ANJAM PHONOLOGY ESSENTIALS

by

Diane J. Rucker

April, 1990

TABLE OF CONTENTS

0. Introduction

This paper is a statement of the basic phonological structure of the Anjam (Bom) language. Anjam (Bom) is a non-Austronesian, Trans-New Guinea language of the Madang Super-Stock, Rai Coast Stock, Minjim language family, as classified by J. A. Z'Graggen. (The Languages of the Madang District, Papua New Guinea. 1975. Pacific Linguistics. B-41)

Anjam (Bom) is spoken by approximately 1,300 people living in four villages in the Astrolabe Bay council area south of Madang in Madang Province. Two of the villages, Bom and Lalok, are located along the coast. Bawak and Jimjam are located inland along the Yawar and Minjen Rivers, respectively.

Data for this analysis have been gathered over a ten-year period of residency in Lalok village. Data come from informal communication situations, elicitations, and texts transcribed from oral discourse. Data collected in the other three Anjam-speaking villages for the Anjam Dialect Survey show that the dialect differences among the four villages are only slight. Only data gathered in Lalok were used for this paper.

1. Phonemes

1.1. Work charts

1.1.1. Consonants

		Bilabial	Alveolar	Alveopalatal	Velar	Back Velar
stop	vl.	p	t		k	ḳ
	vd.	b	d		g	
fricative	vl.		s			
affricate	vl.			tš		
	vd.			dž		
nasals		m	n	ñ	ŋ	
lateral			l			
trill			r			
semi-consonant		w		y		

1.1.2. Vowels

		Front	Central	Back
High	close	i		u
	open	ɪ		ʊ
Mid	close	e		o
	open	ɛ		
Low			a	

2. Interpretation

2.1. Status of items that may be either consonant or vowel

The high vocoids [i] and [u] have been interpreted as /y/ and /w/ when they occur in nonsyllabic positions. Following are examples of parallel distribution to nonsuspicious nonvocoids arranged according to syllable and word patterns.

a. CV pattern

/bu/	[bu]	'rattan'
/yu/	[yu]	'sore'
/sa/	[sa]	'story'
/ya/	[ya]	'water'
/wa/	[wa]	'namesake'
/bi/	[bi]	'feces'
/ni/	[ni]	'you'
/wi/	[wi]	'dust'
/ḳe/	[ḳe]	'fish'
/ye/	[ye]	'give to him'

b. CVCV pattern

/lala/	['la'la]	'aunt'
/kala/	['kala]	'horn'
/dala/	['dala]	'wrap'
/yala/	['yala]	'a little'
/wala/	['wala]	'decoration'

c. CVC pattern

/tal/	[tal]	'house'
/yal/	[yal]	'wash'
/wal/	[wal]	'man's name'
/bem/	[bɛm]	'sago'
/yem/	[yɛm]	'gave to him'
/sum/	[sum]	'ashes'
/yumba/	['yumba]	'bamboo'

d. CVV(C) pattern

/bai/	[bai]	'moon'
/yai/	[yai]	'who'
/wai/	[wai]	'throw'
/kaiŋ/	[kaiŋ]	'mosquito'
/waiŋ/	[waiŋ]	'beg'
/gau/	[gau]	'man's name'
/yau/	[yau/	'type of plant'
/wau/	[wau]	'garden'

e. VCV pattern

/olo/	['olo]	'again'
/oyo/	[o'yo]	'oar'
/aḳa/	[a'ḳa]	'his'
/awa/	['awa]	'rain'
/aḳo/	[a'ḳo]	'we (dual)'
/awo/	['awo]	'sit'

Other factors which favor the interpretation of [i] as /y/ in nonsyllabic positions are, firstly, the consideration of the indirect object markers. Here they are shown with the word /pail-/ 'pray':

/pail-b-e-dž/	['pailbetš]	'pray-1so-dp-3ss'
/pail-m-e-dž/	['pailmetš]	'pray-2so-dp-3ss'
/pail-y-e-dž/	['pailyetš]	'pray-3so-dp-3ss'
/pail-g-e-dž/	['pailgetš]	'pray-1po-dp-3ss'
/pail-ŋg-e-dž/	['pailŋgetš]	'pray-2po-dp-3ss'
/pail-ndzr-e-dž/	['pailndzretš]	'pray-3po-dp-3ss'

In each instance, the object marker is a consonant or consonant cluster. Therefore, the third person singular marker should also be considered to be the consonant /y/ when filling that slot. And, secondly, the vowel sequence /iu/ has not been found to occur in any other syllable patterns. Therefore, it would not seem appropriate to interpret /yu/ 'sore' as /iu/ or /yumba/ 'bamboo' as /iumba/.

When occurring in the peak slot of a syllable, the high vocoids are interpreted as /i/ and /u/. Following are examples of parallel distribution to nonsuspicious vocoids occurring in the peak slot of a syllable.

/ḳamu/	[ḳa'mu]	'if'
/guma/	[gu'ma]	'down'
/matu/	[ma'tu]	'firstborn'
/mutu/	[mu'tu]	'end'
/ḳore/	[ḳo're]	'back'
/ḳure/	[ḳu're]	'village'
/bel/	[bɛl]	'pig'
/bul/	[bʊl]	'like'
/atra/	[a'tra]	'sacrifice'
/utru/	[u'tru]	'source'
/olo/	['olo]	'again'
/ulu/	[u'lu]	'pumpkin'
/muŋge/	[muŋ'ge]	'banana'
/maŋgi/	['maŋgi]	'coconut'

/aḳa/	[a'ḳa]	'his'
/iga/	[i'ga]	'we'
/baŋ/	[baŋ]	'hand'
/biŋ/	[bɪn]	'beetle'
/džen/	[džɛŋ]	'fence'
/džiŋ/	[džɪŋ]	'mat'
/ḳe/	[ḳe]	'fish'
/gi/	[gi]	'underarm'

2.2. Status of items that may be either sequence or unit

2.2.1. Vowel glides

Vowel glides are interpreted as sequences on the basis of:

a. Occurrences of non-suspect vowel sequences

/eo/	['eo]	'no'
/meani/	['meani]	'parents'
/awoem/	['awoɛm]	'sat'
/laedž/	['laetš]	'became limp'

b. Reverse sequencing of vowel

/bai/	[bai]	'moon'
/dia/	['dia]	'there'
/gei/	[gei]	'fruit'
/kie/	[ki'e]	'what'
/boi/	[boi]	'star'
/kio/	['kio]	'perhaps'
/louonub/	['louonup]	'they sang'
/ḳuonub/	['ḳuonup]	'they heard'

2.2.2. Lengthened vowels

Lengthened vowels sometimes occur across morpheme boundaries. These are being interpreted as a sequence of two short identical vowels for the following reasons. Words ending with a (CV:) pattern are analogous to the (CVV) pattern as discussed in the preceeding section. When two identical vowels occur word-medially, they follow the same pattern as two non-identical vowels. The second vowel syllabifies with the following consonant.

Words ending in (CVV):

/pegi-i/	[pɛg'ii]	'divide up' (pl. imperative)
/pegi-e/	[pɛgi'e]	'divide up' (sg. imperative)
/ǫotei/	[ǫo'tei]	'god'

Two vowels occurring word-medially:

/bole-e-dž/	[bo'leetš]	'good-dp-3ss'
/la-e-dž/	['laetš]	'limp-dp-3ss'
/namo-oǫn-si-ka/	[na'mooǫnsɪǫka]	'first-con-med-3ss'
/kobo-e-dž/	[ko'boetš]	'finish-dp-3ss'

The following examples show that a vowel glide followed by an identical vowel is analogous to three different vowels occurring in sequence across morpheme boundaries. In the first set of examples, the three-letter words have a two-syllable pattern. When three vowels occur word-medially, the third vowel syllabifies alone or with the following consonant.

The following words pattern as two syllables (VV.V):

/ai-e/	[ai.'e]	'go down' (sg. imperative)
/ai-i/	[ai.'i]	'go down' (pl. imperative)

The following show contrast between (VV:) and (VV):

/ai-i/	[ai.'i]	'go down' (pl. imperative)
/ai/	[ai]	'mother'

The following show three vowels occurring word-medially:

/džarai-ib/	[dža'rai.ib]	'run away-med.fut.-3ps'
/džarai-e-b/	[dza'rai.ɛb]	'run away-dp-3ss'
/ǫalie-onu-b/	[ǫali.'e.o.nub]	'know-np-3ps'

2.2.3. Ambivalent consonants

The ambivalent consonants /dž/ and /ñ/ are being interpreted as units for the following reasons. Consonant clusters are limited to a stop plus liquid or trill (i.e., bl, br, kr, gr, tr) syllable initial and nasal or liquid plus stop (nt, lt) syllable final. Consonant clusters are not very frequent word-medially and even less frequent word-initially. The phoneme /dž/ occurs frequently in all positions and, along with /ñ/ which occurs word-initially and medially, shows a parallel distribution to other consonants filling those slots.

Examples of parallel distribution:

/džar/	[džar]	'platform'
/bar/	[bar]	'salt'
/džiŋ/	[džɪŋ]	'mat'
/biŋ/	[bɪŋ]	'beetle'
/džeŋ/	[džɛŋ]	'fence'
/seŋ/	[sɛŋ]	'sun'
/džuonub/	['džuonup]	'they cut'
/ḳuonub/	['ḳuonup]	'they heard'
/džeu/	['džeu]	'enemy'
/leu/	['leu]	'man's name'
/odžaim/	[o'džaim]	'don't hold'
/odaim/	[od'aim]	'don't allow'
/bidžal/	[bi'džal]	'bed'
/bital/	['bital]	'outhouse'
/bedž/	[betš]	'he came'
/bem/	[bɛm]	'I came'
/ñam/	[ñam]	'name'
/bam/	[bam]	'when he comes'
/nañu/	[na'ñu]	'jungle'
/nadu/	[na'du]	'woman's name'

In testing for possible ways to write /ñ/, both /ni/ and /ny/ were suggested. But when people were asked to read the word for 'name' /ñam/ as /nyam/ or /niam/, they made it into two syllables [ni.am].

2.3. Discussion

2.3.1. Ambivalent consonants /dž/ and /ñ/

Representative data:

[džar]	'platform'	[džɛn]	'fence'
[džo'džom]	'near'	['andžam]	'talk'
[bedž]	'he came'	[ban'džɛr]	'bush house'
[bu'nudž]	'new'	[ba'džiŋ]	'steal'
[min'džiŋ]	'anger'	[o'džɛb]	'held'
[ñam]	'name'	[na'ñu]	'jungle'
[o'ñi]	'tortoise'	[ki'ñala]	'small'
[si'ñam]	'crab'	[ni'ñaḳɛb]	'ruin'
[ñiŋ]	'grass'	[ña'log]	'brain'
[ñu'me]	'hit them'	[na'ñir]	'red fish'

2.3.1.1. Alternative 1: Consonant sequence

If this alternative were chosen, there would have to be the additional phoneme /ž/, which does not occur otherwise in the language. Also, there would have to be a consonant cluster of stop plus fricative, which does not occur elsewhere.

We have seen previously (section 2.2.3.) that making /ñ/ into a sequence causes speakers to change the word 'name' /ñam/, which is a one-syllable CVC pattern, into a two-syllable CVCV pattern, [ni.am]. Also, this interpretation would cause 'bush' /nañu/ to become /na.niu/ or /na.nyu/. The sequence /Ciu/ has not been found in any other word.

2.3.1.2. Alternative 2: Unit phoneme

This alternative avoids the addition of new phonemes or consonant cluster patterns that do not otherwise occur in the Anjam language.

2.3.2. Semivowels

2.3.2.1. Alternative 1: [y] and [w] as allophones of /i/ and /u/

If this alternative were chosen, then it would be necessary to formulate rules of distribution to predict the occurrence of [y] and [w].

Possible rules would be:

Rule 1.

V --> semivowel / ._V

¦+ high¦

A high vowel becomes a semivowel syllable-initially when followed by a vowel.

Examples:

/iem/	[yɛm]	'gave to him'-dp
/iala/	['yala]	'little'
/ionum/	[yo'num]	'gave to him'-np
/ualuel/	[wal'wɛl]	'walk'

Rule 2.

V --> semivowel / V_V

¦+high¦

A high vowel becomes a semivowel between vowels.

Examples:

/auo/	['awo]	'sit'
/naui/	[na'wi]	'sister
/oio/	[o'yo]	'row (a boat)'
/aiiaŋ/	[ai'yaŋ]	'manioc'

Rule 3.

V --> semivowel / C_V.

¦+high¦

A high vowel becomes a semivowel after a consonant and preceding a vowel within the same syllable.

Examples:

/oḳuai/	[oḳwai]	'go'
/eŋguo/	[ɛŋgwo]	'gave to us'

In attempting to apply these rules, it would seem that they may not always yield the correct phonetic form in regard to syllable breaks. Consider the following chart.

	i	e	a	o	u
i	ai.i	yem	ya.la	yo.num	yu
	dža.rai.ib	ki.e	di.a	ki.o	---
e	gei	bo.le.edž	me.a.ni	e.o	le.u
a	bai	la.edž	u.la.aim	ka.ka.o.siḳ	yau
o	boi	a.wo.em	a.wo.ab	ko.bo.o.nab	lou.o.nub
u	ḳu.i	wal.wel	wa.la	wo	
	na.wi	ḳu.e	yu.al	džu.o.nub	

It will be noted that two non-glide vowels separate into two syllables when following a consonant or a vowel glide as in ki.e, ki.o, di.a, and also ai.em. Thus, this tendency for non-glide vowels to separate would affect the examples in Rule 1 above, in which case /iem/ would yield [i.em] rather than the correct form [yem], and /ionum/ would yield [i.o.num] rather than the correct form [yo.num].

Rule 2 seems to be supported by words that allow a sequence of three vowels such as /louonub/, /aiem/, and

/wauem/. Here again, the syllable break occurs after the glide. However,

/auo/ is [a.wo], not [au.o]
/naui/ is [na.wi], not [nau.i]
/oio/ is [o.yo], not [oi.o]

Furthermore, in applying Rule 2, /louonub/ would become [lo.wo.nub] and /uauem/ would become [wa.wem].

The changes proposed in Rule 3 are explained in the section on morphophonemics under Labialisation. Thus, they would be applicable only to velar consonants.

2.3.2.2. Alternative 2: /y/ and /w/ as consonants in nonsyllabic consonant positions

This alternative is consistent with the syllable patterns of the Anjam language. Occasionally, /i/ and /u/ occur together. Then we have to decide which is the vowel and which is the consonant. For example, the two words 'sorry' and 'eat' are both a sequence of [ui]. Seeing that both CV and VC syllables occur, these words could be written in the combinations [wi] and [uy]. Speakers recognize a contrast in the pronunciation of these two words. So it would seem that the peak of the syllable occurs in different places in these words. The word for 'sorry' is /wi/ and 'eat' is /uy/.

In previous papers, there appeared to be a contrast between /oiyC/, /oiC/, and /oyC/. The difference between /oiC/ and /oyC/ was really only a matter of inaccurate transcription. As the other glides /ei/ and /ai/ do occur, we have chosen to write /oi/ as a glide and not as /oy/, though both VV and VC are permitted sequences in the language. However, the sequence [oii] does occur, and the question arises as to whether the second [i] should be interpreted as a vowel or consonant. Consider the following examples.

/gilḳo/	[gil-'ḳo]	'go-np'
/goiḳo/	[goi-'ḳo]	'cook-np'
/koboiyḳo/	[ko'boi-y-ḳo]	'carry-3so-np'
/gilim/	[gil-'im]	'go-future'
/goiim/	[goi-'im]	'cook-future'

We have seen previously that the object marker /-y/ occurs with the word /pail/ 'pray'. We said that, considering that all the other object markers were consonants, the third person marker /-y/ should also be considered a consonant. We can see from the examples above that the future different subject marker is /-im/. So in that case it is obvious that the [i] should be interpreted

as the vowel /i/ in a VC pattern. Therefore, in the word 'carry it', the sequence is /oiyC/; in the word 'cook-near past', the sequence is /oiC/; and in the word 'cook-future', the sequence is /oiiC/.

In some words, there seems to be a lengthened [u] or [uw] sequence. For example, should the word for 'fire' be indicated by [ŋamyuwo] or [ŋamyuo]? The word 'fire' is made up of 'wood' /ŋam/ plus a nominalized form of 'burn' /yu-/. The nominalization is /-o/ as in /mar-o/ speak-nom. 'speaker'. Therefore, in this case we can see that phonemically the word is /ŋamyuo/, though phonetically we may get a fluctuation between the two forms. Also, there are several words in which it is difficult to tell if [u] is followed by a [w] preceeding an [i]. For example, there seems to be a contrast between /nui/ 'island' and /luwi/ 'point'. To determine if there is a difference, it is helpful to add a morpheme at the end. For example, adding the locative /-ḳ/ makes it easier to hear the division of syllables: /nu.iḳ/ 'on the island' and /lu.wiḳ/ 'at the point'. It would be helpful to discover an identical pair to show true contrasts. This problem is discussed in the appendix.

3. Description of phonemes

3.1. Consonants

Phoneme	Allophone	Description
/p/	[p]	A voiceless bilabial stop
/b/	[b]	A voiced bilabial stop
/t/	[t]	A voiceless alveolar stop
/d/	[d]	A voiced alveolar stop
/k/	[k]	A voiceless velar stop
/g/	[g]	A voiced velar stop
/ḳ/	[ḳ]	A voiceless backed velar stop
/s/	[s]	A voiceless alveolar fricative
/dž/	[dž]	A voiced alveopalatal affricative
	[tš]	A voiceless alveopalatal affricate
/m/	[m]	A voiced bilabial nasal
/n/	[n]	A voiced alveolar nasal
/ñ/	[ñ]	A voiced alveopalatal nasal
/ŋ/	[ŋ]	A voiced velar nasal
/l/	[l]	A voiced alveolar lateral
/r/	[r]	A voiced alveolar trill

3.2. Vowels

Phoneme	Allophone	Description
/i/	[i]	A voiced high close front unrounded vocoid
	[ɪ]	A voiced high open front unrounded vocoid

/e/	[e]	A voiced mid close front unrounded vocoid
	[ɛ]	A voiced mid open front unrounded vocoid
/a/	[a]	A voiced low central unrounded vocoid
/u/	[u]	A voiced high close back rounded vocoid
	[ʊ]	A voiced high open back rounded vocoid
/o/	[o]	A voiced mid close back rounded vocoid

The lack of a voiced back velar to correspond with the voiceless back velar /ḳ/ causes a lack of symmetry. This was discussed in a previous paper. Data has been checked carefully to see if our hearing was inaccurate, and, therefore, we were not hearing the contrast between /ḳ/ and /g̣/. It is quite clear now that there is no occurrence of /g̣/ in that slot. We had found no combination of /ḳ/ followed by an /i/ posited such that /ki/ --> /ḳ/, but rather we showed that this was not likely because the combination /ki/ does, indeed, occur and is contrastive to /ḳ/: /kie/ 'what' and /ḳe/ 'fish'. Also, we have since found that /i/ may occur after /ḳ/ when adding the morpheme /-i/ 'pl. imperative'. Hence /oḳ-i/ [oḳi] 'go up-pl. imperative'. A better solution is to see the /ḳ/ as filling the slot of [h] or glottal stop in the language, as there is neither /h/ or glottal in Anjam. This seems to be supported by the fact that older speakers of the language say that their parents pronounced the sound with a much more fricative quality. Over a period of time the fricative quality was lost and it became more like a stop.

4. Distribution of phonemes

4.1. Consonants

Phoneme	Allophone	Distribution		
/p/	[p]	Word initially:		
		/prug/	[prug]	'jump'
		/par/	[par]	'flat'
		Word medially:		
		/tapor/	[ta'por]	'axe'
		/dapkala/	['dapkala]	'ear'
/b/	[b]	Word initially:		
		/bini/	[bɪn'i]	'today'
		/braŋeb/	['braŋɛb]	'ripped'
		Word medially:		
		/koba/	[ko'ba]	'many'
		/yumba/	['yumba]	'bamboo'
	[p]	Fluctuating noncontrastively with [b] word finally:		
		/aieb/	[ai'ɛb]	'they went'
			[ai'ɛp]	

		/ḳalub/	[ḳa'lub]	'three'
			[ḳa'lup]	
/t/	[t]	Word initially:		
		/tal/	[tal]	'house'
		/tamo/	[ta'mo]	'man'
		Word medially:		
		/gate/	[ga'te]	'head'
		/gentem/	['gɛntɛm]	'cut'
		Word finally:		
		/lent/	[lɛnt]	'red'
		/ḳat/	[ḳat]	'white'
/d/	[d]	Word initially:		
		/damu/	[da'mu]	'meat'
		/di/	[di]	'there'
		Word medially:		
		/medabu/	['mɛdabu]	'mouth'
		/mandam/	[man'dam]	'ground'
		Word finally in only one word:		
		/od/	[ɔd]	'yes'
/k/	[k]	Word initially:		
		/kiñala/	[kɪñ'ala]	'little'
		/kalil/	[ka'lɪl]	'all'
		Word medially:		
		/laklaka/	['laklaka]	'limbu flooring'
		/dapkala/	['dapkala]	'ear'
/g/	[g]	Word initially:		
		/gara/	[ga'ra]	'clothes'
		/grotonum/	['grotonum]	'erred'
		Word medially:		
		/dego/	['dego]	'also'
		/baŋga/	['baŋga]	'leaf'
		Word finally:		
		/mumug/	[mu'mug]	'carpenter bee'
		/ñalog/	[ña'log]	'brain'
/ḳ/	[ḳ]	Word initially:		
		/ḳe/	[ḳe]	'fish'
		/ḳotei/	[ḳo'tei]	'god'
		Word medially:		
		/deḳa/	['dɛḳa]	'therefore'
		/aḳa/	['aḳa]	'his'

		Word finally:		
		/bilaḳ/	[bi'laḳ]	'afternoon'
		/ḳaḳ/	[ḳaḳ]	'sap'
/s/	[s]	Word initially:		
		/siŋga/	[sɪŋ'ga]	'leg'
		/sou/	[sou]	'blossom'
		Word medially:		
		/degsi/	['dɛgsi]	'like that'
		/osim/	[o'sɪm]	'get'
		Word finally:		
		/sis/	[sis]	'grasshopper'
		/oḳas/	[o'ḳas]	'will get'
/dž/	[dž]	Word initially:		
		/džar/	[džar]	'platform'
		/džodžom/	[džo'džom]	'near'
		Word medially:		
		/odžem/	[o'džɛm]	'held'
		/andžam/	['andžam]	'talk'
	[ts]	Word finally:		
		/bedž/	[betš]	'came'
		/bunudž/	[bu'nutš]	'new'
		/namidž/	[na'mitš]	'old'
/m/	[m]	Word initially:		
		/moma/	['moma]	'grandparent'
		/muŋgum/	[mʊŋ'gum]	'breast'
		Word medially:		
		/nami/	[na'mi]	'before'
		/sambi/	['sambi]	'yam'
		Word finally:		
		/mam/	[mam]	'hunger'
		/ñam/	[ñam]	'name'
/n/	[n]	Word initially:		
		/ni/	[ni]	'you'
		/nenem/	[nɛn'ɛm]	'question'
		Word medially:		
		/mana/	[ma'na]	'mountain'
		/endi/	[ɛn'di]	'here'
/ñ/	[ñ]	Word initially:		
		/ñam/	[ñam]	'name'
		/ñomem/	['ñomɛm]	'sharpened'

		Word medially:		
		/kiñala/	[kɪn'ala]	'little'
		/oñi/	[o'ñi]	'tortoise'
/ŋ/	[ŋ]	Word initially:		
		/ŋauŋ/	[ŋauŋ]	'wife'
		/ŋam/	[ŋam]	'tree'
		Word medially:		
		/laŋa/	['laŋa]	'for no reason'
		/naŋgi/	['naŋgi]	'they'
		Word finally:		
		/baŋ/	[baŋ]	'hand'
		/kaiŋ/	[kaiŋ]	'mosquitoes'
/l/	[l]	Word initially:		
		/landža/	[lan'dža]	'host'
		/lumu/	[lu'mu]	'secretly'
		Word medially:		
		/kala/	['kala]	'horn'
		/ombla/	[om'bla]	'together'
		Word finally:		
		/tal/	[tal]	'house'
		/bul/	[bʊl]	'like'
/r/	[r]	Word initially:		
		/robu/	[ro'bu]	'deep'
		/riaŋ/	[ri'aŋ]	'brilliance'
		Second consonant in a cluster:		
		/braŋeb/	['braŋɛb]	'ripped'
		/grotonum/	['grotonum]	'erred'
		Word medially:		
		/ara/	[a'ra]	'jaw'
		/eri/	[e'ri]	'here'
		Word finally:		
		/džar/	[džar]	'platform'
		/ḳer/	[ḳer]	'scraper'
/w/	[w]	Word initially:		
		/walwel/	[wal'wɛl]	'walk'
		/wo/	[wo]	'with'
		Word medially:		
		/awo/	[a'wo]	'sit'
		/tawel/	[ta'wɛl]	'egg'

/y/	[y]	Word initially:		
		/ya/	[ya]	'water'
		/yumba/	['yumba]	'bamboo'
		Word medially:		
		/aiyaŋ/	[ai'yaŋ]	'manioc'
		/bulyeb/	['bulyɛb]	'stirred it'

4.2. Vowels

Phoneme	Allophone	Distribution		
/i/	[i]	Word initially in open syllables:		
		/ino/	[i'no]	'your'
		/iga/	[i'ga]	'we'
		Word medially in open syllables and before /dž/:		
		/titonum/	['titonum]	'pulled'
		/kiena/	[ki'ena]	'how'
		/namidž/	[na'mitš]	'old'
		Word finally:		
		/ni/	[ni]	'you'
		/toroi/	[to'roi]	'all the way'
	[ɪ]	Word initially in closed syllables:		
		/iŋgi/	[ɪŋ'gi]	'food'
		Word medially in closed syllables:		
		/kalil/	[ka'lɪl]	'all'
		/mindžeb/	[mɪn'džɛb]	'they told him'
/e/	[e]	Word initially in open syllables and before /dž/:		
		/ebe/	[ɛb'e]	'give to me'
		/edž/	[etš]	'got'
		Word medially in open syllables and before /dž/:		
		/ḳeli/	[ḳe'li]	'elderly'
		/bedž/	[betš]	'he came'
		Word finally:		
		/uge/	[u'ge]	'bad'
		/kie/	[ki'e]	'what'

	[ɛ]	Word initially in closed syllables:		
		/endi/	[ɛn'di]	'here'
		/eksionum/	['ɛksionum]	'sneezed'
		Word medially in closed syllables:		
		/bel/	[bɛl]	'pig'
		/bandžer/	[ban'džɛr]	'bush house'
/a/	[a]	Word initially:		
		/awo/	[a'wo]	'sit'
		/ani/	[a'ni]	'much'
		Word medially:		
		/baŋ/	[baŋ]	'hand'
		/sai/	[sai]	'no'
		Word finally:		
		/laŋa/	[la'ŋa]	'for no reason'
		/iga/	[i'ga]	'we'
/u/	[u]	Word initially:		
		/ulaŋ/	[u'laŋ]	'go away'
		/utru/	[u'tru]	'source'
		Word medially in open syllables and before /dž/:		
		/sume/	[su'me]	'go'
		/gue/	[gu'e]	'limbu'
		/bunudž/	[bu'nutš]	'new'
		Word finally:		
		/abu/	[a'bu]	'father'
		/olu/	[o'lu]	'pumpkin'
	[ʊ]	Word medially in closed syllables:		
		/bunukna/	[bu'nʊkna]	'later'
		/nungo/	[nʊn'go]	'your'
		/turem/	['tʊrɛm]	'met'
		/bul/	[bʊl]	'like'
/o/	[o]	Word initially:		
		/olo/	['olo]	'again'
		/odžem/	[o'džɛm]	'held'
		Word medially:		
		/koba/	[ko'ba]	'many'
		/džoksiḳ/	[džok'sɪḳ]	'took'
		Word finally:		
		/namo/	[na'mo]	'first'
		/dego/	['dego]	'also'

5. Suprasegmentals

5.1. Stress

Stress is not predictable in the Anjam language. In words having two syllables, stress occurs more frequently on the second syllable. In words of three or more syllables, stress occurs with about equal frequency on the first or second syllables. Those words having stress on the first syllable sometimes have a secondary stress on the third syllable. A few pairs of words are contrastive by stress alone. However, these words could easily be distinguished by the context in which they occur. Therefore, it does not seem that it would be necessary to write stress.

Examples of stress:

Two-syllable words with stress on the first syllable:

/deḳa/	['dɛḳa]	'therefore'
/gaigai/	['gaigai]	'always'
/siŋga/	['sɪŋga]	'leg'
/laŋa/	['laŋa]	'for no reason'
/robu/	['robu]	'deep'
/titedž/	['titetš]	'pulled'

Two-syllable words with stress on the second syllable:

/tapor/	[ta'por]	'axe'
/bilaḳ/	[bi'laḳ]	'afternoon'
/tamo/	[ta'mo]	'man'
/gate/	[ga'te]	'head'
/kalil/	[ka'lɪl]	'all'
/aŋgro/	[aŋ'gro]	'child'
/idžo/	[i'džo]	'mine'

Three-syllable words with stress on the first syllable:

/paŋyonum/	['paŋyonum]	'shucked'
/dapkala/	['dapkala]	'ear'
/medabu/	['medabu]	'mouth'
/ŋamdamu/	['ŋamdamu]	'eye'
/laklaka/	['laklaka]	'limbu flooring'
/sumonum/	['sumonum]	'went'
/karara/	['karara]	'stiff leaf'

Three-syllable words with stress on the second syllable:

/puloŋḳo/	[pu'loŋḳo]	'shone'
/kobana/	[ko'bana]	'all together'
/ḳalonum/	[ḳal'onum]	'hit him'
/padalḳo/	[pa'dalḳo]	'perished'
/dindantedž/	[d n'dantetš]	'diced'
/odžonum/	[o'džonum]	'held'

Contrastive stress:

/oto/	[o'to]	'part'
/oto/	['oto]	'light (in weight)'
/mimiŋ/	[mɪm'ɪŋ]	'earthquake'
/mimiŋ/	['mimiŋ]	'itch'
/mana/	[ma'na]	'mountain'
/mana/	['mana]	'lice'

5.2. Length

Length in vowels is being interpreted as a sequence of two short vowels and is, therefore, a non-contrastive feature. This was discussed, with examples, in section 2.2.2.

5.3. Intonation

a. Medial clause

Medial clause intonation is usually a rising glide over the last one or two syllables. In a story, the final vowel of a medial clause is quite lenthened with a rising glide, then it falls sharply on the next phrase.

b. Final clause

Final clause intonation is a relaxed down glide over the last syllable or two.

c. Question

Questions have a gradual rising of pitch to a point utterance-medial, followed by a downward drift in pitch to a final pause.

d. Vocative

A vocative starts with a high pitch sustained over the first few syllables and then falling over the last one or two syllables.

e. Command

A command has a falling pitch with a strong stress on the next-to-last syllable.

f. Scolding

Scolding has a sharply rising pitch over the whole utterance coming to a peak at the end. As is usually the case, this is accompanied by extreme loudness.

6. Syllables

The following syllable patterns have been observed:

V	/e/	'I'
	/o.ḳedž/	'he went up'
	/met.o.nab/	'called'
	/ḳa.li.e.sai/	'do not know'
	/laŋ.a/	'for no reason'
	/ki.o/	'perhaps'
VV	/au/	'come' (sg. imperative)
	/ai.edž/	'he went down'
	/e.leŋ.oi/	'get many things'
VC	/am/	'get' (sg. imperative)
	/en.di/	'here'
	/di.dab.eḳ.num/	'are listening'
	/wau.oḳ.nedž/	'were working'
	/yai.eb/	'took from him'
	/mar.im/	'will say'
VVC	/aim/	'don't get' (sg. imperative)
	/aiḳ/	'he mustn't get it'
	/pa.dal.aib/	'let us not perish'
CV	/bu/	'rattan'
	/ta.mo/	'man'
	/ko.bo.edž/	'finished'
	/a.gi.de/	'there'
	/u.nu/	'is'
	/o.lo/	'again'
CVV	/yai/	'who'
	/mai.bedž/	'I was sick'
	/a.nai.yedž/	'fed him'
	/ge.rei.yeb/	'they made it'
	/o.sau/	'bring' (sg. imperative)
	/mar.ḳai/	'will speak'
CVC	/bel/	'pig'
	/siŋ.gi.la/	'strength'
	/pa.dal.edž/	'perished'
	/ta.riŋ.eb/	'waited'
	/go.get/	'get up'
	/an.džam/	'talk'
CVVC	/bauŋ/	'dog'
	/waiŋ.yedž/	'begged him'
	/kum.baiŋ.yeb/	'beat him'
	/waŋ.gaim/	'crocodile'

CCV	/tra/	'relations'
	/gum.blu/	'husband'
	/kum.bra/	'custom'
CCVC	/braŋ.edž/	'ripped'
	/grot.o.num/	'erred'
	/bo.brum.ḳo/	'dented'
	/e.krit.eb/	'got completely'
	/sa.plaŋ/	'a mixed vegetable dish'
	/am.bleḳ/	'in the middle'
CVCC	/bont/	'beans'
	/lent/	'red'
	/ge.tent.o.nub/	'blocked'
	/pa.lont.o.nub/	'unfolded'
CCVCC	/brant.ḳas/	'he will rip it'
	/plalt.o.num/	'explained'
	/ḳeŋ.grent.ḳo/	'smoked'
	/ḳa.trent.ḳo/	'lit'

6.1. Distribution of syllables in words

All syllable types occur as a one-syllable word and in all positions in a word with the following exceptions: Syllable pattern VV has not been found to occur word-medially. Syllable pattern CCVCC has not been found to occur word-finally.

6.2. Distribution of consonants in syllables

Almost all consonants may fill the onset and coda slots of CV(C) syllables. /ñ/ cannot fill the coda slot, and /p/ is very infrequent in that position. Nasals and liquids are more frequent word-finally. Syllable-initial clusters are composed of an obtruent and a liquid in the following combinations:

	l	r
p	X	X
b	X	X
t		X
k		X
g		X
dž		X

Syllable-final clusters are infrequent and consist of a nasal or a liquid plus a stop, most often /nt/. The combinations /rt/ and /lt/ occur syllable-finally when the transitive verb marker /-t/ is added to a word.

Consonants that have been found to occur together across syllable boundaries (i.e., C.C) are shown in the following chart. /n/ only occurs word-initially and intervocalically and, therefore, has not been included on the chart.

	p	b	t	d	k	g	ķ	s	dž	m	n	ŋ	l	r	y	w
p					X											
b			X		X	X	X	X								
t		X				X	X	X		X	X					
d		X				X				X	X	X			X	
k													X	X		X
g			X					X		X	X				X	X
ķ		X	X					X		X	X	X	X		X	X
s		X				X				X	X				X	
dž							X				X					
m		X	X	X		X	X	X				X			X	
n			X	X		X	X	X	X		X					
ŋ		X	X	X		X	X			X	X	X			X	
l		X	X				X	X			X	X			X	
r			X			X	X	X			X	X			X	X
y							X	X			X					

Not every word in the Anjam language occurred in the many texts I referred to when making up the chart, so obviously some combinations may have been missed. However, the chart clearly shows the following general statements to be true:

1. The phonemes /p/ and /k/, the latter of which was found to occur only after labials, occur very infrequently word-medially.
2. The phoneme /d/ occurs only after nasals.
3. The phoneme /dž/ occurs only after /n/.
4. A backed velar stop cannot follow a velar stop or another backed velar stop. (See the section on morphophonemics for further discussion of this point.)
5. The phoneme /w/ occurs most frequently after /k/, /g/, and /ķ/. (See the section on morphophonemics for further discussion of this point.)
6. The following phonemes occur after almost all consonants as part of verb morphology: /b/, /t/, /g/, /k/, /s/, /m/, /n/, /ŋ/, and /y/.

6.3. Distribution of vowels in syllables

All vowels may occur in all syllable types with the exception that only /o/ and /e/ are found in syllables that end in /nt/.

The following chart shows which vowels may occur across syllable boundaries (i.e., V.V).

	i	e	a	u	o
i	X	X	X		X
e		X	X	X	X
a		X	X		X
u	X	X	X		X
o		X	X		X

Examples of vowel combinations across syllable boundaries:

/ai.im/	'when you come'
/ai.em/	'you went'
/wai.a/	'brother-in-law'
/ai.o.nub/	'they went'
/bo.le.edž/	'he became well'
/me.a.ni/	'parents'
/dže.u/	'enemy'
/ne.be.o.na.ḳa/	'became the next day'
/ma.edž/	'called out'
/u.la.aim/	'don't be afraid'
/ka.ka.o.siḳ/	'clucked'
/ḳu.i/	'soup'
/wau.eḳ.num/	'are working'
/džu.o.nub/	'cut (grass)'
/a.wo.edž/	'sat'
/a.wo.ab/	'when they will sit'
/ko.bo.o.nab/	'when they finished'

6.4. Syllabic consonants and transition vowels

Previously (in section 2.1.), we added the object markers to the word 'pray'. In that instance, the markers formed a syllable together with the final -VC (i.e., /pail.bedz/, /pail.medz/, etc.). In the following examples, the third person singular subject near past /-ko/ is added instead of the distant past /-edz/:

/pail-b-ḳo/	['pailbəḳo]	'pray-1so-np3ss'
/pail-m-ḳo/	['pailməḳo]	'pray-2so-np3ss'
/pail-y-ḳo/	['pailyəḳo]	'pray-3so-np3ss'
/pail-ndžr-ḳo/	['pailndžrəḳo]	'pray-3po-np3ss'

Speakers of the Anjam language handle this combination in one of two ways. Either they make the marker into a syllabic consonant /pail.b.ḳo/ or they insert a slight vowel sound (transition vowel) after the consonant to give the end of the word a CVCV pattern /pail.b .ḳo/. Which of the two

ways they choose seems to depend upon the rate of speech of the speaker at the time.

Something similar occurs with the words for 'come' and 'to be', as shown in the following example.

cont.dp	near past	future	
giloḳnem	gilonum	gilḳai	'go'
louoḳnem	louonum	louḳai	'sing'
soḳnem		sḳai	'to be'
boḳnem	bonum	bḳai	'come'

(The verb 'to be' is irregular in the near past and so is left out of the example.)

In the above example, we can isolate the continuous distant past as /-oḳnem/, near past as /-onum/, and future as /-ḳai/. Therefore, we can see that the stems are /gil-/ 'go', /lou-/ 'sing', /s-/ 'to be', and /b-/ 'come'. When the latter two verbs occur with the future, the stem becomes syllabic as /sḳ-/ and /bḳ-/ do not form consonant blends (see Section 6.2.). Many speakers insert a transitional vowel here. However, in writing the word they cannot decide which vowel it is. Hence, each person writes a different vowel and we find boḳai, buḳai, or baḳai. But the vowel sound which occurs is only very slight. So we have chosen to write the verb without a vowel, i.e., bḳai, and when read that way, the speakers have tended to insert only a slight vowel sound [bəḳai]. This has also proven the best way to handle 'to be', namely, as /sḳai/ 'I will be', which is in contrast to /saḳai/, which is an entirely different word meaning 'I will tell a story'.

A few speakers even break up the consonant clusters mentioned in Section 6.2, seeming to prefer a CVCV pattern to CCV. For example:

/kumbra/	[kum'bəra]	'custom'
/grotonum/	['gərotonum]	'erred'

7. Morphophonemics

This section will deal with the morphophonemic alternations which occur in the Anjam language.

7.1. Labialisation

There are two types of labialisation in Anjam. The first relates to consonants and the second to vowels. As mentioned in the previous section, a backed velar stop cannot follow a velar or another backed velar stop. The following examples show what happens when two of these occur across morpheme boundaries.

	verb	medial past	future	
1)	mar	marnaḳ	marḳas	'speak'
	gil	gilnaḳ	gilḳas	'go'
2)	oḳ	oḳnaḳ	oḳwas	'go up'
	prug	prugnaḳ	prugwas	'jump
3)	ai	ainaḳ	aiḳas	'go down'
	uge	ugenaḳ	ugeḳas	'bad'
4)	ḳu	ḳunaḳ	kukwas	'hear'
	džu	džunaḳ	džuḳwas	'cut (grass)'

Examples 1 and 2 show that adding a morpheme beginning with /ḳ/ to a stem ending in /g/ or /ḳ/ results in the second consonant becoming a labial. With the stems /mar/ 'speak' and /gil/ 'go', the future marker is /ḳas/. When the future occurs with the stems /oḳ/ 'go up' and /prug/ 'jump', we would expect the forms /oḳḳas/ and /prugḳas/. Instead, the second consonant becomes a labial and we have the forms /oḳwas/ and /prugwas/.

A similar process occurs when /ḳ/ follows a /u/. The rounded vocoid affects the consonant and causes it to become rounded as well. In example 3 we have the verb stems /ai/ 'go down' and /uge/ 'bad'. Adding the future, we get the forms /aiḳas/ and /ugeḳas/. Therefore, with the stems /ḳu/ 'hear' and /džu/ 'cut' in example 4, we would expect /ḳuḳas/ and /džuḳas/. Instead, we have the forms /ḳuḳwas/ and /džuḳwas/.

The rules may be stated as follows:

Labialisation:

1. ḳ --> w / C _ _ _

   ¦+back¦
   ¦+stop¦

A back velar stop becomes a bilabial semivowel when it follows another back velar or velar stop.

2. C --> C / V _ _ _

   ¦+back¦ ¦+rounded¦ ¦+rounded¦
   ¦+stop¦ ¦+high ¦

A back velar stop becomes labialised when it follows a high rounded vowel.

7.2. Agreement in articulation

Consider the following examples:

	verb	past	transitive	
5)	tigel	tigeleb	tigelteb	'stand'
	bab	babeb	babteb	'appear'
6)	geŋ	geŋeb	genteb	'cut'
	braŋ	braŋeb	branteb	'rip'

In example 5, we have the verb stems /tigel/ 'stand' and /bab/ 'appear'. To these we can add the endings /eb/ for past and insert /t/ for transitive. We may do the same for the verb stems in example 6 /geŋ/ 'cut' and /braŋ/ 'rip'. But in these examples, the adding of the transitive marker /t/ causes the velar nasal to adjust itself in point of articulation to the following alveolar stop.

Thus we formulate the following rule:

Agreement in articulation:

C	-->	C	/ _ _ _ C
¦+velar¦		¦+alveolar¦	¦+alveolar¦
¦+nasal¦			¦+stop ¦

A velar nasal changes to alveolar to agree in point of articulation when it precedes an alveolar stop.

7.3. dž-Epenthesis

The insertion of /dž/ only occurs with the stative verb. Notice the following examples.

7)	'be'	'stand'	'sleep'	'watch over'
distant past	soḳnem	tigelesoḳnem	neiesoḳnem	taḳatesoḳnem
near past	nam	tigelenam	ŋeienam	taḳatenam
present	unu	tigeledžunu	ŋeiedžunu	taḳatedžunu

8) verb	near past	distant past	
bole	boleonum	boleeb	'good'
ḳu	ḳuonum	ḳueb	'hear'

In example 7, we see that the forms of the verb 'to be' are /soḳnem/ for distant past, /nam/ for near past, and /unu/ for present. When the 'be' verb is added to another verb to form a stative verb, it is joined to the verb by /e/. This we have done to the verbs 'stand', 'sleep', and

'watch over'. Notice that when the present /unu/ is added to a stative verb, a /dž/ is inserted between the stative /e/ and the verb 'to be'. We have included example 8 to show that this does not occur when other vowels occur together across morpheme boundaries. Thus, when the verb endings /onum/ 'near past' and /eb/ 'far past' are added to the stems /bole/ 'good' and /ḳu/ 'hear', a /dž/ is not inserted. Therefore, the insertion of /dž/ occurs only before a high back vocoid. Therefore, we formulated the rule as follows:

/dz/-Epenthesis:

$$0 \rightarrow dž \;/\; V + \_\;\_\;\_\; V \quad \begin{bmatrix} +high \\ +back \end{bmatrix}$$

A /dž/ is inserted between two vowels across morpheme boundaries when the second vowel is high and back.

7.4 o-Epenthesis

In examples 5 and 6, we added the transitive marker to some verbs and discussed agreement in point of articulation. In examples 9 and 10 below, we see what happens when this marker is added to a verb stem ending with a vowel.

	verb	past	transitive	
9)	awo	awoeb	awoteb	'sit'
	kobo	koboeb	koboteb	'finish'
10)	ŋei	ŋeieb	ŋeioteb	'sleep'
	moi	moieb	moioteb	'die'

In example 9, the verb stems end with one vowel and the adding of the /t/ results in no changes. But when the /t/ is added to a verb ending with a glide, an /o/ is inserted before the /t/. Therefore, we have the following rule:

o-Epenthesis:

$$0 \rightarrow o \;/\; VV + \quad \_\;\_\;\_t \quad [+high]$$

An /o/ is inserted between a vowel glide ending in a high vowel and a /t/ across a morpheme boundary.

7.5. i-Epenthesis

When object markers are added to a verb, an /i/ is inserted before the object marker if the verb stem ends in a vowel. We can see this happening in the following examples:

With singular object markers:

	verb	1st	2nd	3rd	
11)	ḳariŋ	ḳariŋbedž	ḳariŋmedž	ḳariŋyedž	'send'
	met	metbedž	metmedž	metedž	'call'
12)	ula	ulaibedž	ulaimedž	ulaiyedž	'afraid'
	sa	saibedz	saimedz	saiyedž	'story'
	sai	saiibedž	saiimedž	saiiyedž	'negative'

With plural markers:

	verb	1st	2nd	3rd	
13)	daur	daurgedž	daurŋgedž	daurndžredž	'follow'
	mam	mamgedž	mamŋgedž	mamndžredž	'hunger'
14)	bole	boleigedž	boleingedž	boleindžredž	'good'
	ma	maigedž	maiŋgedž	maindžredž	'sick'

In example 11, we have the verb stems /ḳariŋ/ 'send' and /met/ 'call' with the singular markers in 1st, 2nd, and 3rd person. And in example 13, we have the verb stems /daur/ 'follow' and /mam/ 'hunger' with the plural markers also in 1st, 2nd, and 3rd person. From these we can isolate the object markers as follows:

First person singular	-	b
Second person singular	-	m
Third person singular	-	y
First person plural	-	g
Second person plural	-	ŋg
Third person plural	-	ndzr

It may be noted here that some of the more common Anjam verbs (i.e., 'see', 'say', 'hit',) tend to have an irregular third person form. If the irregular third person form is the same for both singular and plural, then the singular object marker is dropped. If the form is different for both singular and plural, then the singular and plural markers are both dropped. For instance, the verb /mer/ 'say', which has as its third person stem /mindž/, drops the third person singular object marker /y/. Also, the verb /nu/ 'see', which has as its third person stem /un/, drops the third person singular object marker. The verb /lu/ 'hit', which has as its third person singular stem /ḳal/ and its third person plural stem /ñum/, drops both the third person singular

object marker /y/ and the third person plural object marker /ndžr/. There seems to be no phonological reason for this dropping of the object markers except in the case of /mindž/, since /ndž/ is not naturally followed by a /y/.

From examples 12 and 14, we see that when the Anjam object markers are added to verb stems which end in vowels (i.e., /ula/ 'afraid', /sa/ 'story', /sai/ 'negative', /bole/ 'good', and /ma/ 'sick'), an /i/ is inserted before the object marker.
The rule, then, will be stated as follows:

0 --> i / V+ _ _ _C

An /i/ is inserted between a vowel and a consonant across a morpheme boundary.

7.6. i-Deletion

The opposite effect occurs before the morpheme /reŋ/, an indefinite plural marker. Notice what happens when these markers are added to the verbs /ŋei/ 'sleep' and /moi/ 'die' in example 15 below.

	verb	3snp	3pdp	indefinite plural	
15)	ŋei	ŋeiḳo	ŋeieb	ŋereŋeb	'sleep'
	moi	moiḳo	moieb	moreŋeb	'die'

When adding the third person singular near-past marker /ḳo/ or the third person plural distant past /eb/, the /i/ is not deleted. But before /reŋ/, it is deleted. The rule, then, is as follows:

i-Deletion:

i --> 0 / _ _ _+r

An /i/ is deleted when it occurs before an r across a morpheme boundary.

This unusual plural marker has only been found to occur with these two verbs so that we cannot compare them to verb endings in other vowels or consonants.

7.7. Vowel harmony

Notice the following verb stems that contain the vowel /u/.

	verb	near past	distant past	
16)	bul	bulonum	bulem	'turn'
	tutut	tututonum	tututem	'push'
17)	džug	džugonum	džigem	'put on'
	tug	tugonum	tigem	'wrap around
	nug	nugonum	nigem	'saw them'

To these verb stems we have added the near past /onum/ and the distant past /em/. In example 16, these endings have no effect on the stem. But in example 17, in which all the stems end with a /g/, the vowel changes when the distant past morpheme /em/ is added. For this we can deduce the following rule:

Vowel harmony:

$$V \quad \text{--->} \quad V \quad / \_ \_ \_g+ \quad V$$

$$\begin{matrix} \text{¦+high¦} \\ \text{¦+back¦} \end{matrix} \qquad \text{¦-back¦} \qquad\qquad\qquad \text{¦-back¦}$$

When a high back vowel occurs in a verb stem ending in /g/, it becomes fronted when adding a morpheme with a front vowel.

8. Lexicon

With the exception of verbs, where the morphology can make them rather long, the greatest percentage of words are one or two syllables. Many of the three-syllable words are really compound words.

There are no restrictions or distinctions between classes of words in the lexicon. That is, no one class ends only in a vowel or only in a consonant.

Consonant clusters syllable-initially appear in the lexicon without insertion of a transitive vowel.

Where neutralization of contrasts occurs word-finally, the voiced form has been chosen for the lexicon.

Following are examples of the forms of words occurring in the lexicon:

One- and two-syllable words:

/e/	[e]	'I'
/ni/	[ni]	'you'
/baŋ/	[baŋ]	'hand'
/samsam/	['samsam]	'shark'
/kuñi/	[ku'ñi]	'rudder'
/tulu/	[tu'lu]	'black'
/atem/	[a'-t-ɛ-m]	'put-dp-1ss'

Three-syllable compound words:

/ŋamdamu/	['ŋam-damu]	look+meat = 'eye'
/dapkala/	['dap-kala]	listen+horn = 'ear'
/medabu/	['med-abu]	call+father = 'mouth'
/ḳalagei/	[ḳala-'gei]	sharp+seeds = 'teeth'

Consonant clusters:

/grotonum/	['gərot-onu-m]	'erred-np-1ss'
/prugem/	['pərug-ɛ-m]	'jump-dp-1ss'
/kumbra/	[kum'bəra]	'custom'
/aŋgro/	['aŋgəro]	'child'
/plaltem/	['pəlalt-ɛ-m]	'explain-dp-1ss'

Neutralization word-finally:

/ḳalub/	[ḳa'lup]	[ḳa'lub]	'three'
/sub/	[sup]	[sub]	'hole'
/web/	[wɛp]	[wɛb]	'pot'
/mumug/	[mu'muk]	[mu'mug]	'bore bee'
/ñalog/	[ña'lok]	[ña'log]	'brain'

Longer verbs:

/anŋilugetedž/	[anŋil-u'gɛ-t-e-tš]	'flutter-int.-trans.-dp-3ss'
/waiŋyokobaonaḳa/	[waiŋ-yo-ko'ba-ona-ḳ-a]	'beg-3so-much-med.-dr-3ss-dep'
/matḳuyoaiyeltḳom/	[matḳu-yo-ai'yɛl-t-ḳ-om]	'fake-twice-fut-1ps

Pidgin words are used by Anjam speakers for objects and concepts that are foreign to the culture. Trying to use a language term often results in bulky phrases. For example, ya piyo ḳadži gara the cloth for wiping water' is easier said using the Pidgin word 'taul'. When using a Pidgin verb, the Anjam speakers add the appropriate verb ending. For example, in the sentence, Ni ya pameḳnum e? 'Are you pumping water?' the Pidgin word 'pam' (meaning 'pump') is used and

the Anjam verb ending -eḳnum is added. Also, the Anjam language has no /h/, so oftentimes the /h/ is dropped out of such Pidgin words as 'hevi' and 'husat' so that they become [ˈɛvi] and [ˈusat].

9. Appendix

9.1. Contrastive pairs

We have discovered in the Anjam language that there are only a small number of minimal pairs. It can be observed in subsection 9.2 below that it has not been possible to find even five sets of identical pairs to show contrasts between each set of phonemes. Due to this, it has been difficult to show a clear contrast between such sequences as n, ng, and ng and between ui and uwi, as mentioned above. Consider the following pairs.

1) paŋga 'type of fish'
   baŋga 'leaf'

2) laŋa 'for no reason'
   baŋga 'leaf'

3) bongar 'star'
   boŋgile 'murder'
4) siŋga 'leg'
   saŋgi 'man's name'

As none of these are identical pairs, one may question if they show real contrast. However, in the first two sets of pairs, I feel it would be unlikely that the initial consonant would affect the difference between /n/ and /ŋ/ or /ŋg/, especially seing that in the first pair, the only difference is voicing. In these first two sets, all three sequences /n/, /ng/, and /ŋg/ occur between /a-a/, which is enough of an identical environment to show contrast. In example 3, the vowels preceding and following the consonant sequence to be contrasted are different, but, as example 4 shows, this has no effect on the consonant sequence. Therefore, I think that sufficient contrasts have been demonstrated without the environments being identical.

In the case of [ui] or [uwi], there is not so clear a contrast. One must determine in each case if the word is a CV.V or CV.CV pattern.

9.2. Contrasts

Contrasts between /p/ and /b/

/paŋyonum/	['paŋyonum]	'shucked'
/baŋ/	[baŋ]	'hand'
/pionum/	['pionum]	'wiped'
/bi/	[bi]	'feces'
/patedž/	['patetš]	'washed ashore'
/bati/	[ba'ti]	'time'
/praŋeb/	['praŋɛb]	'combed'
/braŋeb/	['braŋɛb]	'ripped'
/tapor/	[ta'por]	'axe'
/tabir/	[ta'bir]	'dish'

Contrasts between /p/ and /w/

/pionum/	['pionum]	'wiped'
/wionum/	['wionum]	'was sorry'
/paedž/	['paetš]	'finished'
/wa/	[wa]	'namesake'
/palipali/	['palipali]	'small bat'
/walwel/	[wal'wɛl]	'walked'
/poeb/	['poɛb]	'divided'
/wo/	[wo]	'and'
/padaleb/	[pa'dalɛp]	'perished'
/wada/	['wada]	'woman's name'

Contrasts between /b/ and /w/

/bai/	[bai]	'moon'
/wai/	[wai]	'throw'
/beb/	[bɛp]	'came'
/web/	[wɛp]	'pot'
/baŋ/	[baŋ]	'hand'
/waŋal/	[waŋ'al]	'torch'
/ḳabi/	[ḳa'bi]	'where'
/nawi/	['nawi]	'sister'
/abu/	[a'bu]	'father'
/awo/	['awo]	'sit'

Contrasts between /t/ and /d/

/ti/	[ti]	'with'
/di/	[di]	'there'
/tal/	[tal]	'house'
/dal/	[dal]	'law'
/ḳotei/	[ḳo'tei]	'god'
/ḳudei/	[ḳu'dei]	'some'
/tiŋtiŋ/	['tɪŋtɪŋ]	'straight'
/diŋ/	[dɪŋ]	'end'
/ŋamtaŋ/	['ŋamtaŋ]	'wood'
/ŋamdamu/	['ŋamdamu]	'eye'

Contrasts between /dž/ and /d/

/džiŋ/	[džɪŋ]	'mat'
/diŋ/	[dɪŋ]	'end'
/džali/	[dža'li]	'female'
/dal/	[dal]	'law'
/džedžamu/	['džedžamu]	'skin'
/medabu/	['medabu]	'mouth'
/andžam/	['andžam]	'talk'
/mandam/	[man'dam]	'ground'
/odžonum/	[odžo'num]	'held'
/odonum/	['odonum]	'permitted'

Contrasts between /s/ and /dž/

/seŋ/	[sɛŋ]	'sun'
/džeŋ/	[džɛŋ]	'fence'
/soḳnem/	['soḳnɛm]	'stayed'
/džoḳem/	[džo'ḳɛm]	'took'
/siŋga/	[siŋ'ga]	'leg'
/džiŋga/	[džiŋ'ga]	'carefully'
/bosi/	[bo'si]	'came'
/ḳodži/	['ḳodži]	'fuzz'
/osorbem/	[o'sorbɛm]	'showed me'
/odžonum/	[odžo'num]	'held'

Contrasts between /dž/ and /y/

/džagwa/	['džagwa]	'wind'
/yagwas/	[ya'gwas]	'he will plant'
/džeŋ/	[džɛŋ]	'fence'
/yem/	[yɛm]	'gave to him' (dp)
/džodžom/	[džo'džom]	'near'
/yonum/	[yo'num]	'gave to him' (np)
/džaŋ/	[džaŋ]	'sugar'
/yansonum/	['yansonum]	'washed'
/odžonum/	[odžo'num]	'held'
/oyonum/	[oyo'num]	'to answer'

Contrasts between /k/ and /g/

/koba/	[ko'ba]	'many'
/goba/	[go'ba]	'type of bird'
/karara/	[kara'ra]	'type of plant'
/gara/	[ga'ra]	'clothes'
/kere/	[ke're]	'correct'
/geregere/	[ge'regere]	'well'
/kumbra/	[kum'bra]	'custom'
/gumba/	['gumba]	'purse'

Contrasts between /g/ and /ḳ/

/gue/	[gu'e]	'limbu'
/ḳue/	[ḳu'e]	'hear'
/guŋ/	[guŋ]	'valley'
/ḳuŋ/	[ḳuŋ]	'string bag'
/gei/	[gei]	'seed'
/ḳe/	[ḳe]	'fish'
/dego/	['dego]	'also'
/deḳa/	['dɛḳa]	'therefore'
/iga/	[i'ga]	'we'
/aḳa/	['aḳa]	'his'

Contrasts between /k/ and /ḳ/

/kadža/	[ka'dža]	'sheep'
/ḳadža/	[ḳa'dža]	'spear'

/kalil/	[ka'lɪl]	'all'
/ḳalub/	[ḳa'lup]	'three'
/kamba/	['kamba]	'in turn'
/ḳamem/	[ḳa'mɛm]	'shot'
/laklaka/	['laklaka]	'limbu flooring'
/laḳonum/	['laḳonum]	'walk about'
/koba/	[ko'ba]	'many'
/ḳobuŋ/	[ḳo'buŋ]	'canoe'

Contrasts between /n/ and /ñ/

/no/	[no]	'stonefish'
/ñomem/	['ñomɛm]	'sharpened'
/onum/	[o'num]	'got'
/oñi/	[o'ñi]	'tortoise'
/nenem/	[nɛn'ɛm]	'asked'
/neñem/	[nɛñ'ɛm]	'footprint'
/nanu/	[na'nu]	'woman's name'
/nañu/	[na'ñu]	'jungle'

Contrasts between /n/ and /ŋ/

/naul/	[naul]	'bell'
/ŋauŋ/	[ŋauŋ]	'wife'
/nenem/	[nɛn'ɛm]	'asked'
/ŋeiem/	[ŋei'ɛm]	'slept'
/niŋgi/	['nɪŋgi]	'you' (pl.)
/ŋiŋ/	[ŋ'ŋ]	'suffocate'
/paŋga/	['paŋga]	'type of fish'
/baŋga/	['baŋga]	'leaf'

Contrasts between /ñ/ and /ŋ/

/ñiŋ/	[ñɪŋ]	'grass'
/ŋiŋ/	[ŋ'ŋ]	'suffocate'
/ñalog/	['ñalok]	'brain'
/ŋalom/	[ŋa'lom]	'type of taro'
/kiñala/	[kɪñ'ala]	'little'
/yaliŋa/	[ya'liŋa]	'bottle'

Contrasts between /l/ and /r/

/lou/	[lou]	'song'
/robu/	[ro'bu]	'deep'
/lala/	[la'la]	'feather'
/rarieb/	['rariɛb]	'lined up'
/ulul/	[u'lul]	'sand'
/urur/	[u'rur]	'run'
/ombla/	[om'bla]	'with'
/kumbra/	[kum'bra]	'custom'
/džar/	[džar]	'platform'
/dal/	[dal]	'law'

Contrasts between /i/ and /e/

/džiŋ/	[džɪŋ]	'mat'
/džeŋ/	[džɛŋ]	'fence'
/oḳim/	[o'ḳim]	'will go up'
/oḳem/	[o'ḳɛm]	'went up'
/titedž/	['titetš]	'pulled'
/teteiyedž/	[te'teiyetš]	'chased'
/kere/	[ke're]	'correct'
/kiri/	[ki'ri]	'be quiet'
/si/	[si]	'father'
/se/	[se]	'debris'

Contrasts between /u/ and /o/

/unum/	[u'num]	'am'
/onum/	[o'num]	'got'
/ulul/	[u'lul]	'sand'
/ulol/	[u'lol]	'container'
/ḳudei/	[ḳu'dei]	'some'
/ḳotei/	[ḳo'tei]	'god'
/olu/	[o'lu]	'pumpkin'
/olo/	['olo]	'again'
/damu/	[da'mu]	'meat'
/tamo/	[ta'mo]	'man'

Contrasts between /i/, /e/, /a/, /u/, and /o/

/naŋgi/	['naŋgi]	'they'
/muŋge/	[muŋ'ge]	'banana'
/naŋga/	['naŋga]	'glow'
/nuŋgu/	[nuŋ'gu]	'wet'
/nuŋgo/	[nuŋ'go]	'your'
/džiŋ/	[džɪŋ]	'mat'
/džen/	[džɛŋ]	'fence'
/džaŋ/	[džaŋ]	'sugar'
/džunonub/	['džunonup]	'crowded'
/džodžom/	[džo'džom]	'near'

List of Abbreviations

sg.	singular
dl.	dual
pl.	plural
1ss	first person singular subject
1ps	first person plural subject
1so	first person singular object
1po	first person plural object
2so	second person singular object
2po	second person plural object
3ss	third person singular subject
3ps	third person plural subject
3so	third person singular object
3po	third person plural object
np	near past
dp	distant past
fut	future
cont	continuous
trans	transitive
int	intensifier
med	medial verb
dr	different subject
+	morpheme boundary
.	syllable break