

The Phonology of Masakin Tuwal

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Masakin is spoken in the Nuba Mountains, in the Southern Kordofan Region of the Sudan. The Masakin hills lie south-east of Kadugli and west of Talodi.

Tucker and Bryan, in "The Non-Bantu Languages of North East Africa" (1956), p. 65, classify Masakin as a dialect cluster belonging to the sub-group Talodi-Masakin, within the language group Koalib-Tagoi, all of which are called Noun Class Languages.

The two main dialects within the cluster are Masakin Tuwal and Masakin Gusar, with Lehemar and Doloka being spoken by smaller groups of people. The Doloka speakers are geographically separated from the other three groups, among which considerable intermarriage takes place. Speakers of Masakin Tuwal and Masakin Gusar seem to understand each other well. There are probably more differences in preferred vocabulary than in phonology.

The speakers of Masakin call themselves Arra (sg. Barra), and their language Darra.

This analysis is based on Masakin Tuwal, with an occasional comparison to Masakin Gusar. The data has been obtained from Masakin Tuwal speakers now living in the Khartoum area, with Isa Mehenna as my main informant, during the period December 1981 - December 1983.

Dr. R.C.Stevenson has done considerable research on Masakin Gusar, and my data on this dialect is partly from his work and partly from a personal visit to a group of Masakin Gusar speakers.

Syllable patterns

On the phonetic level of the language there is a contrast between short and long vowels. As this would lead to the setting up of an unnecessary number of CV patterns, the establishing of syllable patterns and the interpretation of ambiguous segments and sequences are done on the basis of phonemized data.

Unambiguous CV patterns:

CV as in /do/ "mouth" and /ge/ "from"
CVC as in /bur/ "person" and /dum/ "praise/
VC as in /or/ "people" and /ar/ "cats"
V as in /a.gu/ "rats" and /ri.o/ "to say"

Ambiguous segments and sequences and their interpretation:

C: as in /n:o/ "to come" and /mud:u/ horse

As there are no unambiguous consonant clusters, C: is interpreted as one lengthened consonant.

Prenasalised plosives, as in /bur mbi/ "my relative",
/do ndum/ "a big mouth", /ndeo/ "to die, cont." and
/ngo/ "that's the end"

These are also interpreted as one consonant. They occur regularly in the noun phrase concord system as prefixes for a noun attributive where the noun has the corresponding plosive prefix, but also occasionally initially, and (more frequently) medially in other words.

Semivowels w- as in /wa/ "cow", y- as in /yu/
"to drink", -w- as in /ma pawa/ "don't come",
-y- as in /ruyo/ "to herd"

The semivowels w and y are interpreted as a consonant when occurring word or syllable initially. This fits in with the unambiguous syllable patterns, and also with the fact that both semivowels function as prefixes in the noun phrase concord system, where no vowel functions.

Semivowel syllable finally, as in /gai/ "to be"
and /dow/ "hot"

These words are very few in number, although they include the high frequency-word /ɣaw/ "to go". They are interpreted CVC in accordance with the already established pattern. However, it seems that a final semivowel does not lengthen the preceding vowel, in the way any other consonant would.

Semivowel syllable medially, as in /gwo/ "to play",
/ŋwi/ "milk".

A few words such as those above are more difficult to interpret, in that there are no unambiguous pattern for either CCV or CVV. The word /ŋwi/ contains ŋ-, the noun prefix for liquids, and -wi, built on the pattern of /wa/ "cow" and /wo/ "To milk". This points to the consonantal origin of the semivowel. However, in most of these words a metathesis can take place, and other speakers of the language pronounce [gwo] as [ogo] and [rwa] "to forget" as [ora]. In psycho-linguistic testing and free writing native speakers do not seem to make a distinction between u and w, and i and y.

Both semivowels are quite fluid, and are pronounced consonantally or vocallically according to environment: [ru:yo] "to herd", but [rui] (monosyll.) "herd, imp.", and/or yyi "my people" is pronounced [riyi].

The words [ɣia] "heart" and [ɣua] "fur" are etymologically /ɣiga/ and /ɣuga/, but most people now seem to feel they are monosyllabic, and therefore /ɣya/ and /ɣwa/. (It is quite a common thing for a g to be elided.) There is also the word ^{"hunger"} [rui], etymologically /rugi/, which native speakers now react to as monosyllabic. In isolation this word has a clearly vocallic u, but in the rhythm group [rui] + [ni] "I am hungry", it turns consonantal and the final i/y behaves like a true vowel: [rwi:ni]. The only conclusion I can draw at this stage is that semivowels syllable medially form an unsettled element in the language.

However, syllables with a medial semivowel will be interpreted CCV. This will distinguish them from disyllabic words on the pattern CV.V.

Frequency of the different syllable patterns.

CV is by far the most common syllable pattern. A syllable count on two randomly chosen narratives show the following distribution:

CV: 91 % (91.0 % - 91.91 %)

CVC and VC: 2.6 % (2.6 % - 2.6 %) These are mainly a few high frequency words, such as /bur/ "person, /or/"people" etc.

V: 4.3 % (4.8 % - 3.7 %) Quite a few of these syllables are known to be etymologically /gV/

With C in the above is understood consonant other than semivowel.

Words on the pattern CVw/y=CVC and Cw/yV=CCV account for the remaining 2.1 %, and most of these occurrences are the high frequency word/raw/ "to go".

Formula for syllable patterns.

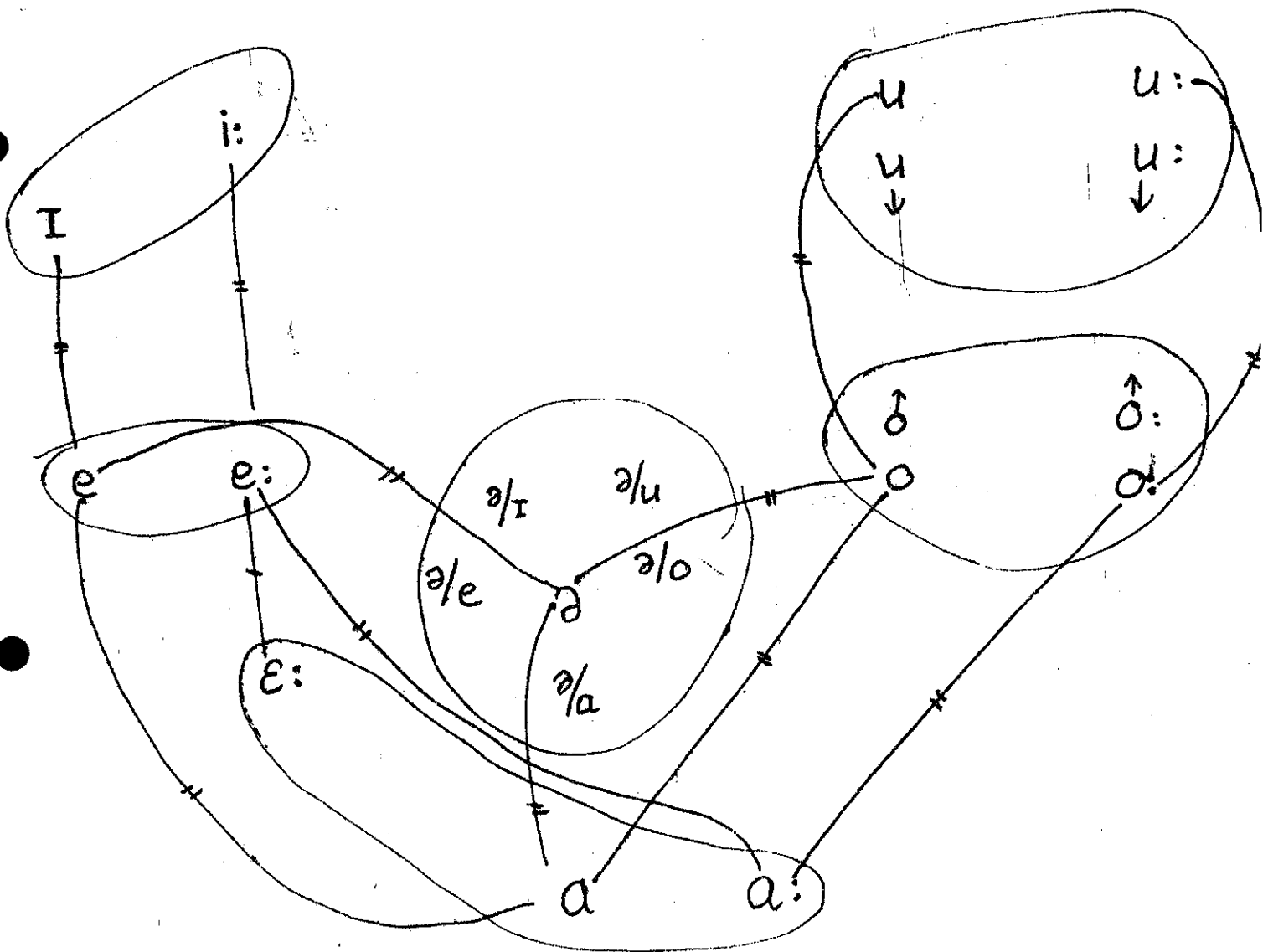
Bearing in mind the rarity of semivowels syllable medially and their unsettled nature, it seems best to set up two formulas for the syllable:

a. $\pm C + V \pm C$

b. $+C +w/y +V = +C +C +V$

Vowel Phone work chart

The work chart displays 21 vowel phones. Suspect pairs found in Identical Environment are linked with a double-crossed line, the one pair in Analogous Environment with a single-crossed line. Suspect pairs found to be in Complementary Distribution or in Fluctuation are circled.



Vowels - minimal sets and pairs.

Vowels found contrasting in Identical Environment:

- i - e - a - o - u [wa w:i] "my cow" - [wa w:e] "their cow" ,
[wa w:a] "your (sg.) cow" - [wa w:ɔ] "your (pl.)
cow" - [wa w:u] "his/her cow"
- ə - e [gə] "do!imp." - [ge] "hoe!imp."
- ə - a [bi:t:ə] "answer" - [bi:t:a] "question"
- ə - o [du:bə] "year" - [dɔ:bɔ] "shoulder"
- i: - e: [ɟi:r:e] "young girl" - [ɟe:r:e] "firewood"
- e: - a: [ge:r:a] "razorblade" - [ga:r:a] "fur"
- a: - o: [ba:ri] "I bathed s.one" - [bo:ri] "I drove s.one"
- o: - u: [o:bi] "who?" - [u:bi] "a long time ago"

Vowels found contrasting in Analogous Environment:

- e: - ɛ: [me:ɾa] "two" - [mɛ:ɾi] "clay bricks"

Vowels found in Complementary Distribution:

- ɪ - i: The lengthened vowels occur non-finally in the rhythm group, except preceding semivowels.
- e - e: The short vowels occur rhythm group finally and preceding semivowels. They are therefore allophones of the same phonemes.
- a - a: See Phoneme Inventory, Vowels.
- o - o:
- u - u:

Vowels found in Partial Fluctuation:

- o - [↑]o: ə - ə / i
 - o: - [↑]o: ə - ə / e
 - u - [↓]y ə - ə / a
 - u: - [↓]u: ə - ə / o
 - ɛ: - a: ə - ə / u
- The circumstances under which Partial Fluctuation takes place are described in Phoneme Inventory.

Vowel Phoneme Chart

	Front	Central	Back
Close	i		u
Mid	e	ə	ɔ
Open		a	

Phoneme Inventory - Vowels

There are 6 vowel phonemes. The back vowels, particularly when lengthened, show some measure of lip-rounding. The other vowels are "unrounded", with not even [i:] really to be described as "spread".

All vowels are voiced and pronounced with egressive lung air.

With the exception of /ə/, all vowels have lengthened allophones. (The syllables in which /ə/ occurs also have less stress than the others.)

The other allophones occur in partial fluctuation with the main phone, rather than in complementary distribution with it.

/i/ [ɪ] is a somewhat lowered and centralised, close front vowel.

It occurs rhythm group finally and preceding semivowel, e.g.

[ɒŋɪ] "I", [gəʊm:ɪ] "goats", [bi:t:iy] "mother-in-law".

[i:] is a lengthened close front vowel, occurring non-finally in the rhythm group, except before semi-vowel, e.g. [di:r:] "grain of corn", [gəʊm:i:pɪ] "I have goats".

[ɪ] and [i:] are therefore allophones of the same phoneme /i/.

/e/ [e] is a mid front vowel, occurring rhythm group finally and preceding semi-vowel, e.g. [no:re] "mat.uncles", [me] "to cut".

[e:] is a lengthened mid front vowel, occurring non-finally in the rhythm group, except before semivowel, e.g. [de:ro] "to build",

[fe:r:e] "firewood".

[e] and [e:] are therefore in complementary distribution and belong to the same phoneme /e/.

/ə/ [ə] is a mid central vowel, e.g. [ɾədd] "stone", [gwə] "play, imp."
/ə/ tends to assimilate partly to any other vowel in the immediate environment, e.g. [gəm:ɪ] / [gə/im:ɪ] "goats", [ɾəm:ə] / [ɾə/em:ə] "bone", [ɾəl:a:bo] / [ɾə/al:a:bo] "frog", [a:ŋgəgu] / [a:ŋgə/ugu] "goat-like animal", [ɾəgd] / [ɾə/ogd] "to eat". The phones [ə/i], [ə/e], [ə/a], [ə/d], and [ə/u] are therefore in partial fluctuation with [ə] and allophones of the same phoneme /ə/.

When /ə/ occurs ^{following} any consonant and preceding a lateral or vibrant, it is normally deleted, so that a consonant cluster is heard:
/gəru/ "to study" → [gru], /ŋɛɾɛpɛda/ "Sweat" → [ŋɾɛ:ɾɛ:da].

/a/ [a] is an open central vowel, occurring rhythm group finally and preceding semivowel, e.g. [mɛ:ra] "to slaughter", [kay] "it is".

[a:] is a lengthened open central vowel, occurring non-finally in the rhythm group, except before semi-vowel, e.g. [a:gu] "rats, mice" [da:ləŋa:pi] "I have a monkey".

[a] and [a:] are therefore in complementary distribution, and allophones of the same phoneme /a/.

[ɛ:] is a lengthened, half open, near front vowel. It occurs in a very few words which have a front vowel in an adjacent syllable, e.g. [gɛɾɛ:ndi] "work", [dɛ:ɾi] "mud brick". It does not, however, occur in all words of a similar type. Native speakers unhesitatingly react to it as /a/, and ^{it} is therefore considered an allophone of this phoneme.

/u/ [u] is a close back vowel, occurring rhythm group finally and preceding semi-vowel, e.g. [yu] "to drink", [gu:pi:k:u] "to learn".

[u:] is a lengthened close back vowel, occurring non-finally in the rhythm group, except preceding semi-vowel, e.g. [u:pe] "I know", [nu:bi] "cats".

[u] and [u:] are therefore in complementary distribution and allophones of the same phoneme /u/.

[y] and [y:] are somewhat opened, close back (lengthened) vowels. They occur in fluctuation with [u] and [u:] respectively, when an open or mid vowel occurs in an adjacent syllable, e.g. [ɾəɛ:u] / [ɾəɛ:y] "stew", [du:bo] / [du:y:bo] "shoulder". They therefore belong to the phoneme /u/.

/o/ [o] is a mid back vowel, occurring rhythm group finally and preceding semi-vowel, e.g. [gɒ] "to do", [hɒt] "hot weather".

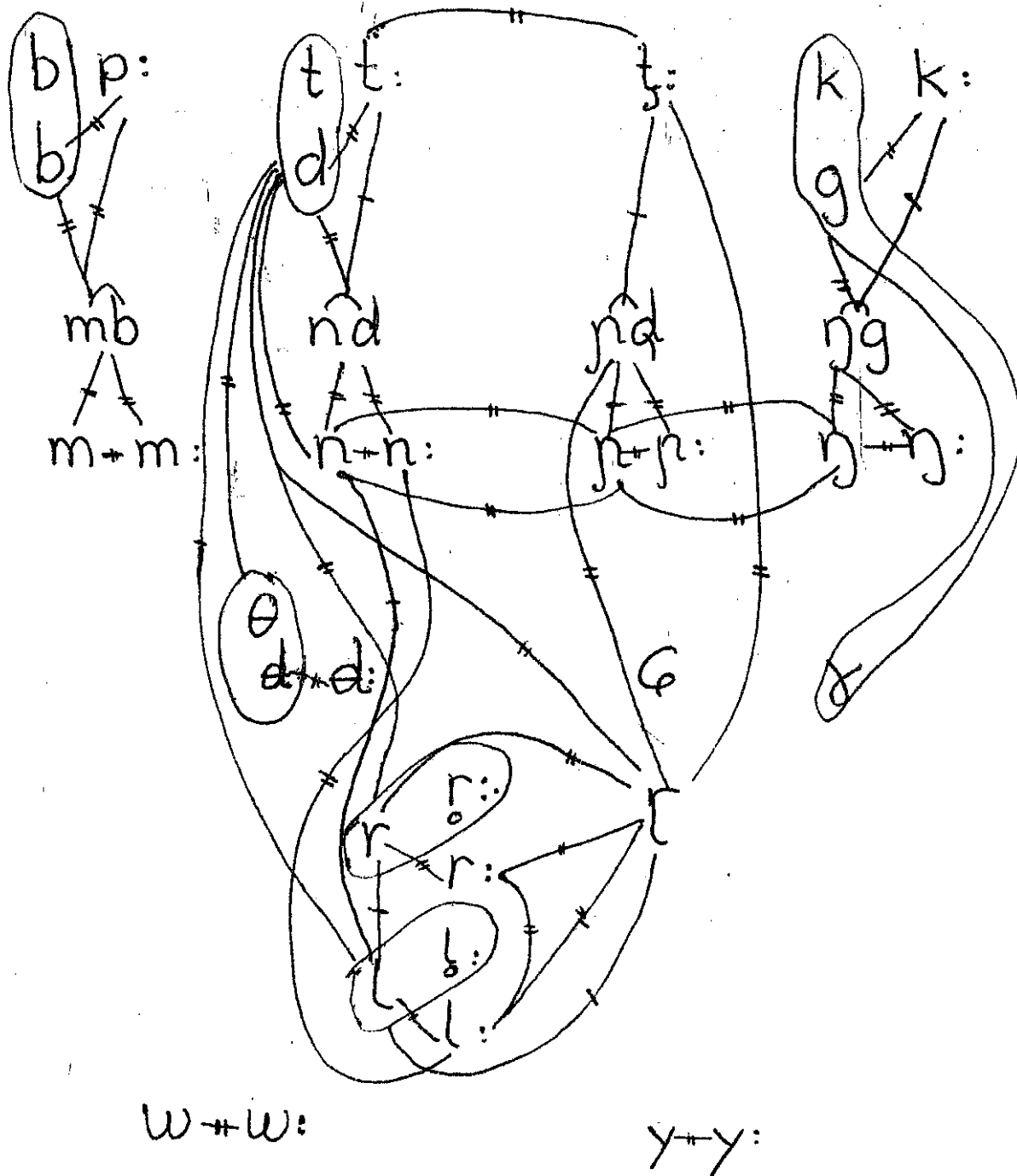
[o:] is a lengthened mid back vowel, occurring non-finally in the rhythm group, except preceding semi-vowel, e.g. [stɑ:] "star", [frɛnd] "friend".

[o] and [o:] are therefore in complementary distribution and allophones of the same phoneme /o/.

[ɔ̞] and [ɔ̞:] are (lengthened) mid back vowels, somewhat more closed than [o] and [o:] and occurring in fluctuation with these phones when a close vowel occurs in an adjacent syllable, e.g. [i:tɔ̞] / [i:tɔ̞:] "there" and [yɔ̞:tɔ̞:] / [yɔ̞:tɔ̞:] "thank you". They therefore belong to the phoneme /o/.

Consonant Phone work chart

The work chart displays 38 consonant phones. Suspect pairs found in Identical Environment are linked with a double-crossed line, pairs in Analogous Environment with a single-crossed line. Suspect pairs found to be in Complementary Distribution or in Fluctuation are circled.



Consonants - minimal sets and pairs.

Consonants found contrasting in Identical Environment:

- p: - b [ʔa:p:əri] "butterfly" - [ʔa:bəri] "scar"
- t: - d [wu:t:u] "insects" - [wu:du] "lips"
- ʔ: - ʔ̄, [bət̄:ɔ] "foreigner" - [bət̄ɔ] "Tabaldi-tree"
- k: - g [rək:ɔ] "to see" - [rəgɔ] "to eat"
- m: - m̄ [ʔo:m:a] "faces" - [ʔo:m̄a] "area"
- n: - n̄ [gi:n:u] "scorpion" - [gi:nu] "ear"
- ɲ: - ɲ̄ [me:ɲ:ɔ] "you(pl.)cut" - [me:ɲ̄ɔ] "he/she cut"
- ŋ: - ŋ̄ [ʔəŋ:ə] "worm" - [ʔəŋ̄ə] "hair"
- r: - r̄ [bu:r:u] "ostrich" - [bu:ru] "type of tree"
- ɛ: - ɛ̄ [ʔu:ɛ:u] "dust" - [ʔu:ɛ̄u] "cough"
- w: - w̄ [wi:nu w:ɪ] "my ears" - [wi:nu w̄ɪ] "these ears"
- y: - ȳ [riya:ri y:ɪ] "my wives" - [riya:ri ȳɪ] "these wives"

ɛ - d - n - ɲ - ŋ - r - ʔ (NB Ci:a can be used pronominally.)

[(ɛa:do) ɛi:a] "which (elephant)?" - [(do:ra) di:a] "which (friend)?" - [(nə:k:ɛ:r:u) ni:a] "which (logs)?" - [(ɲi:gi) ɲi:a] "which (brooms)?"
 [(gu:me) gi:a] "Which (child)?" - [(ru:di) ri:a] "Which (tails)?" - [(ʔər:a) ʔi:a] "which (fly)?"

- n: - ɲ: - ŋ: [na:be:n:i] "my fishes" - [na:ʔu:ɲ:i] "my hats"
 [ŋə:be:ŋ:i] "my fish" (NB. Ci:i can also be used pronominally.)

n: - l: [ʔə:n:ɔ] "next" - [ʔə:l:ɔ] "grass"

l: - r: - ʔ [du:l:a] "lake" - [du:r:a] "belt" - [du:ʔa] "theft"

t: - ʔ: [(do:ma) a:t:ɔ:n:i] "black(house)" - [ʔəŋə]
 a:ʔ:ɔ:n:i] "black (hair)"

m̄b - b [bu:ʔ: m̄bu:m] "big man" - [bu:ʔ: bu:m̄] "bigger man"

m̄d - d [do:ma m̄du:m] "big house" - [do:ma du:m̄] "bigger house"

m̄ʔ - ʔ [ʔi:gi m̄ʔu:m] "big broom" - [ʔi:gi ʔu:m̄] "bigger broom"

m̄g - g [ga:u m̄gu:m] "big hill" - [ga:u gu:m̄] "bigger hill"

- m̃b - p: [a:m̃ba] "drums" - [a:p:a] "Daddy"
 - m̃b - m - m: [ba:m̃ba: m̃b̃] "my drum" - [ma:gə m̃i] "these toes"
- [ma:gə m:i] "my toes"
 - nd - n - n: [do:ma: nd̃] "my house" - [nu:me: ñi] "these children"
- [nu:me: n:i] "my children"
 - nd̃ - ŋ - ŋ: [xi:gi: nd̃] "my broom" - [xi:gi: ŋi] "these brooms"
- [xi:gi: ŋ:i] "my brooms"
 - ŋg - ŋ - ŋ: [ga:t:u: ŋ̃i] "my spear" - [ŋu:me: ŋi] "this child"
- [ŋu:me: ŋ:i] "my child"
- ("these" and "my" also occur pronominally.)

(An identical set for e: - t: - n: - ŋ: - r: - t: could easily be produced from the Noun Phrase concord system, but this has hardly any interest.)

Consonants found contrasting in Analogous Environment:

There are very few examples of [l], and it does not occur in the Noun Phrase concord system. This accounts for the lack of good minimal pairs with this phone.

- l - l: [du:ləŋe] "tongue" - [du:l:a] "small lake", and [bale:k:o:t:e] "to run" - [bal:e:l:i:o] "to drive, cont."
- l - r [bale:k:o:t:e] "to run" - [bəri:t:a] "to get well"
- l - ʃ [bale:k:o:t:e] "to run" - [ŋəʃe:ʃe:da] "sweat" and [bəʃe:ŋdo] "four"
- l - d [da:ləŋa] "monkey" - [da:do] "elephant" and [ləba:r:] "river" - [dər:u] "party, game"
- l - n [ləba:r:] "river" - [na:ba:r:] "boys" and [la:t] "first (from Arabic)"

- nd - t: [sa:nde] "to sleep" [sa:t:a] "pepper" and [ge:ra:t:e] "to return"
- nd̃ - t: [s:ŋdo] "let's go" [la:t:o] "we (incl.) don't have"
- ŋg - k: [a:ŋgo] "man's name" - [ŋa:k:o] "to lift" and [a:k:u] "man's name".

The phoneme /c/

The phone [ɕ] has only been found in the words [ɕa] "disapproving interjection", [ɕa:r:a] "flirtatious greeting", the proper names [ɕa:ci], [go:ce], [go:co], [gu:ce], and then [ba:ca:ŋge] "Southerner" and [Co:ci] "green".

c contrasts in Identical Environment with:

- b [ɕa] - [ba] "python"
- d [ɕa] - [da] "why?"
- g [ɕa] - [ga] "body"
- t: [ɕa] - [t:a] "to divide"
- ɲ [ɕa] - [ɲa] "to have"
- ŋ [ɕa] - [ŋa] "oil"
- ɛ [ɕa] - [ɛa] "head"
- w [ɕa] - [wa] "cow"
- m [ɕa] - [ma] "heads"
- l [ɕa] - [la] "you (sg.) don't have"
- t: [gu:ɕe] - [gu:t:a] "to sit down"
- ɕ [go:ɕe] - [(ga:da) go:ɕe] "redder (cloth)"

mb, nd, pɕ, ŋɕ, m:, n:, ɲ:, ŋ:, ɛ:, w:, y:, and r: all function as consonant prefix in [Ca] "your (sg.)" for the following words respectively: [bu:ɕ] "relative", [do:ɲa] "shield", [ɕo] "well", [ga] "body", [mi:ɕ:] "flour", [nu:me] "children" [ɲa:ɕo] "dishes", [gu:me] "child", [ɛa] "head", [wa] "cow", [i:ɛa] "slaves", [ru:bo] "shoulders".

c contrasts in Analogous Environment with:

- p: [go:ɕo] - [ra:r: bo:p:o] "lung"
- k: [go:ɕo] - [ɛo:k:o] "chin"
- r [go:ɕo] - [go:ru] "you sg. did" and [do:ra] "friend"
- n [ɕa:ɕi] - [na:be] "fishes" (n is very rare)
- l: [ɕa:ɕi] - [i:l:i] "must" and [ga:l:o] "string"
- y [ɕa:ɕi] - [yo:ɕi] "green" and [ya:ra] "small"

[ɕ] is therefore assumed to be a separate phoneme /ɕ/, in spite of its rarity and the fact that it is the only phoneme with no voicing.

Consonants found in Partial Fluctuation:

b - p fluctuate word initially
 t - d " " "
 k - g " " "
 θ - ð " " "
 ʒ - ʒ " " medially

Consonants found in Complementary Distribution:

b - p [p] occurs word finally, where [b] never occurs.
 d - t [t] " " " " [d] " "
 g - k [k] " " " " [g] " "
 r - ʀ: [ʀ:] " " " " [r] " "
 l - l: [l:] " " " " [l] " "

Consonant Phoneme chart

	bilabial	inter-dental	dental + alveolar	retroflex	(alveo-) palatal	velar
plosives	b b:		d d:	t:		g g:
nasals	m m:		n n:	ɳ ɳ:		ŋ ɳ:
prenas. plosives	mb		nd	ɳd		ŋg
fricatives		ð ð:			ʃ	
laterals			l l:			
semi-vowels + vibrants	w w:		r r:	ɻ	y y:	

Phoneme Inventory - Consonants.

There are 31 consonant phonemes, of which 14 are short; 13 long and 4 prenasalised. It is noteworthy that voicing is of no significance in itself. All consonants are pronounced with egressive lung air.

/b/ [b] is a voiced unaspirated bilabial plosive, [bu:rɪ] "person", rewritten /bur/, [du:bi:t:e] "to fill", rewr. /dubid:e/.

[p] is a voiceless unaspirated bilabial plosive, which fluctuates with [b] word initially and is in complementary distribution to it word finally, where [b] never occurs, e.g. [ba:rɪ] / [pa:rɪ] "wife"; rewr. /bari/ and [da:p] "gold, from Ar. dahab", rewr. /dab/ [b] and [p] are therefore allophones of the same phoneme /b/.

/b:/ is a voiceless, aspirated and lengthened bilabial plosive, e.g. [du:p:o] "to walk", rewr. /dub:o/. (The relationship between short and lengthened plosives is discussed below.)

/d/ [d] is a voiced unaspirated dental plosive, e.g. [du:rɪ] "theft", rewritten /duɾa/, [nədo] "stones", rewr. /nədo/.

[t] is a voiceless unaspirated dental plosive. It fluctuates with [d] word initially and is in complementary distribution to it word finally, where [d] never occurs, e.g. [du:dɪ] / [tu:dɪ] "tail", rewr. /dudi/, [la:tɪ] "first, from Ar. al aHad", rewr. /lad/.

[d] and [t] are therefore allophones of the same phoneme /d/.

/d:/ is a voiceless, aspirated and lengthened dental plosive, e.g. [ra:t:a] "leaf", rewr. /ɾad:a/.

/t:/ is a voiceless, aspirated and lengthened retroflex plosive, e.g. [t:a] "to divide", rewr. /t:a/, [yo:t:ɪ] "thank you", rewr. /yoɾ:i/

/g/ [g] is a voiced unaspirated velar plosive, e.g. [gi:ra] "trees", rewr. /gira/, [da:gə] "toe", rewr. /daɡə/.

[k] is a voiceless, unaspirated velar plosive. It fluctuates with [g] word initially and is in complementary distribution with it word finally, where [g] never occurs. When occurring word finally, [k] is sometimes unreleased. E.g. [ka]/[ga] "body", rewr. /ga/, [yæt:ək] "three", rewr. /yəd:əg/. [k] and [g] are therefore allophones of the same phoneme /g/.

[ɣ] is a voiced velar fricative which occurs in fluctuation with [g] word medially, e.g. [p:ɡædi]/[p:ɣædi] "father", rewr. /ogædi/. [ɣ] is therefore an allophone of the phoneme /g/.

/g:/ is a voiceless, aspirated and lengthened velar plosive.
E.g. [gəʔa:k:e] "love", rewr. /gəʔag:e/

/m/ is a voiced bilabial nasal, e.g.
[mo:do] "stars", rewr. /modo/, [ðe:mo] "talk", rewr. /ðemo/,
[yu:m] "big", rewr. /yum/.

/m:/ is a voiced, lengthened bilabial nasal, e.g.
[du:m:e] "funeral", rewr. /dum:e/,

/n/ is a voiced, dental nasal, e.g.
[nu:ʃ] "squirrels", rewr. /nuʃe/, [gi:nu] "ear", rewr. /ginu/.

/n:/ is a voiced lengthened dental nasal, e.g.
[mu:n:o] "to steal, escape", rewr. /mun:o/, [gi:n:u] "scorpion",
rewr. /gin:u/.

/ŋ/ is a voiced retroflex nasal, e.g.
[nət:e] "clouds", rewr. /nəd:e/, [gə:ŋo] "to give birth", rewr. /gəŋo/

/ŋ:/ is a voiced lengthened retroflex velar, e.g.
[r:əŋ:a] "to slim", rewr. /r:əŋ:a/

/ŋ/ is a voiced velar nasal, e.g.
[gə:ʃ] "glass, bottle", rewr. /gəʃe/, [fə:ŋ] "hair", rewr. /fəŋe/.

/ŋ:/ is a voiced lengthened velar nasal, e.g.
[fə:ŋ] "worm", rewr. /fəŋe/.

- /mb/ is a voiced bilabial prenasalised plosive, e.g.
[ba:m̥ba] "drum", rewr. /bamba/
- /nd/ is a voiced dental prenasalised plosive, e.g.
[gəɾɛ:nd̥i] "work", rewr. /gərandi/
- /nd̥/ is a voiced retroflex prenasalised plosive, e.g.
[d̥əŋd̥ə] "neck", rewr. /d̥əŋd̥ə/
- /ŋg/ is a voiced velar prenasalised plosive, e.g.
[ɾəŋg̊ɾ] "day, sun", rewr. /ɾəŋgi/
- /d/ [d̥] is a voiced interdental flat fricative.
[d̥] is a voiceless interdental ^{flat} fricative, occurring in full fluctuation with [d̥], e.g. [d̥ən:i] / [d̥ən:i] "tooth", rewr. /d̥ən:i/, and [ɾo:ɛi:bi] / [ɾo:θi:bi] "evening", rewr. /ɾosibi/
[d̥] and [d̥] are therefore allophones of the same phoneme /d̥/.
- /d̥:/ is a voiced lengthened interdental flat fricative, e.g. [gɾə̃:i] "nose", rewr. /gɾə̃:i/.
- /ɸ/ is a voiceless, alveo-palatal flat fricative.
[ɸa:ɸi] "girl's name", rewr. /ɸapi/, [yo:ɸi] "green", rewr. /yoɸi/
- /r/ [r̥] is a voiced alveolar vibrant. It can be flapped or rolled. E.g. [ge:ɾo] "to sell", rewr. /gero/
[r̥:] is a voiceless alveolar rolled vibrant. It occurs only word finally, where neither [r̥] nor [r̥:] occurs, and it is therefore in C.D. with both of them. On the basis of the word pair [ba:r̥:] "husband" and [ba:r̥i] "wife", [r̥:] is assigned to the phoneme /r̥/, e.g. [bu:r̥:] "person", rewr. /bur̥/.
- /r̥:/ is a voiced lengthened alveolar rolled vibrant, e.g. [ŋe:r̥:e] "firewood", rewr. /ŋer̥:e/
- /ɾ/ is a voiced flapped retroflex vibrant, e.g. [ɾəm:ɛ] "bone", rewr. /ɾəm:ɛ/, [bɾə] "also", rewr. /bɾə/.
See a further discussion of this phoneme below.

/l/ [l] is a voiced dental lateral, e.g. [bɔle:k:o:t:ɛ] "to run",
rewr./bɔleg:od:ɛ/, and [da:lɔŋa] "monkey", rewr. /ɛalɔŋa/.

[l:] is a voiceless lengthened dental lateral, occurring only
word finally. Neither [l] nor [l:] occurs in this position, and

[l:] is therefore in C.D. with them both. It is however ascribed
an allophone of /l/, in analogy with [r:] being an allophone of /r/.
Only one example: [dɔr:ɔmbɛ:l:] "car", rewr. /dɔr:ɔmbɛl/.

/l:/ is a voiced lengthened dental lateral, e.g.

[gɔl:a] "grandmother", rewr. /gɔl:a/.

/w/ is a voiced rounded bilabial semi-vowel,

e.g. [wɛ:ŋ:ɔ] "to open", rewr. /wɛn:o/, [ɸi:wa] "hearts", rewr. /ɸiwa/.

/w:/ is a voiced lengthened rounded bilabial semi-vowel, e.g.

[w:o] "to milk", rewr. /w:o/ and [wa ow:e] "there is a cow",
rewr. /wa ow:e/.

/y/ is a voiced unrounded palatal semi-vowel, e.g.

[yo] "what?", rewr. /yo/ and [gɔye] "illness", rewr. /gɔye/.

/y:/ is a voiced lengthened unrounded palatal semi-vowel, e.g.

[a:r:ɔgu y:u] "his cows", rewr. /ar:ɔgu y:u/, [dɔy:ɔ] "ululation",
rewr. /dɔy:ɔ/.

The relationship between short and lengthened consonants.

It seems clear that [p:], [t:], and [k:] are the lengthened counter-
parts of /b/, /d/, and /g/. The short plosives fluctuate between voiced
and voiceless word initially, they are voiced word medially and voice-
less word finally. Their lengthened counterparts, then, are voiceless
and aspirated.

Arguments for this conclusion:

1) All other consonants (except the rare ɸ) have lengthened counterparts.

2) The way adjectives are presented in the Noun Phrase concord system:

with continuant cons. prefix: [nu:me na:ra] "small(er) children"

[nu:me a:n:a:ra] "the children are small(er)"

with plosive cons. prefix: [bu:r: ba:ra] "a small(er) man"

[bu:r: a:p:a:ra] "the man is small(er)"

3) The reaction of native speakers confirms it.

The phoneme /ɾ/

To some extent, the relationship /ɾ/, /t:/, and /nd/ is the same as that between a short, a lengthened and a prenasalised plosive. The Noun Phrase Concord system bears out this connection:

/bur mbi ab:ot:i/ "my good relative"

/dora ndi ad:ot:i/ "my good friend"

/gira ngi ag:ot:i/ "my good trees"

and /ro ndi at:ot:i/ "my good well"

Masakan Gusar, which is a very close dialect, has [d] in a great number of words where Masakin Tuwal has /ɾ/. This is particularly so word initially, where there is no [d] in Masakin Tuwal. One must therefore assume that what was once [d] in Masakin Tuwal, by now has developed into the flapped retroflex vibrant [ɾ], except when prenasalised. This accounts for the lack of a voiced retroflex plosive on the phone chart.

However, although any native speaker will make the connection /ɾ/ - /t:/ and /nd/ quite automatically in the Noun Phrase concord system, they don't seem to feel the same close relationship between /ɾ/ and /t:/ as, for instance, between /d/ and /d:/. They were very hesitant about the suggestion to write /ɾ/ as "t".

(The development [d] > [ɾ] is interesting when compared to a similar development in some dialects of Swedish and Norwegian.

Old Norse rn > mod. r

" " rs > " r

" " rt > " t

" " d > " d

" " rd > " r

What one would have expected to become

a retroflex voiced plosive, became in

fact a retroflex flapped vibrant, possibly

with the plosive as an intermediate stage.

As there are no combinations rm, rb, ry, etc.,

there is no reason to think that the retroflex sounds in Masakin Tuwal should have developed from a combination r + dental sound.)

Consonant Phone distribution within the word

	W. initially	W. medially	W. finally
b	+++++	+++++	
d	+++++	+++++	
g	+++++	+++++	
ʒ		+++++	
p	+++++		-----
t	+++++		-----
k	+++++		-----
m	+++++	+++++	-----
n	+++++	-----	
ɲ	+++++	+++++	-----
ŋ	+++++	+++++	
ɛ	+++++	+++++	
ø	+++++	+++++	
f	-----	-----	
l	+++++	-----	
r	+++++	+++++	
ʃ	+++++	+++++	
y	+++++	+++++	-----
w	+++++	+++++	-----
p:		+++++	
t:		+++++	
ʈ:	-----	+++++	
k:	-----	+++++	
m:	-----	+++++	
n:	-----	+++++	
ɲ:	-----	+++++	
ŋ:	-----	+++++	
ɛ:	-----	+++++	
l:	-----	+++++	
ʃ:	-----	+++++	
ʒ:			-----
ɹ:			-----
y:	-----	-----	
w:	-----	-----	
ᵐb	-----	-----	
ᵑd	-----	-----	
ᵑɖ	-----	-----	
ᵑᵑ	-----	-----	

Symbols:

Common: +++++

Rare: -----

Comments on the Consonant Phone distribution Chart

As is seen from the chart above and from the syllable frequency count (p.3), Masakin Tuwal is essentially a CV-language. There are a few final consonants, but there seems to be a development towards their elision. Notice in this context the devoicing of almost all of the few final consonants. Exceptions are (in my material) half a dozen words with a final semivowel, and then two indigenous words and a few loanwords with a final nasal.

Final [p] and [t] are only found in loanwords, but illustrate the devoicing word finally: Arabic [dahab] "gold" > Masakin Tuwal [da:p].

Final [k] are sometimes optional: [yo:p:ək] or [yo:p:ə] "true, strong". Dr. Stevenson notes that Masakin Gusar has [gerək] "to trade". In M. Tuwal it is [ge:ro]. Please see further notes on elision of /g/ below.

As will be seen, [ɟ] and [ɢ] are quite rare sounds. Much of the reason for this is that they do not serve as prefixes in the Noun Phrase concord system. [ŋ] is also quite rare word medially, but this phone serves as a prefix in the N.P. concord system and is therefore relatively frequent word initially.

The absence of [p:] and [t:] word initially is probably due to an insufficient amount of data.

Elision of /g/

There is evidence that /g/, in addition to being elided word finally, also is elided word initially and medially. For instance, the word /ga/ "body" often appears as -/a/ in compounds: /ɟia goɟi/ "in-body good, =happiness". M. Gusar still pronounces this [ɟi:ga], but this is not possible in M. Tuwal. "with them" /ɟipa + ge/ can be either /ɟipage/ or /ɟipae/. The verb /ud:a/ "to make" has a repetitive form /gue:əl:ə/ and there are several others on the same pattern. A number of other words on the pattern CVV are known to have been CVgV a few generations back or have this form now in M. Gusar. f.g. /baɔ/ "bee" has pl. /ago/, and M. Gusar has pl. /gago/.

There is a whole Noun Class that take sg. prefix b- and pl. prefix Ø-. As there is another class with sg. b- and pl. g-, and these are the only two classes to "share" a prefix for the same number, there is a possibility that these were once one class, and that the g- was then elided from some members of the class. If this theory is correct, elision of /g/ must have gone on for a long time, since nouns with Ø-prefix now regularly take attributives with y-prefix.

Influence from Arabic

Many Colloquial Arabic words, mostly nouns, are in common use in Masakin Tuwal. Most of them have been conformed to the already described phonology, but two new phonemes are introduced and seem to be pronounced without difficulty, namely /s/ and /f/. Other Coll. Arabic phonemes without an equivalent in Masakin Tuwal are treated in the following manner: (Transliteration of the Arabic as done by A. and J. Perseon, SIL 1979)

Pharyngealised sounds are pronounced without the pharyngealisation: Ar. şanduug "box" > [se:ndu].

Pharyngeal and glottal sounds are elided: Ar. Halaawa "sweets" > [a:la:wa].

All velar sounds are pronounced [g] or [k]: Ar. yoom al khamiis "Thursday" > [raŋgi ŋdo lək:a:mi:s].

All sibilants are [s]: Ar. sheetjan "Satan" > [si:t:a:ŋ].

The affricate j (ج) is [tʃ]: Ar. jineeh "Pound" > [tʃi:pe].

As already pointed out, final plosives, laterals, and vibrants are devoiced: Ar. dahab "gold" > [da:p̥], or they are deleted, cp. [se:ndu] above

Consonant clusters have an [ə] inserted: Ar. alf "1000" > [a:ləf].

A number of nouns are transferred with a remnant of the definite article: Ar. al baHar "the river" > [ləba:r̥].

If the initial of the noun itself is a plosive, this is sometimes lengthened: Ar. bunn "coffee beans" > [lɔp:u:ŋ].

As Masakin Tuwal has near equivalents to the Arabic vowels, these do not present a problem, but are nevertheless sometimes changed to a different vowel from the nearest one, cp. [se:ndu] above, and short vowels often become [ə]: Ar. tarabeeza > [dərəbe:sə].

The two new phonemes:

/s/ is a voiceless dental grooved fricative, e.g. [su] "market"; rewr. /su/, [ma:dərə:sa] "school", rewr. /madarasa/. Masakin Gusar has /s/ where Masakin Tuwal has /θ/, so this may be one reason why people seem to pronounce it without difficulty. It is distinguished from the phonemes /θ/ and /p/ by the following minimal set: [sa] "hour", [θa] "head", [pa] "interjection".

/f/ is a voiceless labio-dental flat fricative, e.g. [fi:k:əra] "idea", rewr. /fig:əra/, [lək:u:fa] "basket", rewr. /ləg:ufa/. It is distinguished from /b:/ by the following minimal pair: [lɔp:u:ŋ] "coffee", [ləfu:ŋfa] "cup".

Word Stress

Stress is not phonemic in Masakin Tawal. Phonetically, however, stress is attributed to the following types of syllables in decreasing order:

- 1) syllables with phonetically lengthened vowels, e.g. [ʔa:k:o]
"to lift, carry"
- 2) open, word final syllables containing [a], [e], [i], [o],
[u], e.g. [rə'go] "to eat"
- 3) non-final syllables containing [ə], e.g. [ŋəgə] "leg"
- 4) open, word final syllables containing [ə], e.g. [ʔəndə] "neck".

Word Tone

Some analysis was done on tone, but without any satisfactory conclusions being reached. The following tentative observations were made, however:

Few minimal pairs were found, but these are two of them:

(/ = high tone, \ = low tone, or a lower tone.)

[d^íi] "fire" [d^íi] "thorn"

[b^à:k^í:ə] "to be left over" [b^à:k^í:ə] "to go away"

Both nouns and verbs were put as substitution items into various test frames. Some monosyllabic nouns caused complex tone perturbations in the word following them in the test frame. This needs considerably more investigation.

When put medially in a test frame, both disyllabic nouns and verbs showed a two-way contrast, what might be called high-low and low-high. But when the same words were put finally in a test frame, the low-high group divided into two groups: low-high and high-high. One thus has the following set in analogous environment:

[d^u:b^ò] "year", [d^u:b^í] "horn", [ŋ^u:b^í] "cat".

Singular and plural of a given noun seemed always to carry the same tone.

The Rhythm Group (Morphophonemics)

In normally rapid speech clauses are divided into rhythm groups which may consist of one polysyllabic word, but more often of several words. Medially in the rhythm group all word final vowels are lengthened (except /ə/), so that the whole rhythm group is heard as one word. Normally a rhythm group consists of between two and six syllables, and most commonly it is monosyllabic words attached to a preceding or following word.

Exactly which words are joined together depends on the structure of the words rather than which words belong together grammatically. Even so, several options are open to the speaker:

e.g. /yo ge n:o ge ei t:ə/ "when they came from everywhere" can be [yo:k:k:e:n:o ge:ei:t:ə] or [yo:k:k:e n:o:ge ei:t:ə].

A complete analysis of the possibilities and limitations for forming rhythm groups is not attempted here, as this would require a massive amount of data.

But some main principles can be pointed out:

The subordinating conjunctions /ma/ "so that", /yo/ "when", /daməna do/ "because", question words /gəre/ "where", /obi/ "who", /yo/ "what", /mo/ "when", the neg. particle /de/, the emphasising particle /a/ and some others always attach themselves to a following verb prefix:

[gəre:k:a n:o:ge ?] "where do you come from?"

The emphasising particle /a/ also attached itself to a following adjective: [bu:r: a:p:u:i] "he is a tall man".

The present tense forms of the verb "to have" always attach themselves to the preceding object, if this ends in a vowel: /ŋaŋu/ "hat" > [ŋa:ŋu:ŋu] "you have a hat".

Possessives, the demonstrative "this" and /t:ə/ "all" also attach themselves to the preceding noun: /doma/ "house", [do:ma:ndu] "his house".

The obj. pron. /be/ "3rd p.sg." and /ge/ "3rd p.pl." (which are the only obj. pron. in common use) attach themselves to any preceding word ending in a vowel, normally the verb: [go ri:t:e:be] "he says to him".

When the word /or/ "people" follows a word ending in a vowel, it normally, but not necessarily, attaches itself to this: /ka or/ "and the people ---" > [ka:r:].

Allomorphs within Rhythm Groups

Another aspect of the Rhythm Group is that certain word initial, rh. gr. medial consonants are lengthened. This happens to two types of words:

1) adjective prefixes when preceded by /a/, e.g. [nu:me na:ra] but [nu:me a:n:a:ra].

2) Pres. and fut. tense verb prefixes, whenever they are found rh.gr. medially: [gi ge:ro mu:t:u] "I buy a horse" but [de:k:i ge:ro mu:t:u ri] "I don't buy a horse".

As this consonant lengthening is limited to these two categories, it seems best to set up a set of allomorphs for the words in question:

e.g. "verb prefix 1st p.sg. fut.tense": /gifi/ occurs rh. gr. initially, /g:ifi/ occurs rh.gr. medially.

and "adj. small, noun prefix /b/": /b:ara/ occurs after /a/, /bara/ or /mbara/ occurs elsewhere.

Intonation

No analysis has been done on clause and sentence intonation, apart from stating the fact that yes/no questions are distinguished from statements by intonation alone.

e.g. [na:k:e:r:u gay] "Is this a dog?" [na:k:e:r:u gay] "this is a dog."

(Intonation marks are highly tentative.)