

THE VOWELS OF THE AMA LANGUAGE

-according to the Ama literates

by

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Introduction1.1. The Setting

The Ama language is a non-Austronesian language, one of the six languages of the Arai Family in the East Sepik Province. The Ama people number about 350, and they live in the most western part of the province. Outside contact up to 1969 was almost non-existent and is still comparably small. A government school was started in 1974. There was no one who could read at that time. We started to work there in 1973. A tentative phonemic statement was written in 1974. After some trial literacy this statement was revised in 1976 with just a few changes, and approved status of orthography was granted. After that a more full literacy program was commenced.

1.2. The Vowel Problem

There are eight vowel phonemes in the Ama language, or so we thought until there were some Ama speakers, who could write. Our analysis showed eight vowel phonemes. The people, who have learnt to read and write, write only four vowel phonemes.

<u>phonetic</u>	<u>old phonemic</u>	<u>old orthography</u>	<u>people's orthography</u>
[ɪ]	/ɪ/	i	i
[ê]	/e/	e	i
[ɛ]	/ɛ/	e	a (aa, #)
[a] [ʌ]	/a/	a	a (A, aa)
[ɔ]	/ɔ/	ɪ	a (o, aa)
[u]	/u/	u	u
[o]	/o/	oo	u, o (uo, ou)
[ɔ]	/ɔ/	o	o, aa (a)
[ɒ] [ʌ]	/ɒ/	aa	aa, o, a

The symbols in parenthesis under people's orthography are not as frequently used. If there are several symbols used for one of our symbols, they are in order of most to least in frequency.

Some people of course write as we have taught them but just in some places, and there is no system, that we have discovered. The above chart is mostly our impression from teaching literacy.

Naturally we wondered; was there something wrong with our analysis? People can read our eight symbols correctly, but why do they write only four? (five symbols are used in the table above, but o and aa are used as if they were the same symbol) To find the answer to that puzzle we made up a list of 265 words and recorded those on a cassette. Eight people, who can write reasonably well<sup>1</sup> listened to the cassette and wrote each word down. In the list of 265 words some words occur more than once for consistency check. Also three of the eight writers wrote the list twice with four months in between. That was done to check the consistency<sup>2</sup> of an individual writer. These people were also asked to read material written with different orthographies. This went well and did not cause any additional problem in reading, even though none of them were taught to read in any of the new orthographies being tested. All testing was done individually.

We are indebted to Dorothy Price and Ana Kila for help and encouragement at different stages of the analysis.

### The Vowel Phoneme

#### Interpretation

Not only do the writers reduce the number of vowels from eight to four, they also have something to say about interpretation of vowel sequences. That is, you can not discuss these things with

them. They just show up in their writing. The only exception is that our main literacy teacher has complained over the letter (i) because it is so hard to teach. Consonant sequences have also appeared with a different interpretation and will also be discussed here, because it involves a vowel.

### 2.1.1. Vowel Sequences

We noted during literacy classes that w and y turned up in places, where we did not expect it. Even though phonetically there are non-suspect vowel sequences and sequences that are seemingly reversed with reverse stress, the feeling of the native speaker is that certain sequences are not vowel clusters but two syllables. Other sequences however are felt to be clusters.

Examples: [te'a:] hungry

[po'p:] downriver

[ɪ'l:Δ] a kind of tree

[sɪ'a:] taro

[sa:l] to know

[sʌ'l:] Go!

#### 2.1.1.1. Non-permissible Vowel Sequences

The sequences that a native speaker will not allow are the sequences going from a high to a low vowel. A y or w is introduced to break up the sequence.

Result of test:<sup>3</sup> (35 words of the 265 contains a high-to-low vowel sequence)

14% have been taught in literacy with y/w

46% of the words tested had y/w breaking up the sequences in their writing

89% of the words written by the two writers least exposed to

Pidgin/English were written with y/w.

Some people write i before initial y, but as there is no contrast found between initial [yV] and [iyV] this is interpreted as /yV/.

Conclusion:

y/w should be written breaking up high-to-low vowel sequences.

Example: /tiy <sup>4</sup> amɔ/	they think
/auwa/	my brother
/i'ɔ/	ear
/puwɔ/	up

#### 2.1.1.2. Permissible Vowel Sequence

Low-High Vowel sequence are felt to be vowel clusters or even a single vowel phoneme. They are /ai/, /au/, /ɔi/ and /ɔu/.

Result of test: (66 words of the 265 contains a low-to-high vowel-sequence)

100% did not introduce a y/w into these sequences even though /ɔ'i/ and /ɔ'u/ have the last vowel stressed. (Taught in literacy without y/w)

Conclusion:

Low-to-high vowel sequences can be interpreted as vowel clusters or complex vowel phonemes. We prefer the first interpretation, as that does not add four more phonemes to the language.

Examples: /ainɔ/	pandana fruit
/taunu/	dry
/yɔsɔi/	Let's go!
/aluwɔu/	dog

#### 2.1.1.3. Other Vowel Sequences

Some other vowel sequences do not at first seem to fit into either

of the above categories. They are the following.

### 2.1.1.3.1. Level Vowel Sequences

These are very rare and there may be other ways to classify them. The sequence *ii/yi* has not been heard at all. The native speakers consider these sequences non-permissible and so introduce at least a *y* or *w* to break them up.

Result of test:

(uu) The phonetic manifestation found is [wu] in one word only.

5 of 7 people felt this is /uwau/ or similar.

(ɔɔ) The phonetic manifestation found is [ob] in one word only.

4 of 9 people felt this is /ɔwɔ/.

(aa) The phonetic manifestation found is [aya] in texts only.

There is a morpheme break between the *a*'s and *y* is a transitional consonant.

Conclusion:

To follow the feeling of the Ama writers.

Examples:	[ʌ'wu:fʌsɔ]	/auwauʔaisɔ/	a cultural hero
	[pɔ'b:]	/pɔwɔ/	downriver
	[to: a-y-'a:-nɔ]	/tuo ayanɔ/	to go and work sago
	sago work-trans.c.-in order to-go		

### 2.1.1.3.2. Shortened Vowel Sequences

Three shortened vowel sequences have been heard [ɔ:], [ɔɪ]<sup>5</sup>, and [uɛ].

They are rare. Native speakers consider these non-permissible.

Result of test:

[ɔ:] very little testing done. Word medially however this seem to be interpreted as /uwɔ/ or /uwa/. (Taught in literacy as /ɔ/.)

[ɔɪ] very little testing done, but the interpretation of the

native speaker seem to be /uwaɪ/. However for reasons discussed later (2.2.2.3. , 2.2.2.4. and 4.2.) we think this ought to be interpreted /uɔɪ/. Also if interpreted /uwaɪ/ it would cause problems with the interpretation of [uɛ]. (Taught in literacy as /ɔɪ/ and /uwaɪ/).

[uɛ] - of 265 words tested only three have this sequence, one occurring twice. (Taught in literacy as /ue/.)

50% wrote ue or similar

50% wrote uwaɪ or similar

Conclusion:

[ɔ:] ought to be interpreted /uɔɔ/

[ɔɪ] ought to be interpreted /uɔɪ/

[uɛ] ought to be interpreted /uwaɪ/

Examples:	[mɔ̃:nɪ]	/muɔ̃ni/	money
	[tu'mɔ̃:ɪ]	/tumuɔ̃ɪ/	owl
	[fu'ɛ:]	/fuwaɪ/	Get out!

### 2.1.1.3.3. The ɛɪ-sequence

Result of test: (11 words of the 265 contains an ɛɪ-sequence, several of them grammatical functors)

All these words were taught in literacy as /ei/.

56% of the words written spelled the sequence ai

16% spelled the sequence ei

86% of the words written by one writer were spelled ai

Conclusion:

The ɛɪ-sequence ought to be interpreted as /ai/.

Examples:	[ɛɪpiɪɛɪ]	/aɪpiɪai/	cassowary
	[nɔ̃mɔ̃nɛɪ'nɔ̃]	/naɪnaɪ na/	so

This sequence is sometimes shortened to [ɛ]. [kwɛ:nɔ̃] /kwainɔ̃/ corn



#### 2.1.1.3.4. The Old/New Vowel Sequences

The earlier papers said that there were a phoneme /e/ and a phoneme /o/. Testing has shown that these are vowels difficult to get people to write and in the case of /e/ difficult to teach in drills too.

Result of testing:

[ê] 18 words of 265 contain [ê].

89% have been taught in literacy as /e/

30% were written with e

61% were written with i

6% were written with a glide of some kind

100% were written with e by one writer (finished grade 4)

87% were written with í by one non-Pidgin/English writer.

He wrote no e.

About 100 words of the 265 contain [i]. Only 2% were written as e.

Another sign of something being amiss was that in early trial literacy teaching /e/, the three men in that class said [ˈea:] when mimicking us in syllable drills. We thought for years that we said a Swedish e (which is a glide ending with a), even though we thought we omitted the final a and said a straight e.

[o] 17 of 265 words contain an [o].

76% were taught in literacy with /oo/

18% were taught in literacy with /u/

6% were taught in literacy with /o/

15% were written oo for [o]; as taught 15%

27% were written u for [o];

23% were written ɔ for [o];

7% were written # for [o];

a single vowel 57%

or other vowel

13% were written ɔu for [o] ;  
 8% were written uɔ for [o] ;  
 7% were written <sup>other</sup> glide for [o] ; } a glide 28%  
 80% were written oo for [o] by two writers  
 100% were written ɔ for [o] by one writer  
 About 50 of 265 words contain [u].

Only 2% were written oo, ɔ, uɔ, or ɔu. However 16% written by 3 writers were written with those combinations.

#### Conclusion:

We are not really sure what conclusion to draw from these figures. One theory we have is that /e/ and /o/ are phonemes on their way in or out of the language. They seem to contrast with other vowels just in a few words. In many or most places [e] may easily be written /i/ and [o] /u/. Another thought is that they may have been glides now going towards being a single vowel. We first thought about that for [o] which may be heard as a glide; but which glide? /u/ seems unlikely as /ɔu/ is one of the low-to-high vowel glides (2.1.1.2.). /uɔ/ is a more likely choice. The corresponding front glide [e] may then be /ia/. That is exactly what we heard for /e/ in our first trial literacy. If that is so almost only /i/ is left of that glide now. For [o] it is harder to say what is left /u/, possibly /ɔ/, or the original glide.

Taking all this into consideration it seems best to interpret [e] as /i/ in all cases, being possibly the remnant of a glide /ia/. There will hopefully be very little confusion.

[o] seems best to interpret as /u/ in most cases, choosing /u/ over /ɔ/ mostly because if choosing /ɔ/ there would be many words where you would not know if it was to be pronounced [o] or [ɔ]. In a few cases we suggest to interpret [o] as the glide /uɔ/.

Examples:	[ <u>ē</u> :nɔ̃]	/inɔ̃/	seed
	[ <u>y</u> atɔ̃' <u>kē</u> ]	/ya tɔ̃ki/	I will see
	[sʌm <u>ō</u> ko' <u>k</u> ɔ̃]	/sʌm <u>u</u> kuɔ̃/	to look after
	[ <u>t</u> o:]	/tuɔ̃/	sago
	[ <u>t</u> u:]	/tu/	thumb

### Consonant Sequences

The earlier analysis seemed to show there are consonant clusters in the Ama language. The Ama literates however are divided into two groups. The people exposed to Pidgin and English feel there are clusters, more of them even than we can hear. The others however feel very strongly there are no clusters and are inserting a vowel. The question is which vowel.

#### Result of test:

C1 and Cn-sequences      49 words of the 265 have these clusters

These clusters we hear and have been teaching in literacy as such.

89% of the words were written as clusters by the Pidgin group

2% of the words were written as clusters by the non-Pidgin group

70% of the words written by the non-P. gr. had 'a' inserted

21% of the words written by the non-P. gr. had ɔ̃ inserted

7% of the words written by the non-P. gr. had <sup>i</sup><sub>[ɔ̃]</sub> inserted

73% of the words written by one non-P. writer inserted ɔ̃

5% of the words written by the P. gr. had 'a' inserted

3% of the words written by the P. gr. had ɔ̃ inserted

26% of the words written by one P. writer had 'a' inserted

Other consonant sequen.      18 words of the 265 have these clusters

The Pidgin group seem to combine almost any two consonants writing them as a cluster, if the vowel in be-

tween is weak enough.

44% of these words were taught in literacy with /ɛ/ [ɔ]

breaking up the cluster

56% were taught with another vowel

57% of the words written by the Pidg. gr. kept the cluster.

2% of the words written by the non-P. gr. kept the clust.

29% of the words written by the non-P. gr. incerted 'a'

41% of the words written by the non-P. gr. incerted ɔ

6% of the words written by the non-P. gr. incerted ɛ [ɔ]

20% of the words written by the P. gr. incerted 'a'

22% of the words written by the P. gr. incerted ɔ

The kw seq. [kw] was earlier considered a consonant cluster, but having interpreted the other consonant sequences as CVC, [kw] is probabely not a cluster. It may then either be interpreted in the same way as the other clusters or as an additional consonant phoneme, /k<sup>w</sup>/. It has a very limited distribution and have been found only between /u/ and /a/ and preceeding /a/ and /ai/ 6 words of the 265 occur with the kw cluster.

All have been taught in literacy with the kw cluster.

/k<sup>w</sup>/\_between\_/u/\_and\_/a/\_

89% of the words written by the P. gr. were written  
with kw

37% of the words of the non-P. gr. were written kw

63% of the words of the non-P. gr. were written only k

/k<sup>w</sup>/\_before\_/ai/\_

67% were written kw for the kw sequence

33% were written kuwV for the kw sequence

Conclusion:

Consonant sequences (except kw)

Following the feeling of the people reading or writing no other language than their own, we feel consonant sequences are not clusters, but there is a weak vowel in between them. The test shows it is either /a/ or /ɔ/. Following the result of the test strictly, it would probably be interpreted as /a/. However as will be shown later (2.2.2.3. and 2.2.2.4.) there has been serious problem in literacy teaching the difference of /a/ and /ɔ/. Also as will be shown in 4.2., /a/ is a very strong vowel whereas /ɔ/ is very weak. Because of that we think the vowel between the consonants in these sequences is /ɔ/.

The kw sequence

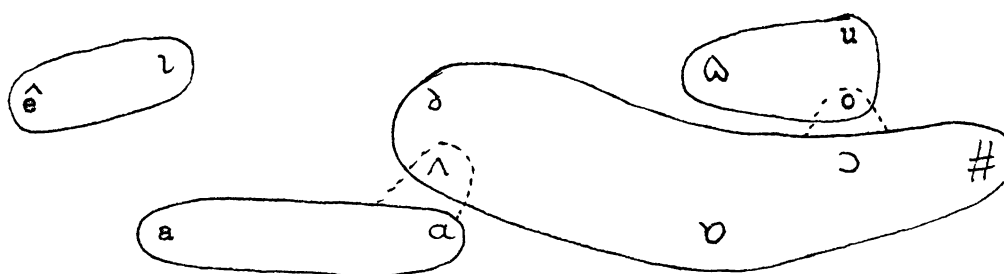
The difference between /k/ and /k<sup>w</sup>/ seem to be neutralized between /u/ and /a/ and following the feeling of the non-P. gr. written with /k/.

before /a/ and /ai/  
The kw sequence however has to be written kw. It can not be written kuw as there is a contrast on that point.

Examples:	[ <u>'k</u> ]a:nɿ]	/kɔlani/	animal
	[ <u>'k</u> ɿsɔ]	/kɔnaisɔ/	later today
	[ <u>s</u> ɿ:] [ <u>s</u> ɿ'mɿ:]	/sɔmɔ/	grasshopper
	[l'mɿ:] }	ω'kwa:sɔ/imɔ lukasɔ/	to speak
	[ <u>'k</u> wa:l]	/kwai/	sago swamp
	[təkwa'l:]	/tukuwali/	to kill many

2.2. Description of Vowel Phonemes

2.2.1. Workchart



The back vowels are not rounded but spread. According to the IPA, they should be symbolized from high to low [u], [ʊ], [ʌ], and [a], but these symbols will not be used in this paper.

## 2.2.2. Formational Statement

All vowels are made with eggressive lungair and voiced.

### 2.2.2.1. The /i/ - phoneme

There has been little problem with /i/ in literacy except for [ê], which we will now call an allophone of /i/ (see 2.1.1.3.4.)

/i/ [ê] half close front spread<sup>raised</sup> vowel, occurs preceding a stressed /ya/, /yau/, or /yai/.

However that does not take care of all occurences of [ê], and it is difficult to find any other conditioning factor even tending to influence it. According to the feel of the Ama writers [ê] is still to be regarded as an allophone of /i/. There are practically no minimal pairs between [ɪ] and [ê].

[t̩ke:]	/tɔki/	sees
[f̩n̩pe:]	/funɔpi/	tobacco

[ɪ] close front spread retracted vowel, occurs elsewhere

[t̩'n̩:]	/tɔni/	bow
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2.2.2.2. The /u/ - phoneme

There has been little problems with /u/ in literacy except for [o] which we will now in most cases call an allophone of /u/.  
(see 2.1.1.3.4.)

/u/ [o] half close back spread vowel, tends to occur in word initial or word final stressed syllable. But so does [u], so there really does not seem to be any real conditioning factor just as for [ẽ]. However it will be considered an allophone according to the feelings of the Ama literates. There are a few minimal pairs of one syllable words between [u] and [o]. In these places the glide will be kept as stated before. (2.1.1.3.4.)

[tɔ:nɔ̃]	/tunɔ̃/	cloth
[m̃ɔ̃tɔ:]	/mɔ̃tu/	true

[ɔ̃] close back spread fronted vowel, occurs in unstressed position.

[mɔ̃ʔu:]	/mulu/	heart
[ɔ̃ʔwɔ̃u]	/aluwɔ̃u/	dog

[u] close back spread vowel, occurs elsewhere.

[tɔ̃'nũ:]	/tɔ̃nu/	they go
[tu:]	/tu/	thumb

2.2.2.3. The /a/ - phoneme

There has been a certain amount of confusion in literacy between a and ɔ̃ɔ̃.

### 2.2.2.3.1. /a/ or /ɔ/

Result of test: (20 words with a final [a] were tested)

All these were taught in literacy as /a/, previous orthogr. a.

3% were written as /ɔ/ (prev. orth. o)

11% were written as /ɒ/ (prev. orth. aa)

70% were written as /a/ (prev. orth. a)

41% were written A by three writers

These figures may be compared with the figures for /i/ and /u/.

(2.1.1.3.4.)

[ɪ] 2% written e

[u/ʊ] 2% written o,ɔ, uɔ, ɔu

(16% written o,ɔ, uɔ, ɔu by three writers)

Conclusion:

We conclude from these figures that the Ama literates are not sure of the difference between 'a' and ɔ/ɒ, and they do not find the symbol 'a' adequate for the phoneme /a/. The question is why they feel like that. The main reason may be that the allophone [ʌ] was attributed to both /a/ and /ɒ/ and now they feel, they have to come up with a special symbol for /a/, because they do not know if 'a' stands for /a/ or /ɔ/.

Another problem was the choice of symbol aa for /ɒ/. The phoneme /a/ is a very strong vowel and has in it a quality of length. Some writers may have thought the aa symbol appropriate for /a/ to show that it was different from /ɔ/ɒ/, which sometimes were written a ([ʌ]) because of the previous analysis.

### 2.2.2.3.2. Formational Statement of /a/

/a/ [a] open central spread vowel, tends to occur word initially in words with more than one syllable.



Result of test: (21 of the 265 words have a [a])

72% were written a

17% were written A

5% were written ɔ

Conclusion:

Even though there is no conclusive distribution of [a], the Ama literates consider it an allophone of /a/.

Examples: [ʔanʌʔ] /anai/ my mother  
[ʔamʌʔ] /tamɔli/ goes upriver

[a] open front retracted vowel, occurs elsewhere

[tai] /ta/ fire

[pəkʌ] /pəkɔ/ Get them!

([ʌ] see 2.2.2.5.)

#### 2.2.2.4. The /ɔ/ - phoneme

As stated before there has been a certain confusion between the /a/ and /ɔ/.

##### 2.2.2.4.1. /ɔ/ or /a/

Result of test: (36 words with a final [ɔ] were tested.)

All have been taught in literacy as /ɔ/, prev. ortho. o .

9% of the words were written a , prev. ortho. a .

19% of the words were written ɔ , prev. ortho. aa .

84% of the words were written ɔ , prev. ortho. o .

47% of the words were written a , by two writers of the Pidg. gr.

36 words with a final [ɔ], prev. ortho. aa, were tested.

All have been taught in literacy as /ɔ/.

39% of the words were written a , prev. ortho. a .

41% of the words were written ɔ, prev. ortho. o .

43% of the words were written ʊ, prev. ortho. aa .

1 person wrote 65% a , prev. ortho. a .

1 person wrote no a , prev. ortho. a .

The Piig. gr. wrote only 5% ɔ , prev. ortho. o .

2 persons wrote no ʊ , prev. ortho. aa

(Compare figures in 2.2.2.3.1.)

#### 2.2.2.4.2. Formational Statement of /ɔ/

/ɔ/ [ɛ] silence, occurs between the consonants p - ʃ, f - ʃ,

m - ʃ, t - ʃ, k - ʃ, and f - n, m - n, k - n.

Varying degrees of [ɛ] may be heard between the consonants depending perhaps on the vowel following, how far from the stressed syllable the sequence is, and also the strength of the sequence itself. f - ʃ, m - ʃ, t - ʃ, and m - n do not seem to draw as closely together as the others.

[ <u>k</u> ɑ:nɪ]	/kɔlani/	animal
[ <u>t</u> r'ɪaɪ]	/tɔliyai/	walks

[ɛ] half closed central spread vowel, tend to occur in CV syllables preceding the stressed syllable in a word. It does not occur in a syllable where the onset is /w/ or /y/. It does not occur word finally and has only been found stressed twice. [ɛ] was earlier taught as a separate phoneme, but testing has shown it is best considered an allophone of /ɔ/. It does not really contrast with other phonemes.

Result of test: (41 words of 265 has one or more [ɛ])

The writers divide into two groups depending on influence of Pidgin/English (or of being used to learning).

### Pidgin\_Group

38% of the words were written with  $\text{[}\delta\text{]}$  as taught in literacy

26% were written with a

3% were written with  $\text{[}\text{ɔ}\text{]}$

### Non-Pidgin\_Group

4% of the words were written with  $\text{[}\delta\text{]}$  as taught in literacy

31% were written with 'a'

60% were written with  $\text{[}\text{ɔ}\text{]}$

92% were written with 'a' by one writer

### Conclusion:

We will consider  $\text{[}\delta\text{]}$  an allophone of  $\text{[}\text{ɔ}\text{]}$  as possibly preferred by the non-Pidgin group. This is supported by the fact that  $\text{[}\text{ɔ}\text{]}$  is a weak vowel and /a/ is a strong vowel (see 4.2.) Also if  $\text{[}\delta\text{]}$  would be written 'a' there would be several minimal pairs.

$\text{[}\text{n}\delta\text{'n}\delta\text{]}$	/nɔni/	woman
$\text{[}\text{t}\delta\text{t}\delta\text{'p}\text{[}\text{ɪ}\text{m}\text{ɔ}\text{]}\text{]}$	/tɔtɔpɔlimɔ/	sews

$\text{[}\wedge\text{]}$  haaf open central spread vowel, tends to occur unstressed word medially following /w/ and /y/. Tend also to occur in syllables following the stressed syllable.

Result of test: (22 words of the 265 has one or more  $\text{[}\wedge\text{]}$ )

All of these words were taught in literacy as /a/ or  $\text{[}\text{ɔ}\text{]}$ , prev. ort. aa

### $\text{[}\wedge\text{]}$ in word initial CV-syllable

62% were written a

20% were written  $\text{[}\text{ɔ}\text{]}$

52% were written a by 4 non-P. writers

37% were written  $\text{[}\text{ɔ}\text{]}$  by 4 non-P. writers

[ʌ] in word medial syllables

85% were written a

13% were written ɔ

35% were written a by two writers

47% were written ɔ by two writers

([ʌ] in word initial position, see 2.2.2.5.)

## Conclusion:

These figures seem to indicate that [ʌ] is an allophone of /a/.

However in view of the confusion between /a/ and /ɔ/, and a fairly high percentage of the words were written as ɔ, we feel that is the best way to go. That fits the overall system best and may also help to reduce the problem in literacy of differentiating between /a/ and /ɔ/.

[ʌ] (a) (ɔ)	/ɪlɔlu/	possessions
[nʌkɔ]	/nɔkɔ/	man

open central spread retracted vowel, occurs in word- or morpheme-final syllable, usually stressed. If not stressed the onset of the syllable tend to be /k/, /s/, or /w/.

[ɔ] was earlier taught as a separate phoneme but testing has shown that the Ama literates consider [ɔ] an allophone of /ɔ/. One possible minimal pair has been found, but an alternative interpretation is possible. (see [kɔ:] and [kɔ:] under 2.2.3.)

Result of test: (36 words with final [ɔ] were tested)

5% of the words were written ɔ, symbolized o, by the Pidgin group

41% were written ɔ, symbolized o, by the non-P. gr.

43% were written ɔ, symbolized aa, (average for all)

## Conclusion:

[ɔ] and [ɔ] belong to the same phoneme as shown by the non-P. gr.

Examples: [nʌ'kɔ:] /nɔkɔ/ man  
 ['pu:ɔ] /puwɔ/ up

[ɔ̃] half open back spread vowel, occurs elsewhere, that is it tends to occur stressed word initially and unstressed word finally.

['ɔ:nɔ̃] /ɔnɔ/ drum  
 ['nɔ̃nɔ̃] /nainɔ/ hand

#### .2.2.5. Exceptions

##### .2.2.5.1. Word Initial [ʌ]

Testing has shown that word initial [ʌ] is by all writers in all cases considered to be an allphone of /a/. Consequently it will be so written. Otherwise one would have assumed that at least some would have preferred an /ɔ/ in this position (see [ʌ] under 2.2.2.4.2.). The two allophones of /a/, [a] and [ã] also occur in word initial position. However there has been no problem in literacy at this point.

Examples: [ʌ'sɔ:] /asi/ ground  
 [ʌmʌ'ki:] /amɔɔki/ night  
 ['ʌmɔ̃] /ami/ strong  
 ['a:ɔ̃] /alu/ child

##### .2.2.5.2. The Syllable [yo]

A certain grammatical marker [yo] - 'bring', is considered by 7 out of 7 writers to be /yɔ/. There is no explanation to that as there are several contrasts on that point. However we will follow the preference of the writers.

[yu:] /yu/ mountain [nʌ'kɔ:yɔ] /nɔkɔyɔ/ by a man  
 [yo:] /yuo/ bird of paradise [yb:] /yɔ/ I  
 [ya:] /ya/ I emph.

[ʌnɪˈyo:təm̃] /aniyɔ̃tum̃/ to come bringing something

Something similar was observed for po in one word [poˈb:] /pɔw̃/ 'downriver.'

### 2.3. Contrasts

This section will show contrasts between phonemes and glides.

/i/, /a/, /u/, /uɔ/, /ɔ/	[ɪ:]	/i/	stringbag
	[a:]	/a/	tree
	[u:]	/u/	flower
	[o:]	/uɔ/	bird
	[ɔ:]	/ɔ/	an exclamation
	[tɪ:]	/ti/	two
	[ta:]	/ta/	fire
	[tu:]	/tu/	thumb
	[to:]	/tuɔ/	sago
	[tɔ:]	/tɔ/	breadfruit

/i/, /a/, /u/, /ɔ/	[ˈtɪñ]	/tiñ/	one day removed
	[ˈtɪñ]	/tañ/	gets
	[ˈto:ñ]	/tuñ/	cloth
	[ˈtɔ:ñ]	/tɔlñ/	goes that way
	[ˈɪ:ɪʌ]	/ilɔlu/	possessions
	[ˈa:ʌfa]	/alufa/	baby
	[ˈu:ɔ]	/ulu/	sore
	[ˈɔ:ɔ]	/ɔɔ/	wood eating insect

/i/, /a/, /u/, /ɔ/, /uɔ/, /ɔu/, /au/ /ai/, /ɔi/	[ʌ'ma:k]	/amaki/	a village
	[ka:]	/ka/	built
	[ku:]	/ku/	mark
	[kɔ:]	/kɔ/	builds
	[ko:]	/kuɔ/	cloud
	[kɔ:]	/kɔu/	mouth
	[kɑ'u:]	/kau/	ornament
	[ʌ'kaɪ]	/akai/	to put
	[kʌ'i:]	/kɔi/	we excl
/i/, /a/, /u/, /uɔ/, /ɔ/, /ɔi/, /ai/	[sɪ:]	/si/	a fruit
	[sa:]	/sa/	rain
	[su:]	/su/	a shot (loanword)
	[so:]	/suɔ/	payback
	[ʔsɔ]	/isɔ/	in the stringbag
	[sʌ'i:]	/sɔi/	Let's go!
/i/, /a/, /u/, /uɔ/, /ɔ/, /u/, /au/	[sa:]	/sai/	knows
	[ñ:]	/ni/	this
	[ña:]	/na/	yes
	[ñu:]	/nu/	house
	[ñɔ:]	/nuɔ/	magic
	[ñɔ:]	/nɔ/	to eat
	[nʌ'u:]	/nɔu/	my fosterfather
	[na:u]	/nau/	cup

### 1.3. Outline of Vowel Phonemes

#### 1.3.1. Chart of Vowel Phonemes

	front	back
high	i	u
low	a	ɔ

#### 2.3.2. Description of Contrastive Features of Vowels

Vowels contrast vertically as to high and low, and they also contrast as to front and back tongue position.

#### 2.4. Function of Vowel Phonemes

The vowels function as the nucleus of the syllable. There are two classes of vowels based on their function in the syllable.

##### 2.4.1. Classes of Vowel Phonemes

Class 1: /a/ and /ɔ/ function in the V and CV syllables, and as the first vowel of the VV and CVV syllables.

(For /i/ and /u/ as the first vowel of the CVV syllable, see 2.1.1.3.4.)

Class 2: /i/ and /u/ function in the V and CV syllables and as the second vowel of the VV and CVV syllables.

(For /a/ and /ɔ/ as the second vowel of the CVV syllable, see 2.1.1.3.4.)

Examples: [ˈsa:ɪ] /sai/ knows  
 [sʌˈɪ:] /sɔɪ/ Let's go!  
 [ˈna:u] /nɔu/ my fosterfather

#### 2.4.2. Co-occurrence restrictions between consonants and vowels within the syllable

All vowels may be preceded by any consonant with the following restrictions:



/y/ is not found preceding /i/

/w/ is not found preceding /u/

/h/ being very rare, is only found preceding /a/

/k<sup>w</sup>/ being rare, has only been found preceding /a/ and /ai/

### The Syllable

The syllable consists of a nucleus of one or two vowels with an optional onset of one consonant.

#### 1. Function

There are two classes of syllables based on their function in the phonological word.

Class 1: The CV and CVV syllables function anywhere in the word

Class 2: The V and VV syllables function only word initially

#### 2. Structure

There are four types of syllables based on their structure

Type 1: V [ɪ:] /i/ stringbag

Type 2: VV [aɪ] /ai/ sick

Type 3: CV [ku:] /ku/ mark

Type 4: CVV [mʌɪ:] /m>i/ you, pl.

### The Phonological Word

A phonological word is defined as having one stressed syllable.

It does not necessarily correspond to the grammatical word, especially in the case of complex verbs.

#### 1. Structure

Words have been found with from one up to six syllables. The

V and VV syllables can only appear word initially.

Examples: See next page

[u:]	/u/	flower	1 syllable
[ʌ'sauñ]	/isauñ/	tongue	3 syllables
[tɔ̃tɔ̃kəsʌ'aiñ]	/tɔ̃tɔ̃kəsɪyaini/	Are you cutting?	6 syllables

### Stress

Originally we thought stress was phonemic in the Ama language, and in our first trial literacy we marked stress. It helped us to read, but it made no difference to the students when stress was not marked. So in the literacy program stress has not been marked. Still there were stress contrasts and in a few places the meaning of a passage was ambiguous.

Examples:	[nʌ'kɔ:]	prev. ortho.	nakaa	man
	[na:kɔ]	prev. ortho.	nakaa	blood

A solution to the problem presented itself almost by accident when working on another problem.

There are two pairs of words which actually contrast by stress.

Testing those words on another point we actually got the first clue to how to look at stress. The words are:

<u>phonetic</u>	<u>old phonemic</u>	<u>old ortho.</u>	<u>people's ortho.</u>
[sa:]	/sai/	sai	sai
[sʌ'ɪ:]	/sa'i/	sai	soi', saai, sɪi /sɔi/
[na:u]	/nau/	nau	nau
[nʌ'u:]	/na'u/	nau	noʊ, naaʊ, nɪʊ /noʊ/

Not everybody wrote like this, but we saw a pattern.

Result of test:

See next page

11 words of the 265 have the sequence [ʌ<sup>1</sup>ɪ] , all taught in literacy as /ai/.

55% of the words were written as ai

32% of the words were written as ɔi

41% of the words were written as ai by 4 people

42% of the words were written as ɔi by the same 4 people

(80% of the words were written as ai by 3 Pidg. writers

Those same 3 people wrote no ɔi )

These figures may be compared with the figures for [aɪ] and [ɛɪ], /ai/<sup>6</sup>

Only 4% were written as ɔi as an average.

(33% however were written as ɔi by 2 non-P. writers.)

Similar figures were found between [ʌ<sup>1</sup>u]<sup>7</sup> and [a<sup>1</sup>u] , with the following addition: 90% of the words with [ʌ<sup>1</sup>u] were written as ɔu by two writers.

#### Conclusion:

From these figures we thought that perhaps stress is non-phonemic and what looks like phonemic stress has to do with the different strength of the four vowel phonemes. In that case /a/ is a strong vowel always taking the stress. /ɔ/ is a weak vowel seldom taking the stress and /i/ and /u/ are somewhere in between.

A count was made to see if the above conclusion would bear up in all or most words.

#### Result of count:

Not counting the words containing an [ʌ] or [a] to start with as they are allophones of /a/ and/or /ɔ/ and could maybe turn the result one way or another.

96% followed the above theory

2% contain grammatical affixes that seem to almost always be stressed

-/kɔ/	dual and plural object	/tɔsi'kɔ/	drink
-/kɔ'nɔ/	down	/tamukɔ'nɔ/	goes down
-/yɔ/	bring	/kawi'yɔtumɔ/	come bringing someone

2% seem to be unexplainable exceptions

/i'wɔ/	water
/i'mɔ/	speech
/wi'yɔ/	feather, hair
/u'lɔ/	sun

Next all words involving the four vowel phonemes /i/, /a/, /u/, /ɔ/ (including all allophones) were counted.

90% followed the above theory

5% were words starting with the allophone [ʌ] (see 2.2.2.5.)

[ʌ'sɪ:]	/asi/	ground
[ʌ'nã:pɔ]	/anapɔ/	barren

5% were true exceptions

It was found that the vowels and glides could be arranged in the following order going from the strongest (almost always occurring in the stressed syllable if it occurs in a certain word) to the weakest (almost never occurring in the stressed syllable if there are other vowels or glides in the word).

/ai/, /au/	[ʷəʔkə]	/uluwakai/	to keep washing
/a/	[ʷəʔa:]	/uluwa/	to wash
/-i/, /u/	[ʷəʔu:]	/aluwɔu/	dog
/i/	[ʷəʔ]	/ilɔlu/	possessions
/u/	[ʷəʔnɔ]	/tunɔ/	cloth
/ /	[ʷəʔnɔ]	/tɔnɔ/	eats

20 words of the 265 in the list had the stressed vowel occurring also as unstressed in the word. It was found that <sup>in</sup> 75% of those it was the last occurrence in the word that was stressed.

[mʊ̃u] /mulu/ heart  
[tɔ̃kɔ̃kɔ̃lɔ̃mɔ̃] /tɔ̃kɔ̃kɔ̃lɔ̃mɔ̃/ is afraid

#### .1. Length

Length is a feature of stress as the stressed syllable is usually lengthened, except when the allophone [ɑ̃] of /a/ occurs stressed.

[ʌ̃nũ:] /anu/ there  
[ʌ̃tɪnɔ̃] /atinɔ̃/ his mother

#### Tone/Tenseness

Tone does not carry a heavy load in the language. There are certain words that contrast seemingly by tone. Context will usually tell which word is meant.

[ɪ̃]/i/ stringbag and [ĩ]/i/ tooth is such a pair. In the test it was noted that 6 of 9 persons made the difference by in some way reduplicating the 'i' in the word with the falling tone. By listening to the tape it was also noted that one member of a tone pair seemed to be said more strong or tensed, seemingly the one with a sharply falling tone. Further we remember now from earlier phonology studies that one person in the village used to tell us that certain words were 'strong' while others were 'weak'. It seems then that instead of responding to tone, people respond to tenseness. A suitable way to mark this tenseness may be to reduplicate the last vowel. However as this feature does not carry a heavy load it seems unnecessary to mark it on all words. A better proposal would seem to be to mark only such words a might cause

confusion if spelled the same way. A few pairs of nouns may fall into this group. No other wordclass have been found to have minimal pairs of this kind.

A problem with this however is the earlier orthography, where a double vowel meant a different vowel phoneme. To teach tenseness by doubling a vowel may then be confusing at this stage. (uu and ii were not used in the previous orthography so would cause no problem. aa and oo were used, but only oo would need to be used here, as no word ending in a has been found to be one of a pair, tenseness being the only difference. None of the glides have been found either.) Still it might be best to wait with introducing this feature until the old orthography is forgotten. Perhaps it may not even need to be marked ever in the orthography.

Examples:	$\left[ \overset{\wedge}{\text{m}}\text{u} \right]$	/amu/	nose
	$\left[ \overset{\wedge}{\text{m}}\text{uu} \right]$	/amuu/	moon
	$\left[ \text{m}\overset{\sim}{\text{a}}' \text{v} \right]$	/mɔlv/	vine, road
	$\left[ \text{m}\overset{\sim}{\text{a}}' \text{v} \right]$	/mɔlvv/	eye, coconut

### Nasalization

Nasalization is non-phonemic as all vowels preceded by a nasal consonant are nasalized until a non-nasal occurs in the word to break the nasalization. /y/ and /w/ does not break the nasalization.

Examples:	$\left[ \text{n}\overset{\sim}{\text{a}}' \text{n}\overset{\sim}{\text{a}} \right]$	/nɔni/	woman
	$\left[ \text{n}\overset{\sim}{\text{a}}' \text{k}\text{b} \right]$	/nɔkb/	man
	$\left[ \text{mu}\overset{\sim}{\text{a}}' \text{ɛ} \right]$	/muwai/	not

OrthographyVowels

In this section the new orthography will be compared with the old.

<u>Allophones</u>	<u>Old Phonemic</u>	<u>Old Ortho.</u>	<u>New Phonemic</u>	<u>New Ortho.</u>
[ɪ], [i]	/i/	i	/i/	} i
[ɪ], [e]/[ê]	/e/	e	/i/	
[ɛ]	/ɛ/	e	---*	
[ʌ], [a] [ʌ]/[a]	/a/	a	/a/	a
[ə]	/ə/	±	/ɔ/	} o
[ʌ], [v]	/v/	aa	/ɔ/	
[ɔ]	/ɔ/	o	/ɔ/	
[ʊ], [o]	/o/	oo	(/uɔ/, /ɔ/)/u/	} u
[ʊ], [u]	/u/	u	/u/	

\*It was considered that what had been heard as [ɛ] was really [ə].

## 5.2.

Consonants

<u>Allophones</u>	<u>Phonemes</u>	<u>Ortho.</u>	<u>Allophones</u>	<u>Phonemes</u>	<u>Ortho.</u>
[p]	/p/	p	[ɸ], [p]	/ɸ/	f
[t]	/t/	t	[s]	/s/	s
[k]	/k/	k	[h]	/h/	h
[kʷ]	/kʷ/	kw	[r], [ʀ]	/ʀ/	l
[m]	/m/	m	[w]	/w/	w
[ŋ], [n]	/n/	n	[y]	/y/	y

The consonants are described in, Årsjö, Tentative Phonemic Statement, 1974, except for /kʷ/ (see 2.1.2.)

5.3. Sample Text

Phonetic: nãmõ'nẽ 'nã tẽ'si:mã'i:, 'hãñ 'hãñ 'au "au, kɔ'mã:sɔ, mãm' } ɛ:wɛɛ'mãɛ,

Old Phon.: namɛɛi na tɛsimai, hani hani au au, komasɔ, mualiweimai,

Old Orth.: Nameneina tɛsimai, hani hani au au komaso, mualiweimai,

New Phon.: namɔnai na tɛsimɔi, hani hani au au, komasɔ, muwɔliwaimai,

New Orth.: Namonai na tosimoi, hani hani au au, komaso, muwoliwaimai,

Transl.: That-because-of that they-sit-always, what what taboo taboo, all, heavy-  
-with-at

Phonetic: 'au 'au 'kʌ:nĩsɔ nã'kɔ:mɔ. Mu: sãmũ:, 'mã:mɔ, tɛ: ɛ'wɔ: tata:,

Old Phon.: au au klanisɔ nɔkɔmɔ. fu sãmu, mamɔ, ti iwɔ tata,

Old Orth.: au au klaniso naakaamo. Fu sãmu, mamɔ, ti iwaa tata,

New Phon.: au au k lanis n k m . fu s mu, mam , ti iw t ta,

New Orth.: au au kolaniso nokamo. Fu somu, mamɔ, ti iwo tota,

Transl.: taboo taboo animal-to eat-pl-to. Pig meat, salt, tea water hot,

Phonetic: mãm' } ɛ:wɛɛ'mãɛ nã'kɔ:sɔmɔ, 'a: } ɔwɛɛ tã'ta:wɛɛ 'yau 'yau.

Old Phon.: mualiweimai nɔkɔsɔmɔ, aluweɛ tataweɛ yau yau.

Old Orth.: mualiweimai naakaasomo, aluweɛ tataweɛ yau yau.

New Phon.: muwɔliwaimai nɔkɔsɔmɔ, aluwai tatawai yau yau.

New Orth.: muwoliwaimai nokosomo, aluwai tatawai yau yau.

Transl.: heavy-with-at eat-pl-at-if, child-and she-emph-and dead dead.

Free Translation

So they live with all kinds of taboos, when they are pregnant,  
taboos about eating meat. If she eats pig meat, salt, hot tea  
water, when she is pregnant, the child and she will die.



Footnotes

1. These are about all writers there are in the Ama language group.
2. No actual counts of consistency was made, but the impression is that a writer is not completely consistent, though he shows certain definite patterns. One person was further trained after the first test and tested on the same material some time later.  
2. cont. below.
3. Any figures for a writer way above or below average has been omitted from the average and is shown separately. Where there is a division of opinion between Pigin/English writers and only tokples writers, the feeling of the tokples writers have been followed, as they will be in majority for some time. We also feel this is the more 'correct' feeling as they are not influenced by other systems.
4. /ɔ/ or ɔ will be used in most places of this paper for both /ɔ/ and /v/ of our old phonemic statement, which the people write o or aa . When used in another way this will be specifically stated.
5. This vowel has the first vowel stressed [ɔ̌] and is not the same as in 2.1.1.2. which phonetically is [ʌ̌].
6. [ǎ], [ǎ], and [ɛ̌] all seem to be interpreted as /ai/ by the literates.
7. The corresponding phonetic manifestation when preceded by /w/ seem to be [w̌'ǔ], when preceded by /k/ possibly /ǩ/.(see 2.2.3.)

## 2. cont.

His pattern was then somewhat changed going towards the pattern of the more schooled group. We assume from this that a person used to learning, learns other patterns and maybe loses his intuitive interpretation of the sounds of his language. The best persons for tests of this kind seem to be those who has no influence from reading or writing another language and is newly literate in his own language.

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