

AROP PHONEMIC STATEMENT
AUSTRONESIAN

Steve Whitacre
Summer Institute of Linguistics

2

May 1984

Arop Phonemic Statement

1. Introduction

This paper is a preliminary description of the phonemic structure of the Arop dialect of the Sissano language. Sissano is an Austronesian Language in the Western subgroup in the West Sepik Province of Papua New Guinea. Arop is spoken by about 1,500 people.

There are over 5,000 speakers of the Sissano Language and they are divided into three distinct settlements located around the Sissano lagoon with all of them located on the coast. Sissano is the village located most westward and it is cut off from the other two, Arop and Malol, by a different language group of the Sko phylum.

In a dialect survey taken in April 1980 by Wietze Baron and Steve Whitacre it was found that the three dialects are about 85% cognate with each other. The corpus of data used in the phonemic analysis consists of approximately 1,000 words, collected over a period from 1980 to 1984. Gratitude is extended to John Maki, Linus Wairapu, Alphonse Saya and Paul Sariwe for contributing a major percentage of the data.

This paper is based on the Tagmemic Theory of phonological analysis. The author is grateful to Linda Lauck and Eileen Gasaway of the Summer Institute of Linguistics, for their consultant help in the preparation of this paper. They should not, however, be held responsible for any of its shortcomings.

2. Inventory of Phonemes

2.1 Chart of Phonemes

| Consonants | Labial | Alveolar | Post Alveolar | Velar | Glottal |
|-----------------|--------|----------|------------------|-------|---------|
| stops | p | t | č | k | |
| voiceless | | | | | |
| fricatives, vl. | | s | | | |
| nasals | m | n | ɲ | | |
| laterals | | l | ɭ | | |
| trills | | r | | | |
| glides | w | | y | | |
| Vowels | front | central | back | | |
| high | i | | u | | |
| Mid | e | | ɔ | | |
| Low | ə | a | o | | |

2.2 Description of Contrastive Features

2.2.1 Consonants.

There is contrast between stops, affricates, fricatives, nasals, laterals, trills and glides as to the manner of articulation. Stops contrast as to labial, alveolar, post alveolar, velar and glottal points of articulation. There is only one fricative which is alveolar. All of the stops, affricates, and fricatives are voiceless. Laterals contrast as to alveolar and post alveolar. The nasals contrast as labial, alveolar and post alveolar points of articulation. Glides contrast in labial and post alveolar positions. There is only one trill and it is alveolar.

2.2.2 Vowels

Vowels contrast vertically as to high, mid, and low tongue positions and front vowels contrast with back ones. The low vowels contrast as to front, central and back positions.

3.0 The Syllable

3.1 Syllable Patterns

S1 = (C1) V (C2)

where C1 = all consonants except /ʃ/
 V = all vowels
 C2 = all consonants except //

S2 = C1 C2 V (C3)

where C1 = /p/, /t/ or /k/
 C2 = /l/, /r/ or //
 V = all vowels
 C3 = all consonants except //

S3 = (C1) V1 V2 C2

where C1 = all consonants except /ʃ/
 V1 = all vowels
 V2 = all vowel
 C2 = all consonants except //

These three syllable types represent all of the possible formed segment constraints for syllables that are found in Arop. Notice that there are no occurrences of unambiguous consonant clusters occurring either syllable or word final. This is the basis for identifying [tʃ] as the single phoneme [č] rather than a consonant cluster because it does occur both syllable and word final.

Concerning syllable type 3. There are a few occurrences of long vowels in Arop. There are also occurrences of segments with two adjacent vowels carrying the same time length as other syllables. These two facts seem to indicate that there are two vowels as part of a complex nuclei of a single syllable.

The following syllable patterns have been observed:

Syllable type - S1

V a single vowel

- | | | | |
|-----|------------------|--------|-------------------|
| (1) | [<u>o</u> .ri] | /ori/ | 'crab' |
| (2) | [<u>e</u> .na] | /ena/ | 'you sg' |
| (3) | [pi. <u>a</u>] | /pia/ | 'question marker' |
| (4) | [<u>e</u> .la] | /ela/ | 'eastward' |
| (5) | [a. <u>lon</u>] | /alon/ | 'house' |

VC a vowel plus a consonant

- | | | | |
|-----|------------------|------------|--------------------|
| (6) | [om] | /om/ | 'you, pl' |
| (7) | [at.pe] | /atpe/ | '(we) run' |
| (8) | [ui .purkun] | /u purkun/ | 'urchin' |
| (9) | [e.' <u>at</u>] | /e'at/ | 'boiled vegetable' |

CV a consonant plus a vowel

- | | | | |
|------|-------------------------------|-----------|------------------|
| (10) | [pù] | /pù/ | 'beetlenut' |
| (11) | [ke] | /ke/ | 'and' |
| (12) | [<u>è</u> .ne] | /ène/ | 'this' |
| (13) | [na. <u>tip</u>] | /natip/ | 'ripple or wake' |
| (14) | [<u>yi</u> .tek. <u>pe</u>] | /yitekpe/ | 'he runs' |

Syllable type - S2

CCV a consonant plus a consonant plus a vowel

- | | | | |
|------|-----------------------|--------------|-------------|
| (15) | [kro] | /kro/ | 'they made' |
| (16) | [tre] | /tre/ | 'excrement' |
| (17) | [plu.a. <u>kuun</u>] | /plu.a.kuun/ | 'my' |

CCVC two consonants plus a vowel plus a consonant

- | | | | |
|------|-------------------------|---------------|-----------------|
| (18) | [prum] | /prum/ | 'big' |
| (19) | [trèk] | /trèk/ | 'cane twine' |
| (20) | [plaw] | /plaw/ | 'mangro' |
| (21) | [<u>kros</u> .paič.na] | /krospaič.na/ | 'able' |
| (22) | [<u>èm</u> .blot] | /èmplot/ | 'longs' |
| (23) | [om.p'um] | /omp'um/ | 'you pl. close' |

Syllable type - S3

VVC two vowels plus a consonant

- | | | | |
|------|-------|-------|-------------|
| (24) | [uuk] | /uuk/ | 'my nose' |
| (25) | [èèm] | /èèm/ | 'your chin' |
| (26) | [èèk] | /èèk/ | 'my chin' |

AROP PHONEMIC STATEMENT

CVVC a consonant plus two vowels and a consonant

- (27) [saim] /saim/ 'a small basket'
- (28) [puon] /puon/ 'shell or egg'
- (29) ['aap] /'aap/ 'a type of tree'

4.0 Interpretation

4.1 The Status of Items which may be either Consonant or Vowel.

4.1.1 The Interpretation of high vocoids.

High vocoids [i] and [u] when occurring adjacent to other vocoids within a syllable are functioning as consonants /y/ and /w/ when they do not carry the stress of the syllable. The only exception is due to structure constraint of syllable type S3.

- (30) [e.ios] /eyos/ 'southward'
- (31) [au] /aw/ 'guard'
- (32) [ui.ès] /wiès/ 'paddle, n.'
- (33) [ui.io] /wiyo/ 'cassowary'
- (34) [jau.ni.aw] /yawniaw/ 'I see'
- (35) [plau] /plaw/ 'mangrove'
- (36) [nii] /niy/ 'man'
- (37) [wuw] /wuw/ 'moon'
- (38) [wu] /wu/ 'fish trap'
- (39) [ai.yi.a] /ayia/ 'mother. personal ref.'

Concerning example (39) see Section 5.1.2 where there is a vowel insertion rule of a high front vocoid between a non-high vocoid and a following palatalized consonant.

There is proof for the validity of /y/ and /w/ as phonemes representing consonants. Morphonemic changes occur within Arop tense markers due to either the presence or absence of a consonant initial in the verb root. The underlying form for the present tense marker when second person is the subject is /awk/. Notice that whenever the verb root begins with a consonant the /w/ in the tense marker goes to zero (awk---> ak).

VERB ROOTS STARTING WITH VOWEL

UNDERLYING FORM

SURFACE FORM

pronoun + tns + verb root (vowel initial)

- (40) om + awk + is ---> omawkis you (pl) are talking
- (41) om + awk + um ---> omawkum you (pl) are buying
- (42) om + awk + eff ---> omawkeff you (pl) are drinking
- (43) om + awk + ama ---> omawkama you (pl) are coming
- (44) om + awk + èč ---> omawkèč you (pl) are getting

VERB ROOTS STARTING WITH CONSONANT

- (45) om + awk + taiŋ ----> omawktaiŋ you (pl) are crying
 (46) om + awk + muč ----> omakmuč you (pl) are holding
 (47) om + awk + 'ep ----> omak'ep you (pl) are holding
 (48) om + awk + se ----> omakse you (pl) are throwing
 (49) om + awk + pe ----> omakpe you (pl) are running

VERB ROOTS STARTING WITH [y] or [w]

- (50) om + awk + yiey ----> omakyiey you (pl) are sinking
 (51) om + awk + yi ----> omakyi you (pl) are pulling
 (52) om + awk + warwar ----> omakwarwar you (pl) are jabbing
 (53) om + awk + wa ----> omakwa you (pl) are going

Note: The [w] in the tense marker [awk] drops off with either [y] or [w] initial in the verb root as it does with verb roots beginning with the other non-ambiguous consonants as shown in the above examples. This shows that [y] and [w] are functioning in Arop as consonants.

4.2.1. Palatalized consonants /č/, /ŋ/ and /ɺ/

Because there are no unambiguous consonant clusters occurring syllable final [tš] must be interpreted as one segment /č/;

- (54) [aitš] [aič] 'talk'
 (55) [wa.titš] [watič] 'green'
 (56) [ɛ.ni.ak.soitš] [ɛniaksoič] 'small shrimp'

The phone /č/ also contrasts with [ti].

- (57) [ča.kal] 'knife'
 (58) [ti.as] 'sea'
 (59) [tai.ča] 'father, personal ref.'
 (60) [ti.ti] 'close to'

The phones /ŋ/ and /ɺ/ contrast with their counterparts /n/ and /l/ medial and final but there is no occurrence of /ɺ/ word initial.

- (61) [piɺ] 'fish'
 (62) [tiɺ] 'gaze'
 (63) [paiɺ.paiɺ] 'palm leaf mat'
 (64) [sal.sal] 'broom'
 (65) [aloŋ] 'feather'
 (66) [nu.'u.an] 'his head'
 (67) [aiŋ.iŋe.puk] 'type of snake'
 (68) [ɛ.ne] 'here'

- (69) [ʔe.ki] 'bush man'
 (70) [new] 'coconut'
 (71) [yaw.min] 'I will stay'
 (72) [ya.kiŋ] 'I drank'

4.2.2.1 There is the Consonant Palatalization Rule (PCP) that states that the consonants /t/, /l/ and /n/ become palatalized when directly following a palatalized consonant.

PCP /t, l n/ → [č, ʃ, ŋ] / $\begin{smallmatrix} \text{č} \\ \text{ } \\ \text{ŋ} \end{smallmatrix}$ _____

In the following examples notice how the morphemes /-na/ 'into' and /tək/ 'a few' change in surface form when following a palatalized consonant.

- (73) [a.təm.na] '(we) pick and put into'
 (74) [a.təm.tək] '(we) pick a few'
 (75) [a.teŋ.ŋa] '(we) pull out and put into'
 (76) [a.toŋ.čək] '(we) pull out a few'
 (77) [a.tel.ŋa] '(we) dig and put into'
 (78) [a.tel.čək] '(we) dig out a few'

4.2.2.2 Palatalized consonants also affect the vowels directly preceding them by causing a central or back vowel to glide to a high front position.

e.g. (a → ai), (o → oi), (u → ui) etc.

The vowel glide rule (PVG), is written as follows:

PVG V → V[i] / $\begin{smallmatrix} \text{č} \\ \text{ } \\ \text{ŋ} \end{smallmatrix}$ _____

- (79) [maiŋ] /maŋ/ 'bird'
 (80) [aič] /ač/ 'talk'
 (81) [pai}.pai}] /pa}pa}/ 'weaving'
 (82) [moi}] /mo}/ 'work'
 (83) [moiŋ] /moŋ/ 'sleep'
 (84) [uič] /uč/ 'lice'

Note: Because [ə] never precedes a palatalized consonant it may be that [ə] → [e] before such consonants.

4.3 The status of items which may be either a Sequence or Unit.

4.3.1 Vowel Cluster Sequences

Sequences of unambiguous vocoids can occur word initial, medial and final, as in:

- (85) [ɔ̃.a.nən] 'what'
 (86) [e.a.tə] 'you do'
 (87) [pɥ.ou.a.mau] 'wild pig'
 (88) [re.aw.rə̃.ɣi] 'they will get for him'
 (89) [no.tə.u] 'birthplace'
 (90) [kɔ̃.ən] 'why'

Also when stress occurs on a high vocoid of a two-vocoid sequence, the vocoids are interpreted as a sequence of vowels.

- (91) [pi.a] 'where'
 (92) [yaw.ni.aw] 'I see'
 (93) [yaw.nu.as] 'I cook'
 (94) [a.mi.am] 'stand'

4.3.2 Vowel Length

There are instances of unambiguous vowel sequences and there are also the occurrence of syllables with complex nuclei of two vowels carrying the timing of one stress, such as the word

- (95) [saim] /saim/ 'hand basket'

Therefore lengthened vowels can be interpreted as a sequence of two vowels:

- (96) [è:k] /èèk/ 'my chin'
 (97) [è:m] /èèm/ 'your chin'
 (98) [om] /om/ 'you pl.' (to show contrast in length)
 (99) [plu.ak.ɥ:n] /plu.ak.ɥun/ 'my knee'
 (100) ['a:p] /'aap/ 'type of tree'

4.3.3 Consonant Length

Lengthened consonants only occur at syllable boundaries and not word initially or word finally. Also syllable patterns do allow for consonant clusters word medially where the first consonant is in the coda slot of the first syllable and the next adjacent consonant is in the onset slot of the next syllable. Therefore lengthened consonants are interpreted as a sequence of two consonants.

- (100) [lot:təçi] /lot.təç.i/ 'we two gave him'
 (101) [ət:atse] /ət.tat.se/ 'we throw'
 (102) [lot:alon] /lot.tat.lon/ 'we two hear'

Note: In the underlying form there are two [t]s as shown by the following example:

- (103) [lot.lin.tat.lon] 'we do not hear'

4.3.4 Portmanteau Phone [(u)au] Rule (PPP)

In some words the phone [o] is heard alternating with the sequences of [(u)au] in rapid speech. Since the underlying form of [(u)au] is observed in slow speech then the phone [o] will be interpreted as an optional portmanteau phone of these sequences.

[(u)au] ---> [o] / (<fast speech>)

Note the following examples:

- (104) [e.aw.kis] [e.o.kis] 'you talk'
 (105) [ək.tu.aw.kək] [ək.to.tək] 'you cut'
 (106) [ək.wu.a.kič.yi] [ək.wo.kič.yi] 'you go give him'
 (107) [wu.ru.au] [wu.ru.o] 'male'

5.0 Description of Phonemes

5.1 Consonants

5.1.1 Work Chart of Phones.

| | <u>Labial</u> | <u>Alveolar</u> | <u>Post Alveolar</u> | <u>Velar</u> | <u>Glottal</u> |
|----------------|---------------|-----------------|----------------------|--------------|----------------|
| Stops | | | | | |
| voiceless | p | t | č | k | |
| voiced | b | | | g | |
| Fricatives vl. | | s | | | |
| Nasals | m | n | ŋ | ŋ | |
| Laterals | | l | ɭ | | |
| Vibrants | | r | | | |
| Semi-vowels | w | | y | | |

| Phoneme | Allophone | Description, Occurrence, Example |
|---------|-----------|----------------------------------|
|---------|-----------|----------------------------------|

The consonant [k] becomes voiced following a voiced consonant.

(121) [waŋ.glis] /wanklis/ 'pumpkin' (Pidgin)
 (122) [aŋ.qa] /anka/ 'Ah, let me think.'

// ['] Voiceless, glottal stop occurs in all environments.

- (123) [ʔəs] //əs/ 'latter'
 (124) [ʔəs.i.e.ʔəs.i.e] //əs'ie'əs'le/ 'pack tightly'
 (125) [mèn.ʔup] /mèn'up/ 'type of basket'
 (126) [ʔuc] //uc/ 'lice'
 (127) [ʔè.po'om] //èpo'om/ 'your foot'

The phone [ò] occurs only preceding glottals word medially and it does occur word finally such as in [tò] 'sugar cane'. But [ò] does not occur in closed syllables so as to contrast with [o]. Because [ò] is found only preceding glottals the [ò] will be interpreted as the sequence [o] + ['] when occurring word final. See the examples below:

- (128) [tò] /to'/ 'sugar cane'
 (129) [o] /o/ 'something'
 (130) [ʔon] //on/ 'part'
 (131) [ò.ʔon] /o'on/ 'part of something'

This may be happening with other vowels as well. For example:

[e] + ['] ----> [è] / word final

- (132) [etpe] 'we run' /etpe/
 (133) [etpè] 'we ourselves' /etpe'/ or /etpè/ ?

Since [e] and [è] do contrast within closed syllables it is not altogether conclusive that in example (133), [è] can be interpreted as a sequence of two phones.

See section 11.2 Problems

/tʃ/ [tʃ] Voiceless, alveopalatal affricate occurs in all environments.

- (134) [tʃa.kal] /tʃakal/ 'bushknife'
 (135) [pil.tʃək] /pilʃək/ 'search'
 (136) [tai.tʃa] /taʃa/ 'father, per. ref.'
 (137) [e.wuʃ] /ewuʃ/ 'northward'
 (138) [tʃo.na] /tʃona/ 'that, medial'
 (139) [ya.wiʃ] /yawiwʃ/ 'I get or take'

/s/ [s] Voiceless, alveolar fricative occurs in all environments.

- (140) [saim] /saim/ 'type of basket'
 (141) [se.se] /sèse/ 'comb'
 (142) [wi.ès] /wiès/ 'paddle'
 (143) [sè.si.a] /sèsia/ 'we said'
 (144) [èt.tès] /èttès/ 'we said'

/m/ [m] Voiced bilabial nasals occur in all environments.

- (145) [mas] /mas/ 'bush spirit'
 (146) [mus.mu.aw] /musmuaw/ 'large'
 (147) [tem] /tem/ 'time'
 (148) [wa.nam] /wanam/ 'your brother'

/n/ [n] Voiced alveolar nasals occur in all environments.
 [ŋ] Occurring before velar consonants.

- (149) [no.non] /nonon/ 'cockroach'

When [n] comes before a velar consonant it goes to [ŋ]. See PVN, Velar Nasal rule below:

PVN /n/ ---> [ŋ] / ____ [k]

- (150) [an.ga] /anka/ 'Ah! Let me try and remember.'

/ʎ/ [ʎ] Voiced alveopalatal nasals occur in all environments.

- (151) [ʎai] /ʎay/ 'tadpole'
 (152) [ʎe.ki] /ʎeki/ 'bushman'
 (153) [teʎ.ya.roiʎ] /teʎaroʎ/ 'smoke'
 (154) [aiʎ.yiʎ.yu.puk] /aiʎiʎupuk/ 'type of snake'
 (155) [maiʎ] /maʎ/ 'bird'

/l/ [l] Voiced alveolar laterals occur in all environments.

- (156) [lèk] /lèk/ 'bean'
 (157) [la.mas] /lamas/ 'sand'
 (158) [a.plai] /aplay/ 'bush'
 (159) [sal.sal] /salsal/ 'broom'
 (160) [pèl.pèl] /pelpel/ 'type of purse'

/j/ [j] Voiced alveo-palatal lateral occurs in all environments, except word initial.

- (161) [pij] /ɣpij/ 'fish'
 (162) [tai.aij] /taiaj/ 'type of tree'
 (163) [kuij] /kuj/ 'type of leaf'
 (164) [e].roiŋ /e|roŋ/ 'tulip'

/r/ [r] Voiced alveolar trill occurs in all environments.

- (165) [rè.rèr] /rèrèr/ 'coconut milk'
 (166) [prum] /prum/ 'big'
 (167) [ran.raiŋ] /ranraŋ/ 'wet'
 (168) [wur] /wur/ 'banana'

/w/ [w] Voiced, bilabial semi-vowel occurs in all environments.

- (169) [we.mew] /wemew/ 'red'
 (170) [wo.waw] /wowaw/ 'sago iron holder'

/y/ [y] Voiced, alveo-palatal semi-vowel occur in all environments.

- (171) [ye.yi.ey] /yeyiey/ 'ancestors'
 (172) [kai.yi.a] /kaiyia/ 'I am full'
 (173) [èm.yi.e] /èmyie/ 'step on'
 (174) [èm.i.e] /èmie/ 'yam'

5.1.3 Contrasts

5.1.3.1 Velar stop /k/ contrasts with glottal stop /ʔ/ word initially and word medially.

- (175) [kaiŋ] /kaŋ/ 'type of tree'
 (176) [ʔaiŋ] /ʔaŋ/ 'cat'
 (177) [kuij] /kuj/ 'type of leaf'
 (178) [ʔuij] /ʔuj/ 'breadfruit'
 (179) [yi.ta.kaw] /yitakaw/ 'he paddles'
 (180) [yi.tak.ʔaw] /yitakʔaw/ 'he swims'
 (181) [pi.kar] /pikar/ 'sago with coconut'
 (182) [sa.ʔar] /saʔar/ 'reef'
 (183) [nu.ʔu.an] /nuʔuan/ 'head'
 (184) [nu.ku.an] /nukuan/ 'strong'

5.1.3.2 Nasals /m/, /n/ and /ŋ/ contrast in all environments.

| | | | |
|-------|------------------------|------------|-----------------|
| (185) | [<u>ma</u> .ma] | /mama/ | 'older brother' |
| (186) | [<u>na</u> .na.ke.ne] | /nanakene/ | 'now or today' |
| (187) | [<u>ŋai</u>] | /ŋay/ | 'tadpole' |
| (188) | [<u>maiŋ</u> .a.loiŋ] | /maiŋaloŋ/ | 'feathers' |
| (189) | [<u>an</u> .ton] | /anton/ | 'his child' |
| (190) | [<u>an</u> .tom] | /antom/ | 'your child' |

5.1.3.3 Lateral /l/ and /ɭ/ contrast word medially and finally.

| | | | |
|-------|--------------------------------|------------|--------------------|
| (191) | [iɭ] | /iɭ/ | 'sago iron' |
| (192) | [<u>ya</u> .tak. <u>tiɭ</u>] | /yataktiɭ/ | 'I notice' |
| (193) | [<u>paiɭ</u> .paiɭ] | /paɭpaɭ/ | 'coconut leaf mat' |
| (194) | [<u>sal</u> .sal] | /salsal/ | 'broom' |

5.1.3.4 Alveolars /t/, /s/, /n/ /l/ and /r/ contrast in all environments.

| | | | |
|-------|--------------------------------|------------|-------------------|
| (195) | [<u>ta</u> .law] | /talaw/ | 'limboom' |
| (196) | [<u>sa</u> .sal] | /salsal/ | 'broom' |
| (197) | [<u>la</u> .ke.o] | /lakeo/ | 'bamboo' |
| (198) | [<u>na</u> .roiŋ] | /naroiŋ/ | 'beetlepepper' |
| (199) | [<u>ram</u> .tèn] | /ramtèn/ | 'large leaf vine' |
| (200) | [<u>put</u> .e] | /put'e/ | 'clap' |
| (201) | [<u>se</u> .se] | /sese/ | 'comb' |
| (202) | [<u>so</u> .ne] | /sone/ | 'here' |
| (203) | [<u>su</u> .le] | /sule/ | 'school' |
| (204) | [<u>nu</u> .re] | /nure/ | 'shadows (their)' |
| (205) | [lot] | /lot/ | 'sore' |
| (206) | [<u>wos</u> .pos] | /wospos/ | 'white' |
| (207) | [a. <u>lon</u>] | /alon/ | 'house' |
| (208) | [<u>èni</u> .ak. <u>pol</u>] | /èniakpol/ | 'type of shrimp' |
| (209) | [por] | /por/ | 'canoe' |

5.2 Vowels

5.2.1 Workchart of Phones

| | | <u>Front</u> | <u>Central</u> | <u>Back</u> |
|------|-------|--------------|----------------|-------------|
| high | close | i | | u |
| | open | ɪ | | ʊ |
| | | e | | o |
| | | è | | ò |
| | | a | | à |
| | | | a | |

5.2.2 Description

| <u>Phoneme</u> | <u>Allophone</u> | <u>Description, Occurance, Examples</u> |
|----------------|------------------|---|
| /i/ | [i] | High, close, front unrounded vocoid occurring in all environments. (210) [i.to] /ito/ 'type of taro' (211) [èt.tiw] /ètti/ 'we go down' (212) [lè.pi] /lèpi/ 'sago' (213) [lè.nis] /ènis/ 'dragonfly' |
| /e/ | [e] | Mid, close, front, unrounded vocoid occurring in all environments and fluctuating noncontrastively with mid, open, front unrounded vocoid before velar stops, when occurring word initial. (214) [e.na] /ena/ 'you' (215) [wə.mew] /wemew/ 'red' (216) [ek.wu.a] ~ [èk.wu.a] /ekwua/ 'you go' (217) [èt.pe] /ètpe/ 'we run' (218) [èt.pè] /ètpe/ 'we only' |
| /è/ [ɪ] | [è] | Mid, open, front, unrounded vocoid occurring in all environments and fluctuating noncontrastively with high, open, front, unrounded vocoid before alveolar nasals, word medial. (219) [èm.i.èp] /èmièp/ 'dirty water' (220) [nè] /nè/ 'here it is' (221) [èl.pi.è.tiw] /èlpiètiw/ 'very bad' (222) [è.lèn] ~ [e.lɪn] /èlèn/ 'some' |

/a/ [a]~[a̠] Low, open, central, unrounded vocoid occurring in all environments and fluctuating noncontrastively with low, close, front, unrounded vocoid preceeding a glottal stop in fast speech.

- (223) [a.mon] /amon/ 'good'
 (224) [ya.tak.lu.aw] /yatakluaw/ 'I roast (it)'
 (225) [so.pa] /sopa/ 'bat'
 (226) [i.ya.'e]~[i.ya.'e] /ya'e/ 'mine'

/u/ [u] High, close, back, rounded voiced vocoid occurring in all environments.

- (227) [uuk] /uuk/ 'my nose'
 (228) [mu.lu.aw] /muluaw/ 'frog'
 (229) [mi.ni.u] /miniu/ 'sit down'
 (230) [ɔw] /ɔw/ 'saucepan'

/o/ [o] Mid, close, back, rounded vocoid occurring in all environments and going to low, close, back rounded vocoid, between two glottal stops.

- (231) [o.pi.yən] /opiyən/ 'short'
 (232) [a.mok] /amok/ 'wild beetlenut'
 (233) [o.no] /ono/ 'there, distal'
 (234) [sone.'o.eyə] /sone'oeye/ 'is it yours'

/o/ ---> [ɔ] / ___[']

- (235) [sone.'ɔ.'ome] /sone'o'ome/ 'It is yours, pl.'

When a non-front vowel comes before a palatalized consonant the vowel glides to a high front vowel. See VG the Vowel Glide Rule below:

VG /a, o, u/ ---> [a, o, u][i] / ___[y, ɛ, ʌ, ɨ]

- (236) [ɛ̃.ni.ak.soi̯ɕ] /ɛ̃niakso̯ɕ/ 'small shrimp'
 (237) [ai̯ɕ] /a̯ɕ/ 'talk'
 (238) [rai̯ʌ] /ra̯ʌ/ 'water'
 (239) [moi̯ɨ] /mo̯ɨ/ 'work'
 (240) [a̯i.yia] /a̯yia/ 'mother, per. ref.'

5.2.3 Contrasts

5.2.3.1 Front vocoids /i/ and /e/ contrast in all environments.

| | | | |
|-------|-------------------|---------|------------------|
| (241) | [<u>t</u> i.aw] | /tiaw/ | 'hand net' |
| (242) | [tew] | /tew/ | 'clam' |
| (243) | [o. <u>r</u> i] | /ori/ | 'crab' |
| (244) | [re] | /re/ | 'they' |
| (245) | [wè. <u>n</u> i] | /wèni/ | 'snake' |
| (246) | [o. <u>n</u> e] | /one/ | 'this' |
| (247) | [wè. <u>l</u> in] | /wèlin/ | 'fuzz' |
| (248) | [wè. <u>l</u> èn] | /wèlèn/ | 'small (plural)' |

5.2.3.2 Front vocoids /e/ and /ə/ contrast in all environments.

| | | | |
|-------|----------------------|-----------|--------------------|
| (249) | [<u>e</u> .mow] | /emow/ | 'westward' |
| (250) | [<u>è</u> m.blot] | /èmplot/ | 'tongs' |
| (251) | [<u>n</u> ew] | /nèw/ | 'coconut' |
| (252) | [nèw] | /nèw/ | 'green lizard' |
| (253) | [a. <u>t</u> èm] | /atèm/ | 'liver, your' |
| (254) | [tem] | /tem/ | 'time' |
| (255) | [om. <u>k</u> èm] | /omkèm/ | 'you. pl. get' |
| (256) | [èt. <u>p</u> e] | /ètpe/ | 'we ran' |
| (257) | [èt. <u>p</u> è] | /ètpè/ | 'we yet' |
| (258) | [o. <u>l</u> èk.lèk] | /olèklèk/ | 'bush spirit' |
| (259) | [<u>l</u> ek.lek] | /leklek/ | 'hairy catapillar' |

5.2.3.3 Non-high vocoids /ə/ and /a/ contrast in all environments.

| | | | |
|-------|---------------------|----------|------------------|
| (260) | [èt] | /èt/ | 'we' |
| (261) | [at] | /at/ | 'stone' |
| (262) | [<u>t</u> i.as] | /tias/ | 'sea' |
| (263) | [<u>y</u> i.ès] | /yiès/ | 'hot water sago' |
| (264) | [<u>n</u> è.'e] | /nè'e/ | 'here, take it' |
| (265) | [na. <u>'u</u> .am] | /na'uam/ | 'your head' |

5.2.3.4 Non-front, non-high vocoids /a/ and /o/ contrast in all environment

| | | | |
|-------|-----------|---------|-----------------|
| (266) | [am] | /am/ | 'your name' |
| (267) | [om] | /om/ | 'you, pl.' |
| (268) | [a.ma.na] | /amana/ | 'tomorrow' |
| (269) | [a.mon] | /amon/ | 'good' |
| (270) | [o.na] | /ona/ | 'there, medial' |
| (271) | [o.no] | /ono/ | 'there. distal' |

5.2.3.5 Non-front, vocoids /o/ and /u/ contrast in all environments.

| | | | |
|-------|--------------|------------|----------------------|
| (272) | [om] | /om/ | 'you. pl.' |
| (273) | [uum] | /uum/ | 'your nose' |
| (274) | [a.kon] | /akon/ | 'lying down' |
| (275) | [plu.a.kuun] | /pluakuun/ | 'my knee' |
| (276) | [i.to] | /ito/ | 'type of taro' |
| (277) | [pi.tu] | /pitu/ | 'large type of taro' |

5.2.3.6 Non-front vocoids /u/, /ʊ/ and /o/ contrast in closed syllables only.

| | | | |
|-------|-------|-------|----------|
| (278) | [lot] | /lot/ | 'sore' |
| (279) | [lʊt] | /lʊt/ | 'we two' |
| (280) | [tup] | /tup/ | 'pile' |

Even though there is contrast within a closed syllable for [ʊ], this phone as a phoneme is suspect because of its very low occurrence. See Section 11.2 Problems.

6.0 Supra-segmental Items

6.1 Phonemic status of stress

Stress is predictable in most instances in Arop. When a word consists of three syllables then the stress generally falls on the second syllable except on verb forms. In verb forms the stress always occurs on the first syllable of the verb root. Generally, with word modifiers the stress occurs on the second syllable but always when the word is a modifier with a reduplicated stem. Generally nouns have the stress on the first syllable but will always on the first syllable of reduplicated stems. Although not all words conform to these general rules, stress has a very low functional load and there are some minimal pairs of words elicited where stress is the sole criterion for differentiation. Therefore, stress is phonemic in Arop, but the use of these words in their grammatical slots negates the need for notation of stress in the orthography.

6.1.1 In three syllable words the stress falls on the second syllable.

- (281) [nu.'u.an] 'his head'
 (282) [u.wu.aw] 'new'
 (283) [a.lun.na] 'middle'
 (284) [mu.lu.al] 'wallaby'
 (285) [ko.ko.lek] 'bad'

6.1.2 Stress on verb forms are secondary stress on the pronoun and primary stress on the first syllable of the verb root.

[pro + tns + verb rt]

- (286) [ya + tak + ni.aw] 'I see'
 (287) [e + naw + kum] 'you will buy'
 (288) [yi + aw + mèn.i.u] 'he is sitting down'
 (289) [om + ka + mo.'o] 'you (pl) sang'

6.1.3 Stress usually occurs on the second syllable of a word modifier when it is a two syllable word.

- (290) [tè.kèn] 'long'
 (291) [wè.tiç] 'green'
 (292) [è.lèn] 'some'
 (293) [pè.'èk] 'round'
 (294) [an.no] 'completely'

Exceptions:

- (295) [o.ne] 'this here'

6.1.4 Stress on nouns with two syllables usually occur on the first syllable.

- (296) [tə.kal] 'bushknife'
 (297) [ti.aw] 'net'
 (298) [wi.ès] 'paddle'
 (299) [oi.čèk] 'knife'
 (300) [tri.e] 'ground'
 (301) [a.mok] 'type of fish'

Exceptions:

- (302) [a.mok] 'wild beetlenut'
 (303) [a.loiŋ] 'feather'

6.1.5 Nouns with reduplicated stems always carry the stress on the first syllable.

- (304) [sal.sa] 'broom'
 (305) [tup.tup] 'weeds'
 (306) [lal.lal] 'type of wild quila'

6.1.6 Modifiers with reduplicated stems always carry the stress of the second syllable

- (307) [tek.tek] 'early'
 (308) [tar.tar] 'plenty'
 (309) [ran.raif] 'wet'

6.2 Intonation

Intonation is used in Arop to mark clause and sentence boundaries. In a sentence with more than one clause each clause ending has a rising intonation while the sentence closes with a falling intonation. If the clause is a question then just before the question word at the end of the sentence the intonation goes up and then down on the last word.

Orait ettawuc etow kiaman anu. Etton yin olqeta man.
 Then we went worked temporary house We stayed beach everyone

etta'iu na ton yin Orait tonton re niytaweyn
 'We laid down and slept on beach Then stayed and stayed all the big men

tamakre kro anu prum, orait ettaton.
 our fathers built houses big and we stayed (inside)

- (310) [ettakuw anen]
 'What are you doing?'
- (311) [antonre piapiare]
 'How many children do you have?'
- (312) [Linus kowa sto onno o èlin]
 'Did Linus go to the store or not?'
- (313) [Ow! Yikowa sto]
 'Yes! He went to store.'

7.0 Morphophonemics

7.1 There is a metathesis rule which applies to the undergoer pronoun morpheme [yia] 'me'. Whenever this morpheme follows a consonant then /y/ and /i/ switch due to a syllable preference in fast speech.

| | | |
|----|----------------|------------|
| MM | (Pronoun only) | (Verb) |
| | CVV ---> | VCV / ...C |
| | 1 2 | 1 2 |

- (314) [ekyi-yia] /ekyiyia/ 'you pull me'
 (315) [eawkis-iya] /eawkisya/ 'you will talk to me'
 (316) [eksiema-iya] /eksiemayia/ 'you throw to me'
 (317) [eaklun-iya] /eaklunya/ 'you will hear me'

7.2.1 Vowel Deletion and Consonant Deletion

Across morpheme boundaries only two like vowels will cause one to delete. Two like consonants will also cause one consonant to delete across morpheme boundaries.

(318) ya + aw + is --> [yawis] I + pr tns + talk
 'I am talking'

(319) ya + aw + 'ièp --> [yaw'ièp] I + pr tns + hold
 'I am holding'

(320) ya + aw + oma --> [yawoma] I + pr tns + come
 'I am coming'

(321) ya + aw + wua --> [yawua] I + pr tns + go
 'I am going'

7.2.2 The Assimilation rule (MA) states that two segments of like features across morpheme boundaries will cause one to delete. (LF = like feature)

MA [LF] ---> 0 / [LF]---

7.2.3 The following is the Tense Manner Vowel Deletion rule (MTMVD) which only applies to the tense marker in the verb stem, but it is optional.

- (322) ya + aw + um --> [yiawum]~[yiwum]
 'he + pr tns + buy' 'he is buying'
- (323) e + awk + oma --> [eawkoma]~[ewkoma]
 'you + pr tns + come' 'you are coming'
- (324) om + awk + ama --> [omawkama]
 'you pl + pr tns + come' 'you (pl) are coming'
- MTMVD TM (pronoun)
 V ~ Ø / ...V

7.3 The Aspect, Completion and Person Portmanteau Marker

7.3.1 In Arop the tense marker is made up of three tagmemes which occur preceding the verb stem. The first tagmeme on the left side of the chart relates to aspect and may be filled by one of three morphemes, [ta], [n] and Ø. The aspect marker, [ta]- is continuous action and [n]- has the aspect of distant future, while Ø represents no aspect.

The second tagmeme in the middle of the chart is a completion tagmeme with two morphemes occurring in this slot. The morpheme [k]- means completed action and the morpheme [aw]- refers to action not completed.

The aspect morpheme Ø occurs with either completion marker but the continuous action morpheme [ta]- can only occur with the completion morpheme [k]-. The distant future morpheme [n]- occurs only with the non-completion morpheme [aw]-.

The third tagmeme is a person agreement marker filled by one of four morphemes. The morphemes are [k]- (second person), [t]- (first person plural), [r]- (third person plural) and Ø (first and third person singular).

The tenses given on the left of the chart below are used to describe the English field of reference to time and are used here to give an approximation of meaning for each combination used in Arop.

| Tense Marker | | | |
|--------------------|-----|-----|--------------------|
| Aspect Comp Person | | | |
| + | | | |
| Cont Act | ta- | k- | k- 2nd sing or pl. |
| Past | Ø | k- | t- 1st pl. |
| Present | Ø | aw- | r- 3rd pl. |
| Future | n- | aw- | Ø 1st + 3rd sing. |
| - | | | |
| Comp | | | |

Any consonant which preceeds the person marker morpheme t- is deleted. Therefore the following morphonemic 'T' preference rule (MTP) is written.

Example:

(325) lot + 0 + aw + t + es --> [lotates]
 'we (2) are talking'

(326) et + n + aw + t + es --> [etnates]
 'we are talking'

(327) et + ta + k + t + es --> [etates]
 'we talk'

2/ MA [LF] --> 0 / [LF]-

Example:

(328) et + ta + k + t + es --> [etates]
'we talk'

(329) om + ta + k + k + nas --> [omtaknas]
'you cook'

(330) lo + Ø + k + k + es --> [lokes]
'you (2) talked'

7.3.1.3 The third ordered rule is the Completion Marker Deletion rule (MCMD), which states that when the completion marker, [k]- follows a vowel in the aspect marker and precedes a consonant in the person marker then it, [k]- is deleted. This rule is applied only when the tense is continuous action. Notice the contrast with past tense below.

3/ MCMD Comp marker ASP PM
 C --> 0 / V C

Tense Marker
PRO + ASP + Comp + PM + VR

{331} rot + ta + k + r + es --> [rotares] (continuous action)
 `they (2) talk'

(332) ro + Ø + k + r + es --> [rokres] (past tense)
 'they (2) talked'

7.3.1.4 The fourth ordered rule is the Vowel Insertion rule (MVI). Vowel insertion only occurs within the past tense marker. The conditions for [k]- to change to [ka]- within the completions marker are when the aspect morpheme is 0 and the verb root begins with a consonant.

4/ MVI Tense Marker Verb
 CC ---> CVC / C

PRO + AS + COMP + PM + VR

(333) UF /om + 0 + k + k + nas/
 UF /omknas/ k + k --> k (Rule 2 MA)
 SF [omkanas] 'you (pl) cooked' k + n --> kan (Rule 4 MVI)

(334) UF /ro + θ + k + r + nas/
 UF /rokɾnas/
 SF [rokarnas] 'they (2) cooked'

(335) UF /re + θ + k + r + nas/
 UF /rekrnas/
 SF [rekrnas] 'they cooked'

In (333) /omknas/ has the sequence of 'mkn', (334) /rok^hnas/ has the sequence of 'k^hrn' and (335) /rek^hnas/ also has the sequence of 'k^hrn'. Since these sequences of consonants do not occur in Arop a vowel is inserted after k-.

Examples:

- 7.3.1.5 There is also a secondary vowel insertion rule called the Person Marker Vowel Insertion rule (MPMVI) which is applied when the completion marker is deleted because of the 't' preference rule (MTP).

5/ MPMVI C ~ CV / -0 -C PRO TNS Verb

Below are examples of the past tense markers with both verb roots starting with and without a consonant.

| | | | | <u>Rules Applied</u> |
|-------|------------------------------------|--------------------|-------|----------------------|
| (340) | / ya + 0 + k + 0 + is/ -> | [yakis] | | |
| | I + AS + Comp + PM + talk | `I talked' | None | |
| (341) | / ya + 0 + k + 0 + nuas/ -> | [yakanuas] | | |
| | I + AS + Comp + PM + cook | `I cooked' | 4 | |
| (342) | / ro + 0 + k + r + es/ -> | [rokres] | | |
| | they (2) + AS + Comp + PM + talk | `they (2) talked' | None | |
| (343) | / ro + 0 + k + r + nas/ -> | [rokarnas] | | |
| | they (2) + AS + Comp + PM + cook | `they (2) cooked' | 4 | |
| (344) | / lot + 0 + k + t + es/ -> | [lotes] | | |
| | we (2) + AS + Comp + PM + talk | `we talked' | 3 | |
| (345) | / lot + 0 + k + t + nas/ -> | [lotanas]~[lotnas] | | |
| | `we (2)' + AS + Comp + PM + cook | `we (2) cooked' | 1,2,5 | |
| (346) | / ro + 0 + k + r + es/ -> | [rokres] | | |
| | `they (2)' + AS + Comp + PM + talk | `they (2) talked' | None | |

8.0 Distinctive Features, Rules, Summary and Derivations8.1 Distinctive features

The distinctive features of Arop phones are listed in the following chart.

| Phones | p | b | t | k | g | č | j | s | m | ŋ | n | ɲ | l | ɭ | r | w | y | i | ɛ | è | à | a | ò | o | u | ù |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| consonant | + | + | + | + | + | + | + | + | + | + | + | + | + | + | - | - | - | - | - | - | - | - | - | - | - | - |
| syllabic | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | + | + | + | + | + | + | + | + | + |
| sonorant | - | - | - | - | - | - | - | - | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| high | - | - | - | + | + | - | + | + | - | + | + | - | + | + | + | + | + | + | + | - | - | - | - | - | - | + |
| back | - | - | - | + | + | - | - | - | - | - | - | + | - | - | + | - | - | - | - | - | - | - | - | + | + | + |
| tense | + | + | + | + | - | + | + | + | - | - | - | - | - | - | + | + | + | + | - | + | - | + | - | + | - | + |
| round | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | + | - | - | - | - | - | - | - | + | + | + |
| mid | | | | | | | | | | | | | | | - | - | - | + | + | - | + | - | + | - | - | - |
| low | | | | | | | | | | | | | | | - | - | - | - | - | - | - | - | + | - | - | - |
| close | | | | | | | | | | | | | | | | | | + | - | + | - | + | - | + | + | - |
| palatal | - | - | - | - | - | - | + | - | - | - | + | + | - | - | + | - | - | + | | | | | | | | + |
| anterior | + | + | + | - | - | - | - | + | + | + | - | - | + | - | + | | | | | | | | | | | |
| coronal | - | - | + | - | - | - | + | + | + | - | + | + | - | + | + | + | + | | | | | | | | | |
| continuant | - | - | - | - | - | - | - | + | - | - | - | - | + | + | + | | | | | | | | | | | |
| nasal | - | - | - | - | - | - | - | - | + | + | + | + | - | - | - | | | | | | | | | | | |
| strident | - | - | - | - | - | - | + | + | + | - | - | - | - | - | - | | | | | | | | | | | |
| lateral | - | - | - | - | - | - | - | - | - | - | - | - | + | + | - | | | | | | | | | | | |
| voice | - | + | - | - | + | - | - | + | - | + | + | + | + | + | + | + | + | | | | | | | | | |

8.2 Rules Summary

From the preceding discussions on the following set of 14 ordered rules can be formalized.

R1 MTP: 'T' Preference rule in Person Marker. See section 7.3.1.1.

$$C \rightarrow \emptyset / \text{___} \begin{matrix} \text{PM} \\ [t] \end{matrix}$$

R2 MA: Consonant or Vowel Assimilation Rule. See section 7.3.1.2 and section 7.2.1.

$$LF \rightarrow \emptyset / [LF] \text{---}$$

R3 MCMD: Completion Marker Deletion Rule. See Section 7.3.1.3.

$$\begin{matrix} \text{Comp Marker} & & \text{AS} & \text{PM} \\ \dots C \rightarrow \emptyset / \text{V} \text{___} C \end{matrix}$$

R4 MVI: Vowel Insertion Rule. See section 7.3.1.4.

Tense marker Verb
CC ---> CVC / ____-C

R5 MPMVI: Person Marker Vowel Insertion Rule. See section 7.3.1.5.

Pro Tense Verb
C ~ CV / ____-θ -C

R6 MTVD: Tense Marker Vowel Deletion Rule. See section 7.2.3.

TM Pro
V... ~ θ / ...V-__

R7 MM: Metathesis Rule. See section 7.1.

Pro
only Verb
CVV ---> VCV / ...C __

R8 PVG: Vowel Glide Rule. See section 4.2.2.2.

Non Front ĕ
V ---> V[i] / ____ }
 ħ

R9 PV: Voicing Rule. See section 5.1.2.

p b Voiced
k ---> g / C__

P10 PVN: Velar Nasal Rule. See section 5.1.2.

[n] ---> [ŋ] / ____[k]

R11 PVLBG: Vowel Lowering Before Glottal Rule. See section 5.2.2.

a à
o ---> ò / ____[']

R12 PP: Portmanteau Phone of [(u)au]. See section 4.3.4.

[(u)au] ---> [o] / (<fast speech>)

R13 PCP: Consonant Palatalization Rule. See section 4.2.2.1.

 ĕ
 }
/t, l, n/ ---> [č, ʃ, ɲ] / ħ ____

AROP PHONEMIC STATEMENT

8.3 Derivations

Examples from the lexicon showing the derivations of the surface forms according the above 14 rules are listed in the chart following.

| | | | | | |
|--------------|---------------|---------------|------------------|-----------------|-------------|
| <u>UF</u> | lot-ta-k-t-es | ro-ta-k-r-nas | lo-θ-k-k-nas | lot-θ-k-t-nas | e-θ-aw-k-is |
| R1 | lot-ta- t-es | _____ | _____ | lot-θ- t-nas | _____ |
| R2 | lot- a- t-es | _____ | lo-θ-k nas | _____ | _____ |
| R3 | _____ | ro-ta -r-nas | _____ | _____ | _____ |
| R4 | _____ | _____ | lo-θ-ka nas | _____ | _____ |
| R5 | _____ | _____ | _____ | lot-a- nas | _____ |
| R6 | _____ | _____ | _____ | _____ | e-θ- w-k-is |
| <u>SF</u> | lotates | rotarnas | loKanas | lotanas | |
| ewkis | | | | | |
| <u>Gloss</u> | 'we (2) talk' | 'they cooked' | 'you (2) cooked' | 'we (2) cooked' | 'you talk' |

| | | | | | |
|--------------|-------|------------------|-------------|-----------------|--------------------|
| <u>UF</u> | _____ | e-aw-k-is yia | mafi ène | ar kran | anka |
| R6 | _____ | e w-k-is yia | _____ | _____ | _____ |
| R7 | _____ | e w-k-is iya | _____ | _____ | _____ |
| R8 | _____ | _____ | maifi ène | _____ | _____ |
| R9 | _____ | _____ | _____ | ar gran | anga |
| R10 | _____ | _____ | _____ | _____ | anga |
| <u>SE</u> | _____ | ewkis iya | maifi yène | ar gran | anga |
| <u>Gloss</u> | _____ | 'you talk to me' | 'this bird' | 'pandanus side' | 'Ah! Let me think' |

AROP PHONEMIC STATEMENT

| | | | | |
|--------------|-----------|--------|---------------|-------------|
| <u>UF</u> | | | | |
| sone 'o 'ome | ektuawtèk | wuruau | atoñ-na | ate -tèk |
| R8 | | | | |
| _____ | _____ | _____ | atoñ-na | _____ |
| R11 | | | | |
| sone 'ò 'ome | _____ | _____ | _____ | _____ |
| R12 | | | | |
| _____ | ektotèk | wuruo | _____ | _____ |
| R13 | | | | |
| _____ | _____ | _____ | atoñ-ña | ate -čèk |
| <u>SF</u> | | | | |
| sone 'ò 'ome | ektotèk | wuruo | atoñña | ate čèk |
| <u>Gloss</u> | | | | |
| 'is this | 'you cut' | 'male' | 'pull out and | 'pull out a |
| yours' | | | put into' | few' |

9.0 Pidgin and English words as pronounced by vernacular speakers are listed below.

| | |
|-------------------------|---------------|
| (347) [kɾas] | 'gras' |
| (348) [nèk] | 'nek' |
| (349) [lek] | 'lek' |
| (350) [yaw] | 'yau' |
| (351) [han]~['an] | 'hand' |
| (352) [plut] | 'blut' |
| (353) [tèl] | 'tel' |
| (354) [panana] | 'banana' |
| (355) [taro] | 'taro' |
| (356) [kamban]~[kamban] | 'kambang' |
| (357) [maggol] | 'mango' |
| (358) [kiaw] | 'kiau' |
| (359) [prok] | 'frog' |
| (360) [maleaw] | 'maleo' (eel) |
| (361) [sawul] | 'shovel' |
| (362) [rip] | 'reef' |
| (363) [waisan] | 'waisan' |
| (364) [paiya] | 'paia' |
| (365) [wailès] | 'wireless' |
| (366) ['angri] | 'hangri' |
| (367) [pasket] | 'basket' |

10.0 Sample Text

Stress in the phonetic is indicated by parenthesis, i.e. (< >), around the stressed syllable.

| | | | | | | | |
|------------------|--------|-------------------------|----|-----------------------|-------------------------|------------|----|
| Phonetic | 1. /// | <u>0'(<rait>)</u> | // | <u>(<ta>ko)</u> | <u>ka-(<loi>)</u> | <u>pil</u> | // |
| Orthographic: | 2. | orait | | tako | kaloy | pil | |
| Interlinear: | 3. | OK | | another | p-speared | fish | |
| Free translation | 4. | OK, | | there was | another man who speared | some fish. | |

| | | | | | | | | |
|----|-------------------------|------------|-----------------------|------------------------|-----------------------|------------------------------------|------------------------|----------------|
| 1. | <u>ka-(<loi>)</u> | <u>pil</u> | <u>(<wu>ak)</u> | <u>an(<ton>)</u> | <u>(<yi>'e)</u> | <u>le(<pa>le(<pa>)</u> | <u>an(<ton>)</u> | // |
| 2. | kaloy | piyl | wuak | anton | yi'e | lepalepa | anton | |
| 3. | p-speared | fish | outrigger | little | him-poss | 'saman' | canoe | little |
| 4. | He speared | the fish | in his | little | outrigger | canoe, | a little | 'saman' canoe. |

| | | | | | | | | | |
|----|-------------|------------------------|------------------------|-------|------------------------|-------------------------|-----------|------------------------|----|
| 1. | <u>k-au</u> | <u>ko-(<wa>)</u> | <u>ko-(<wa>)</u> | // | <u>wa-(<ma>)</u> | <u>wa-(<'os>)</u> | <u>re</u> | <u>(<is>ano)</u> | // |
| 2. | kaw | kowa | kowa | | wama | wa'os | re | Isano | |
| 3. | p-paddled | p-went | p-went | | pr-come | go-south | those | Sissanos | |
| 4. | He paddled | until | he came | south | of those | in | Sissano. | | |

| | | | | | | | | |
|----|-------------------------|-------------------------|----------------------|-------------------------|---------|-------------------------|------------|--------|
| 1. | <u>(<Re>saku)</u> | <u>ka-(<lun>)</u> | <u>(<yi>a)</u> | <u>(<Re>saku)</u> | // | <u>wa-(<'os>)</u> | <u>ano</u> | // |
| 2. | Resaku | kalun | yia | Resaku | | wa'os | ano | |
| 3. | Name | p-hear | me | Name | | went-south | there | |
| 4. | Resaku is | his name, | do you hear | me, | Resaku. | He went | south to | there. |

| | | | | | | | | | |
|----|------------------------|----------------------------|------------------------|------------------------|----|------------------------|------------------------|------------------------|--|
| 1. | <u>o(<rait>)</u> | <u>yi-ka-(<nio>)</u> | <u>ai(<lan>)</u> | <u>an(<ton>)</u> | // | <u>ai(<lan>)</u> | <u>an(<ton>)</u> | <u>ka(<mèn>)</u> | |
| 2. | orait | yikaniaw | ailan | anton | | ailan | anton | kamen | |
| 3. | then | he-p-saw | island | little | | island | little | p-was | |
| 4. | Then he saw | a little | island. | | | The little | island was | | |

| | | | | | | | | | |
|----|------------------------|----|-----------|-------------------------|----------------------------|----|-----------------------|-----------------------|-------|
| 1. | <u>pè-(<no>)</u> | // | <u>wa</u> | <u>wa-(<'os>)</u> | <u>yi-ka-(<mèn>)</u> | // | <u>a(<teŋ>)</u> | <u>è(<lin>)</u> | // |
| 2. | pèno | | wa | wa'os | yikamen | | ateyn | èlin | |
| 3. | there | | went | went-south | he-p-stayed | | fire | no | |
| 4. | over there. | | He went | south and | stayed. | | But he didn't | have | fire. |

| | | | | | | | | |
|----|------------|----------------------|-----------------------------|-------------------------|----|-----------------------------|-------------------------|-----------|
| 1. | <u>pil</u> | <u>è(<ne>)</u> | <u>yi-ka-(<'aiŋ>)</u> | <u>la(<muat>)</u> | // | <u>yi-ka-(<'aiŋ>)</u> | <u>la(<muat>)</u> | / |
| 2. | piyl | ene | yika'ayn | lamuat | | yika'ayn | lamuat | |
| 3. | fish | these | he-p-ate | uncooked | | he-p-ate | uncooked | |
| 4. | He ate | these fish | uncooked. | | | He ate | them | uncooked. |

| | | | | | | | | | | |
|----|----------------|-------------------------|-----------------------|--------|----------------------|--------------------------|----------|-------------------------|--------------------------|--------------------|
| 1. | <u>yi el-a</u> | <u>ka-(<tow>)</u> | <u>a(<rau>)</u> | // | <u>è(<ne>)</u> | <u>niy è(<ne>)</u> | // | <u>ka-(<lau>)</u> | <u>ka-(<'aiŋ>)</u> | // |
| 2. | yi eyla | katow | araw | | ene | niy ene | | kalaw | ka'ayn | |
| 3. | he | put-up | p-stand | sun | | this | man this | p-dried | p-ate | |
| 4. | he | put | them up | in the | sun to | dry. | This man | here. | He dried | them and ate them. |

1. o(rait) // kom-(lan) ka-(aiñ) la(muat) / ka-(aiñ) // ka-(nio)
2. orait komlan ka'aiyn lamuat ka'ayn kaniaw
3. then finished p-ate uncooked p-ate p-saw
4. Then, when it finished drying he ate it, uncooked. He saw some

1. el(wu)as // et-ta-(ki) el // et-ta-(ki) pè(ne) el(wu)as //
2. eylguas ettaki eyl ettaki pene eylguas
3. aivika we-cont-call leaves we-cont-call like aivika
4. aivika. We call the leaves, we call them aivika.

1. wa-(iu) raiñ kow yi (w-a)ma // Q(wa)ni
2. wa'iu rayn kow yi wama Owani
3. went-down water got it p-come Name (of water)
4. He went down the water and picked the leaf as he went. In Owani

1. k-ow yi (w-a)ma // raiñ an (yi)-'e è(ne) Q(wa)ni // k-ow yi
2. kow yi wama rayn an yi'e ene Owani kow yi
3. p-got it p-came water name it-poss this Name p-got it
4. he got it as he came. The water's name is this, Owani, on which

1. (w-a)ma Q(wa)ni Q(wa)ni // ko yi (w-a)ma a(no) //
2. wama Owani Owani ko yi wama ano
3. p-came Name Name got-it p-came there
4. he got them and came. Owani, Owani, he got it and came over there

1. ko-(wa) ko-(wa) (w-a)ma // kos yi(keč) yi el // aa el
2. kowa kowa wama kos yikej yi eyl aa eyl
3. p-go p-go p-came completed he-picked it leaf ah leaf
4. going and going. Alright he picked up the leaves and he thought, 'These leaves,

1. i(nan) kar-(mèn) kr-o el è(ne) a(tin) niy kar-(mèn) a(no) //
2. inan karmen kro eyl ene atin niy karmen ano
3. who p-staying p-did leaf this think man p-staying there
4. who is putting these leaves in the water? I think men live up there.'

1. em // na(kan) yi-ka-(ta) ko-(wa) pa(no) // ka-(ta) ko-(wa) pa(no) //
2. em nakan yikata kowa pano kata kowa pano
3. correct finger he-p-pointed p-go there p-pointed p-go there
4. That's right! He pointed over there, he pointed there.

1. o(rait) // el è(ne) yi-(k-eč) o a(tin) ya-na-(wu)a-nan re pil
2. orait eyl ene yikej o atin yanawuanan re piyl
3. then leaf this he-p-get oh I think I-f-go-follow them fish
4. Then these leaves he got, he thought, 'I will follow these leaves' and the fish

1. è(ne) yi-ka-(sie) basket // yi-ka-(sie) a(lu)am // ka-(sie) ka-(sie) / k-ow
2. ene yikasio basket yikasio aluam kasie kasie kow
3. these he-p-put basket he-p-put basket p-put p-put p-paddle
4. he put in a basket. He put all of them in the basket and after putting them

1. na-ka-(ba)* // wa wa k-èč re // aa / niy a(na) om-a(k-on)
2. nakawa wa wa kej re aa niy ana omakon
3. therefore-p-went go go p-gave them ah man this you.pl-pr-live
4. then he went. He went and went and gave them, to this man and said, 'You are living

1. a(na) // o(rait) yi-(k-èč) re (pi)nis // o(rait) teñ (ta)ko
2. ana orait yikej re pinis orait teñ tako
3. here then he-p-gave them already then fire a
4. here!' Then he gave them the fish. 'Alright, you give me

1. om-(k-èč) iya // a(teñ) // a(teñ) (ta)ko ka(r-èč) yi //
2. omkej yia ateyn ateyn tako karej yi
3. you.pl-p-give me fire fire another p-gave him
4. some fire!' Okay they gave him some fire and

* Note that in this man's dialect his /w/ has the allophone of [b] in free variation occurring. But in the previous data there was never this occurrence because my informant is much younger and it appears to be only common with the old men in the village.

1. k-ow (w-a)ma // e(lin) / a(teñ) ka-(li)ye ka-(li)ye // o(rait) //
2. kow wama elin ateyn kaliye kaliye orait
3. p-carry p-came no fire p-died p-died so
4. he brought it But no! The fire died. It died. So

1. ka-(pe)-nian // ko-(wa)-nian // uu // a(teñ) om-(k-èč)-iya ai a(mon) //
2. kapenian kowanian uu ateyn omkejyia ay amon
3. p-ran-again p-go-again hey fire 2pl-p-give-me wood good
4. he went back again. Went again. 'Hey! You give me some good wood!

1. ai a(mon) // ko-(wa) ka(r-èč)-yi / k-ow (w-a)ma ko-(wa) ko-(wa) w-a(ma)
2. ay amon kowa karejyi kow wama kowa kowa wama
3. wood good p-go p-gave-him p-carry came p-go p-go p-came
4. Some good wood! He went and they gave him some,

1. (k-èč)-iu-na (wu)ak // wa ka-(min) ka-(min) yey a(teñ) ka-(li)ye //
2. kejiuna wuak wa kamin kamin yey ateyn kaliye
3. p-put-down-into canoe go p-remain p-remain sorry fire p-died
4. and he put it into his canoe. The fire remained in the boat but sorry, it died.

1. i (qi)aman // a(teñ) i no ka-(li)ye // em i (pu)tim (wa)ra // o(rait) //
2. i giaman ateyn i no kaliye em i putim wara orait
3. he lied fire didn't p-die. he put.in water OK
4. He lied the fire didn't die. He put it in the water. OK,

1. ka-(li)ye // ko-(wa)-nian / aa // a(teñ) et-(teč)-e ai a(mon) //
2. kaliye kowanian aa ateyn etteje ay amon
3. p-died p-go-again hey fire we-gave-you wood good
4. it died and he went back. 'Hey! This fire we gave you was good wood!'

1. kar-tow-pot rap(rap) // ka-(ru)-na // a(teñ) ka-(aiñ) //
2. kartowpot raprap karuna ateyn ka'ayn
3. p-broke-to.pieces 'raprap' p-put.in fire p-ate
4. They broke into pieces some 'raprap' wood. They put it in the fire it caught fire

1. ka(r-èč)-yi / aa // a(tin) yi-ta-(yup) na èt tè(miñ) // ta-(yup) na
2. karejyi aa atin yitayup na et temiyñ tayup na
3. p-gave-him hey think he-cn-cries to us woman crying to
4. and they gave it to him. 'Hey! I think he is crying to us for woman, he wants

1. èt tè(miñ) // (ta)ko a(t-èč)-yi // 'usia ka(r-èč)-yi (ta)ko sa(èr)'ièr //
2. et temiyñ tako atejyi 'usia karejyi tako sa'er'ier
3. we woman one pr-give-you get.up p-gave-him one wrinkly.skin
4. a wife. We'll give you one.' They got up and gave him one with wrinkly skin.

AROP PHONEMIC STATEMENT

1. ka(r-èc)-yi k-ow (w-a)ma // o(rait) // ro-(wa) yi-ka-(la) ka-(la) //
2. karejyi kow wama orait rowa yikala kala
3. p-gave-him p-carry p-come then they-went he-p-laughed p-laughed
4. They gave her to him and he brought her and they went and he laughed with joy.

1. k-ow ko-(wa) naw // Ra(mo) tè(miñ) // ka(r-èc)-yi //
2. kow kowa naw Ramo temiyn karejyi
3. p-carry p-went now Ramo woman p-gave-him.
4. He married her and went. She was a Ramo woman that they gave him.

11.0 Orthography

11.1 Suggested Orthography

| <u>Phoneme</u> | <u>Allophone</u> | <u>Suggested Orthography</u> | <u>Alternate symbols in order of preference</u> |
|----------------|------------------|----------------------------------|---|
| /p/ | [p] [b] | p | |
| /t/ | [t] [c] | t | |
| /k/ | [k] [g] | k | |
| // | ['] ['] | ' | |
| /t̥/ | [t̥] | j | c |
| /s/ | [s] | s | |
| /m/ | [m] | m | |
| /n/ | [n] [ŋ] | n | |
| /ɲ/ | [ɲ] | yn | ñ, ny |
| /l/ | [l] | l | |
| /ʎ/ | [ʎ] | yʎ | ʎ, ly |
| /r/ | [r] | r | |
| /w/ | [w] | w | |
| /y/ | [y] | y | |
| /i/ | [i] | i | |
| /e/ | [e] [è] | e | ee |
| /è/ | [è] [e] [+] | è | e |
| /a/ | [a] [à] | a | |
| /o/ | [o] [ò] | o | |
| /u/ | [u] | u | |
| /ù/ | [ù] | ù | o |

11.2 Problems

Palatalized consonants have probably become phonemes over a period of time in Arop. It is curious there are not instances of non-palatalized alveolars occurring immediately following the vowel glides [ai], [oi] and [ui]. There is only one instance though of the glide in Arop which comes within a closed syllable without a palatal following. This word is saim 'carrying basket'. But even this word appears to be a borrowed word from the Yakamul language, another Austronesian language.

The problem can be seen by checking the older people's pronunciation of the Pidgin word for instance, 'orait'. Generally the older people pronounce it as [oraij]. Because of this it is probably safe to say that originally the palatalized consonants were allophones of alveolar consonants occurring immediately following a glide to a high front vowel. This may explain why there are only two occurrences of [ʃ] occurring and no occurrences of [ʒ] occurring word initial because the language is in a state of change.

In writing the phoneme [ɕ] most of the Arops prefer to use /j/ as the letter because of the preference in following Pidgin and the English writing of Christian names with a 'J' like for John, Jake, James, etc. It is a letter they more readily associate with the sound [ɕ] a lot more so than 'c' or 'ch' which have been used on a trial basis in the village.

In writing the phonemes [ʎ] and [ʀ] there was a real strong dislike of my use of /ly/ and /ny/ respectively by those who know English. It seems like the word for 'bird' for example [maiʀ] would have to be spelled /many/. It was pronounced by most as the word in English, 'many' instead of [maiʀ]. Also in trying to get away from using any diacritics if possible we have tried using /yn/. This has been used and liked much more than the other options. So this word when written /mayn/ lends more readily to how the word should be pronounced.

The problem with the phone /ʊ/ is that there may be some doubt to its validity as a phoneme. One reason is the very low occurrence of it throughout the language. Even though it does contrast in a closed syllable, it may be that it is to be analyzed as a sequence of two vocoids, where the stress falls on the second vocoid of the sequence. e.i.

| | | | |
|-------|---------|----------|----------------------|
| (368) | [lot] | 'sore' | /lot/ |
| (369) | [pu.ok] | 'navel' | /puok/ |
| (370) | [lõt] | 'we two' | /lõt/ or /lu.ot/ ??? |

The problem of phones [ɔ̌] and [ʊ̌] respectively may be the result of [ol] and [ul] being lowered by a glottal following occurring utterance final.

[u, o] ---> [ʊ̌, ɔ̌] / ____'

| | | | |
|-------|--------|--------------|---------|
| (371) | [anʊ̌] | 'house' | /anu'/' |
| (372) | [tò] | 'sugar cane' | /to'/' |

This may be why there appears to be no occurrence of the phone /'/' occurring word final in the data.

Another problem area is the interpretation of the words for 'something', 'mountain' and 'saucepan'. Each of these words can be distinguished by the Arops where I can only tell the difference between two of them. Let me give an approximation of the differences found between these words.

| | | |
|-------|--------|-------------|
| (373) | ['o] | 'something' |
| (374) | ['ow] | 'saucepan' |
| (375) | ['bw] | 'mountain' |

The last two examples are hard for me to distinguish and the phone [ò] is either just a shade lower in tongue height than [o] or the vowel length of [o] in the word for 'saucepan' is just a little longer than the vowel used in the word for 'mountain'. If the vowel is longer, that may be the reason the vowel sounds just a little higher in tongue height than in the other word. If the vowel is longer any lowering of the tongue caused by the preceeding glottal will have more time for the tongue to raise.

Another possibility is 'mountain' could be /'aow/ in the underlying form. More analysis needs to be done on this and I expect a little time on the segmentor machine would be of great help.

12.0 References

- Cochran, Anne. 1977. 'Alphabet Design for Papua New Guinea Languages. Manuscript, 159 pp.
- Crothers, John. 1978. 'Typology and Universals of Vowels Systems.
- Greenberg, Joseph H. ed., 'Universals of Human Speech' 93-152.
- Hyman, Larry M., 1975. 'Phonology Theory and Analysis'. 163-97. Holt, Rineholt and Winston.
- Robinson, Dow f., 'Manual For Analytical Proceedures in Phonology.' Summer Institute of Linguistics.
- Schane, Sanford. A. 1973. 'Generative Phonology'. 62-104. Prentice Hall Inc..
- Wivell, Richard. 1981. 'Kairiru Grammar Manuscript.' (xii)-2.