map be sketched? What could be a common point of reference? Tonic similarity cannot serve this purpose. That has been decided before there was a renewed interest in "surface" phenomena. but it still is clear that tonetics can at most be a secondary perspective. Reference could be made to morphotonemic rules and their ordering, but these rules do not lend themselves to being displayed as a map. Certain sets of language specific rules which are relevant to typological studies could be identified in autosegmental theory; but analyses. of languages with more than two or three tones still have to demonstrate that this theory provides a wider framework for a typology.² Feature analyses could be considered here because they claim universal relevance; but features used in actual analyses still differ widely. and such analyses usually have a toneme notation in addition to feature notation - as a sort of tonemic shorthand.

So this map counts tonemes. The number of contrastive tone levels serves as common denominator. Glides will be disregarded - both those with open ends and those with fixed end points.

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Since in African tone languages levels are basic to contours, no essential perspective will be lost by looking at levels only.

The items to be displayed as a map, then. are the numbers for the distinctive levels: 0 "no tone", 2 "two phonemic tone levels" ... 5 "five phonemic tone levels".

These categories cannot always be handled as simply and rigidly as it may seem. There are cases where the analysis of particular language leads to a choice between positing either tone or accent as phonemic (or two or three tonemes.. etc.) But it would be misleading to call these decisions all arbitrary cf.the case of Nsok, below.

This sketch treats analyses as if they were comparable. They are not. But to some extent, such comparability has been achieved by "filtering" the analyses. Most of them are recent, and others, screened through secondary literature. Of the analyses quoted in this sketch. a large number have been quoted together with secondary sources esp. from recent publications dealing with tone under a theoretical perspective. Some are based on personal observation. In most cases, the analyses fulfil the following conditions:

In the tone language analysed,

1. pitch phenomena were shown to be contrastive on the tonemic level; if underlying tones were given (e.g. in non segmental composition or autosegmental analysis), these tones were added with a slash;
2. tonemic contrasts were presented with reference to the overall tonal system of the language;
3. the language was shown to have lexical tone;
4. level tonemes were distinguished from glide tonemes;
5. tonemic differences caused by downstep or floating tones were not counted as additional levels.

Throughout this paper, tones will be numbered from 1 "Low" 2, 3, 4, 5 "Higher", with "5" as the "High" of the largest number of levels possible. It should be noted that this map has only one tonal dimension: the number of tonemic levels of the lexicon.

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This makes certain languages stand out. If other dimensions were included, such as the complexity of rules, or the amount of perturbation caused by floating tones, then other languages would stand out - e.g., the Bamileke group.

The Map

The map shows homogeneous areas with no tones (0), areas with two tones (2), and spots with (3), (4), and (5). There also are cases of transition and uncertainty: (0/2), (2/3) etc. It is the borderline cases which present a challenge when it comes to coining "tone language types".

(0) No tone

There are large areas where non-tonal languages are spoken: all of North Africa, and most of the East Coast. The borderlines "tone vs. non-tonal" often, but not always, coincide with borders of language families: trade languages spread across various family areas, and members of the Afro-Asiatic and West Atlantic families are found on both sides of the border. Most of these languages have stress, but some do not.

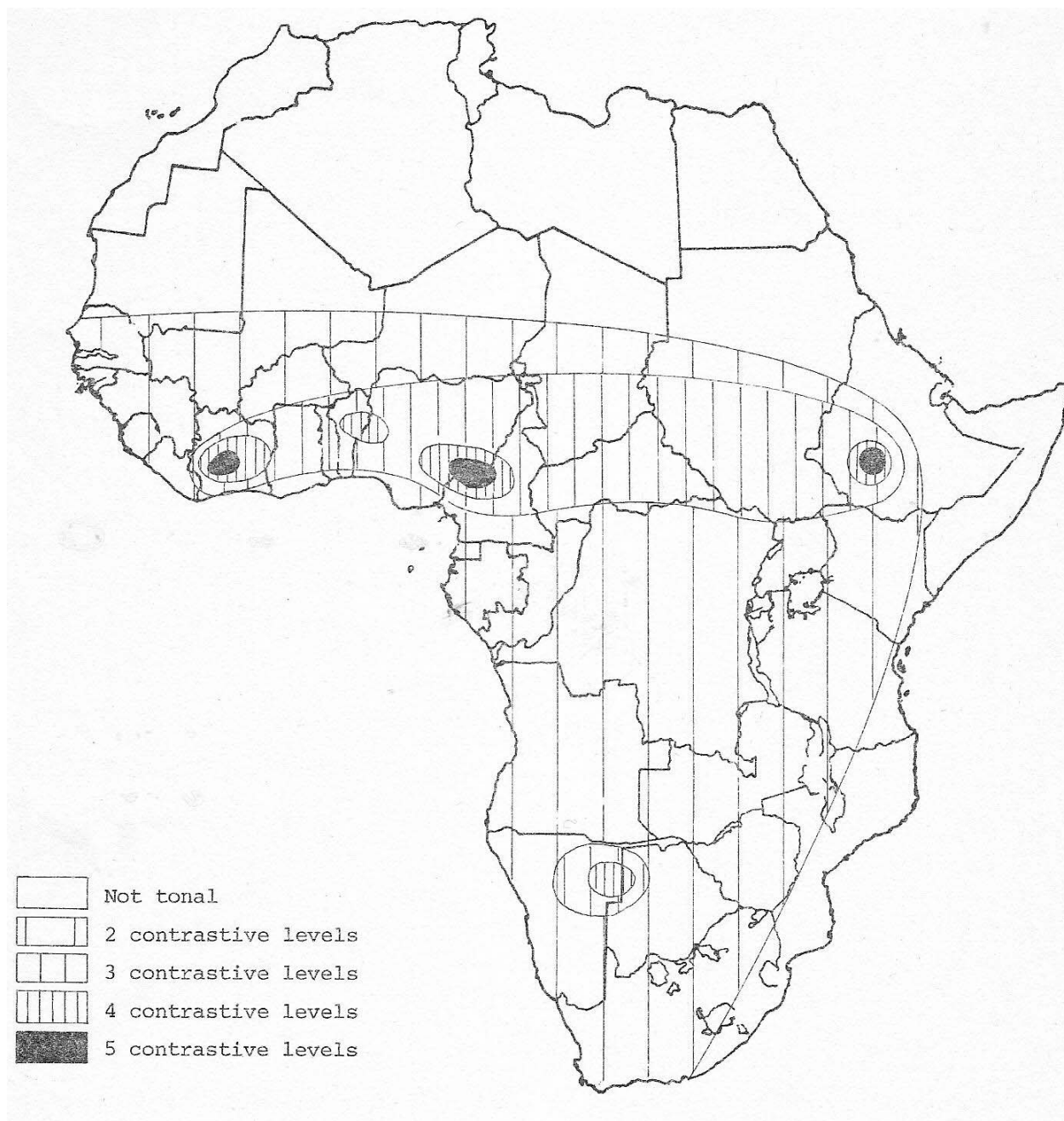
Here is the home of the "interference theory". This theory explains tonogenesis on the basis of contact with tonal languages (esp. within Afro-Asiatic). In the spirit of this theory, one could look at the map and conclude that Arabic and Berber have lost their tones - and so have Spanish, Basque and French. Wolff (1983:203ff.) has offered a more convincing explanation of tonogenesis in Chadic languages.

(0/2) Stress or tone

"Two-prosodeme" languages (cf. Moehlig 1974:83ff.), varieties between accent, pitch accent, and restricted two-tone languages are typical of Bantu areas, but the dilemma of descriptions between stress and tone also characterises the situation in Afro-Asiatic languages. Within Afro-Asiatic, the Omotic languages behave different from the ("rest of the") Cushitic languages:



Map I: Map of tone languages
(Figures indicate numbers of contrastive tone levels)



Map II: Map of tone levels

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Their tonal behaviour would appear to supply additional evidence for separating former "West Cushitic" from the rest of Cushitic: Cushitic languages have phonetic or phonemic stress, Omotic languages, tone. There are exceptions. Wolaytta (Adams, forthc.) has traces of syntactic tone oppositions, and, in addition, it has other suprasegmental contrasts of heavy functional load: stress, consonant gemination, and vowel length.

(2) Two level tones

The majority of African languages have two tone levels. A belt of such languages stretches across the continent, parallel to the equator.

In the West, the Mel languages and the Mande languages typically have 2 tones in the grammar, but also in the lexicon. Gola is an example where lexical contrasts have a light functional load, but grammatical contrasts are frequent:

(1) mi mana wodiɔ	1 22 221	'I want a-goat'
(2) mi mana wodiɔ	1 22 2121	'I want a-cow'
(3) mi mana wodiɔ	2 22 121	'I don't-want a-goat'
(4) mi mana wodiɔ	2 22 1121	'I don't-want a-cow'

Lexical contrasts as those between (1) and (3) vs. (2) and (4) are extremely rare, and the grammatical contrast as in (1) and (2) vs. (3) and (4) could be viewed as intonational.

(2/3) Two or three level tones

The belt of two-level languages is sprinkled with threelevel languages. In some cases, a three-toneme analysis can be re-written in terms of two underlying tone oppositions. The following example is taken from a grassfields Bantu language, Nsok. An analysis in terms of "contours" counts six phonemic contours. There are three phonemic level tones on the level of abstraction which Weidert (1983:passim) calls "L2", but only two levels lie at the base of all these tone patterns (cf. Weidert's "L3"):

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Examples, Nsok (Wiesemann 1983: 93, cf. Grebe 1975)

L1	L2	L3	
Phonetic Countours	Phonemic Tones	Underlying Tones	
(5) tan ↗	High Rise	222	'hat'
(6) la ↘	High Fall	221	'permit, n.'
(7) coŋ —	Mid	122	'dance, n.'
(8) lav ↘	Mid Fall	121	'house'
(9) ndzey _	Low	112	'clothes'
(10) bar ↘	Low Fall	111	'cup'

gɔ	5	'judge, n.'	gii	51	'fever'
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Examples, Wobe (Voltaic, Bearth & Link 1980:151; cf. Singler 1984: 61)

(15)

kwe	1	'chimpanzee'
kwā	2 Fall	'husband'
kpa	2	'ladder made of bamboo'
kpa	3	'bone'
kpa	4	'banana cake'

Examples, Igede (Kwa, Bergman 1971:16, cf. Stahlke 1977: 5, tracing back the 4 tonemes to 2 diachronically)⁴

(16)

lɔ	1	'to fly'
lɔ	2	'to scatter'
lɔ	3	'to stay'
lɔ	4	'to wash'

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Examples, Mambila (Benue-Congo, Perrin 1974:97)⁵

(17)

bal	1	'wing'
cel	2	'fog'
bal	3	'bag'
sed	4	'fufu'

Examples, Gimira-Bench (Omotiic, Wedekind 1983:129ff)

(18)

ʃot	1	'seedling'
kar	2	'wasp'
bar	3	'holiday'
ʃot	4	'crutch'
ʃot	5	'edge'

Examples, #Hoã (Khoisan, Gruber 1973:427f. footn., cf. also Anderson 1978:139)

(19)

#gão	1	'woman'
//kam	2	'relationship term'
//qboʔε	3	'relationship term'
kyxoõ	4	'extended skin'

Note that in each of these sets, the data are of the same word class. Note also that a comparatively large percentage of words, even in their citation form, consists of one syllable only. In most of these languages this is representative of the canonical forms of lexical items.

The phoneme inventories of each of these languages are of different sizes - some of them rather on the large side; cf. (18) and (19), where Gimira has a full set of ejectives, of affricates, and retroflexed consonants, and #Hoã, 5 clicks, 8 click releases, palatalisation and nasalisation in addition to tone. One might be inclined to look for a simple correlation

large phoneme inventory vs. small phoneme inventory

small toneme inventory vs. large toneme inventory,

but such a correlation would not really be consistent with the way diachronic changes seem to work.

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In fact, Serzisko has provided some preliminary evidence that the correlation phoneme quantity vs. tone quantity is not statistically significant.

The examples given above still cannot falsify Maddieson's claim that a number of five distinctive levels is a maximum universally. Any set which exceeds this number will contain glide tones. Hombert quotes Pollack as saying that "a maximum of five level tones can be distinguished under laboratory conditions" (Hombert 1977:185). For the data given above this probably means, each item of each minimal set will be identified without further context on the first hearing.

The Exceptional and the Rule

Wolff is not satisfied to see tonality of Afro-Asiatic languages explained on the basis of some "interference" by non-Afro-Asiatic tone languages, He looks for processes inherent to the language which has developed tone, and for Chadic languages he finds them in the phonemisation of tonetic features which accompany consonants (1983:208).

For the Afro-Asiatic language exemplified above, and maybe for some of the others too, a different explanation seems valid which is not new but can hardly be presented more convincingly than with data from Gimira-Bench; cf. the data under (18) above and the chart below, with elision and tone sandhi.⁶

Examples, Omotic languages (Bender 1971, Wedekind forthc.)

(20)

Gloss	Gimira (5) Bench		Janjero (3) Yemsa	Dizi (2)	Mocha (2)	Kefa (2)
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Gloss	Gimira (5) Bench		Janjero (3) Yemsa	Dizi (2)	Mocha (2)	Kefa (2)
'food/eat'	m'	1	nu:wwa	m'.mo	mə:.m	ma.rome
'breast'	t'yam.	2	ta.ma	t'ya.mu	t'ɛ:.no	t'a:.no
'dog'	kyan.	3	ka:.na	kia.nu	kun'naa.no	ku.na:.no
'cold'	k'og.	4	kɔ:.co	co.u	k'ə.wɔ	a:.ko

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but two or three tonemic levels only (the number of tone levels has been given in parentheses next to the name of the language).

Schuh generalises, "many African languages have lost syllables, leaving monosyllabic roots. In such languages tone generally plays a greater functional role than in languages where roots are two syllables or longer", but he goes on to say that the tone inventory "in the most tonally complex African languages rarely matches that of the simplest Chinese languages. ... The role of tone in Asian languages is therefore almost always lexical." (1978:251).

Gimira-Bench is typologically close to Asian tone languages: it has very few grammatical tone rules, but a high functional load on lexical tone. The map shows that there are not many such languages in Africa.

At the other end of the scale, one has languages with long words but few tones. "Word" here would be all citation forms from open lexical classes like nouns and verbs.

Bantu languages for instance preserve long citation forms but have few tones if any. One could conclude that a mathematical product - namely,

tone levels multiplied by the canonical number of segments per word (i.e., citation form), multiplied by the number of other suprasegmental features -

might be a constant for languages of some lexical and syntactic similarity. If this were strictly so, then the number of tone levels could be predicted on the basis of phonological information:

*tones = constant / segments * suprasegmentals*

But who would dare to claim this on the basis of a little map alone?

Only very rarely can the development of tones be traced back as clearly as in the case of Bench, but similar changes lie hidden in the history of many of the tone languages displayed on the map. Hopefully, a map can show where to go next.

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[List, see footnote 1]

Afar	0	Bliese 1981:209, accent
Agaw	0/2	Hetzron 1976, tone and accent (?)
Akan	2	Welmers 1973:118
Amharic	0	Cohen 1936, no accent
Angas	3	Burquest 1974:123
Arabic	0	Jungrathmayr in J&M
Bambara	2	Courtenay 1974:302, Schuh 1978:235f.
Bamileke	2/3	general: Voorhoeve 1968:108; Dschang: Anderson 1978:144, 2 underlying tones; Ngamambo: Asongwed and Hyman 1977, Hyman 1978:260, 2 tones underlying
Bariba	4	Welmers 1952:85, Anderson 1978:145
Beja	0	Hudson 1976:100, accent governing pitch movements
Bemba	2	Lehmann in J&M
Berber	0	Wolff 1983:203
Bété	4	Werle 1976:12
Bolanci/Bolawa	2	Lukas 1969:134, Jungrathmayr 1978, Schuh 1978:226
Boni	0/2	Heine 1977:254
Burji	0	Wedekind 1980:137
Busa	3	Wedekind 1972:236
Chasu	2/0	Kaehler-Meyer 1962, Weidert 1983:48f., from accent to 2 level tones
Chokwe	0/2	Moehlig in J&M
Daba	3	Lienhard 1977:1
Dagbani	2	Jungrathmayr and Leger in J&M
Dan	5	Flik 1977:8
Dholuo	2	Okoth-Okombo 1982:26
Dinka	3?	Tucker and Bryan 1966
Dullay lggs.	0	Amborn et al. 1980: 74, tone. Zaborski 1983: accent
Duwai	2	Schuh 1978:225
Ebira	3	Scholz personal communication

Edoid lggs.	2	Elugbe 1977:54, Leben 1978:180, Williamson 1979:426f.
Efik	2	Kim 1981:271f.
Etung/Ejagham	2	Bendor-Samuel and Edmondson 1977:3, Schuh 1978:235
Ewe	2/3	Moehlig 1971, Stahlke 1971:142, from 3 to now 2 level tones
Fang	2/3	de Wolf in J&M
Fulani	0	Mukarowski in J&M
Fur	2	Jernudd 1977:160
Ga'anda	3	Newman 1971:15, Anderson 1978:139
Ganda	0/2	Meeussen 1966:85, 2 level sequences
Gã	2	Dakubu 1981:227, 2 level tones and stress
Gě/Mina	2	Weidert 1983:135
Gimira/Bench	5	Wedekind 1983:134, forthc.
Gola	2	Iserf forthc., Wedekind personal investigation
Gumuz	2?	Uzar forthc., Wedekind personal investigation
Gwari/Gbari	3	Hyman and Magaji 1970:15
Hausa	2	Jungrathmayr in J&M
Ibo/Igbo	2	Voorhoeve 1968:108, Goldsmith 1976:56ff.
Igala	3/2	Maddieson 1974:206, from 2 to now 3 levels
Igede	4/2	Bergman 1971, Stahlke 1977:5, from 2 to now 4 levels
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Ijo lggs.	2	Williamson 1979:426f.
Iraq	0/2	Whiteley 1958:12, 2 level tones?
Janjero/Yemsa	3	Wedekind forthc.
Jukun	3	Welmers 1973 passim, Goyvaerts 1983:62
Kabre	2	Jungrathmayr and Leger in J&M
Kalenjin lggs.	2	Creider 1982, 1982a:20
Kamba	0/2	Moehlig in J&M
Kanuri	2/3	Cyffer 1971:237, from 3 to now 2 level tones
Kavango lggs.	0/2	Moehlig in J&M
Kefa	2	Wedekind, personal investigation
Kenyang/Anyang	2	Goyvaerts 1978:276f.
Kikongo	2	Miehe in J&M
Kikuyu	2	Goyvaerts 1983:60
Kinga	0/2	Schadeberg 1973:24, 2 level tones, Weidert 1983, accent
Kinyarwanda	0/2	Kinmenyi 1976, cf. Hyman 1978:264, 2 level tones

Kirundi	0/2	Stevick 1969, cf. Hyman 1978:264
Koman lggs.	2/0	Bender 1984:262, Twampa 2 level tones, others?
Kposo	2	Heine 1968:138
Kru	2/3	Anderson 1978, ct. Singler 1984:63, 2 level tones, cf. Lightfoot 1974:425, 3 level tones?
Kunama	0/2	Boehm 1984:39, accent
!Kung	4	Snyman 1975:144
Lingala	2	Miehe in J&M
Logo	2	Goyvaerts 1983:60
Lorna	2	Welmers 1973:122
Luba	0/2	Moehlig in J&M
Luganda	0/2	Stevick 1969, Hyman 1978:264, tone or accent
Logbara	2/3	Crazzolara 1966:11, 3 level tones?, Schadeberg 1981:283
Mamvu/Balese	3	Vorbichler 1971:131
Mambila	4	Perrin 1974:97
Mandinka/Hende	2	Meeussen 1971, Leben 1973, 1978:186, Dwyer 1978:181
Mbam-Nkam lggs.	2	Voorhoeve 1976, all 2 level tones
Mbembe	5/2	Maddieson 1974:206, Shimizu 1980:95f. from 2 to now 5?
Mocha	2	Leslau 1958:135
Mofu-Gudur	2	Barreteau 1978:14
Mubi	0/2	Jungrathmayr 1978.:78
Murle	0	Arensen 1982:15
Musgum	2	Jungrathmayr and Leger in J&M
Nama	3	Hagman 1977:222
Ndoro	4/2	Maddieson 1974:206, from 2 to now 4 levels
Nsok/Lamnsok	2/3	Grebe 1975, Wiesemann et al. 1983:93, 2 underlying
Nubian	0	Armbruster 1960:39
Nuer	3	Crazzolara 1933:3
Nupe	3	George 1970:102, Schuh
Nyakyusa	0	Hombert 1978:4, accent
Oromo/Galla	0	Gragg 1976:175, accent
Rimi/Nyaturu	2	Schadeberg 1979: 288
Safwa	0/2	Voorhoeve 1973, accent replaces tone, Weidert 1983:230f. pitch accent
Sango	3	Samarin 1958:67

Sango West	2	Samarin 1958:67, tone loses contrastive functions
Schambala	2	Kaehler-Meyer 1962:7
Sebei Kalenjin	3	Montgomery 1966:38
Senufo	2	Jungrathmayr in J&M
Shilluk	3	Tucker and Bryan 1966
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Somali	0	Biber 1982, Weidert 1983:230f., pitch accent
Songhay-Zarma	2	Nicolai 1976:121f. .
Sura	3	Jungrathmayr 1963:19f. a 4th tone mentioned with doubt
Susu	2	Houis 1963:29
Swahili	0	Hombert 1978:4 tones lost
Talodi Iggs.	2?	Schadeberg 1981:166, tones transcribed, not analysed
Tharaka	2	Moehlig 1974:85f. 2 prosodemes, Goyvaerts 1983:60
Tigre	0	Mueller in J&M
Tigrinya	0	Mueller in J&M
Tiv	2	Goldsmith 1976:36
Tobanga	3	Caprile 1978, cf. Wolff 1983:121, Wieseemann et al. 1983
Toura	4	Bearth 1968:46f.
Tubu	2	Lukas 1953:6
Vai	2	Welmers 1976:29, Schuh 1978:222,.231
Wobe	4	Bearth & Link 1980:149, Singler 1984:61
Wolaytta	0	Adams forthc., accent
Wolof	0	Sauvageot 1965:41, accent
Xhosa	2	Louw 1971:104, Weidert 1983:217
Yaka	0/2	Meeussen 1971, cf. Weidert 1983:48 tone or accent
Yala	3	Armstrong 1968:139, Schuh 1978:239
Yoruba	3	Hombert 1977: 185
Zande	2?	Dammann in J&H
Zulu	0/2	Cope 1970:114, Laughren 1984:184f. tone or accent
Hoã	4	Gruber 1973:427f. fn., Anderson 1978:163

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¹ The list [above, pp. 116-118] serves to relate names on the map and sources. For the larger languages, where common knowledge is assumed, we refer to general reference books, esp. Jungrathmayr and Moehlig 1983 (J&M).

² Cf. Singler 1984 for a recent application of autosegmental studies to a multi-level tone language. But where glides are few, and where tones and syllables map one by one (synchronically), autosegmental theory cannot demonstrate its strength.

³ Maddieson 1974:206f. is an early summary of possible explanations.

⁴ Another minimal set from a Kwa language has been provided by Werle 1976, p. 12:

a bi	1 1	'we produced'
a bi	1 2	'we vomit'
a bi	1 3	'we produce'
a bi	1 4	'we have problems'

⁵ From the Benue-Congo group, one case of five contrastive tone levels has been reported in a Mbembe language (Shimizu 1980:95f., cf.Maddieson 1974: 206). But Shimizu states that tone 5 is rare. From his description it appears that this tone is still conditioned and probably cannot be considered to be a full toneme.

⁶ Cf. Maddieson 1974:207f., tone sandhi.