NASALIZATION IN ZIA

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To Ken,

With thanks!

Darryl

2) Results of Further Analysis of Nasalization

Outline

1. Introduction
2. Historical Reconstruction
   A. Nasalization as the result of a lost intervocalic nasal.
   B. Nasalization as the result of a lost final ng.
3. Phonology Rules

1. Introduction.

Using the traditional phonemic analysis I had proved that nasalization was phonemic, but there was "residue", and the orthography was awkward. I felt that the awkwardness was caused for the most part by the fact that the Zias had chosen to represent nasalization by the digraph ng. When I questioned Phanuel as to why they chose that symbol, he replied that that is what the nasalization sounded like to them. Although the 129 testees were firmly settled on the symbol, they couldn't agree as to where to write it, at least in certain words, as pointed out earlier in this paper.

Now, thanks to Ken McElhanon's consultant help, Generative Phonology has revealed the best orthography. And the amazing thing to me is that it indicates that the ng symbol is probably the most accurate representation of the nasalization.

2. Historical Reconstruction

A. Nasalization as the result of a lost intervocalic nasal.

Type 1: VNV became VV

a) Where proto N was an /m/.

English	Zia	Proto	Suena
'father'	mau	mamV	mama
'none'	au	amu	amu
'open'	dau	damu	damu
'skin'	tau	tamV	tama
'dirt'	beiti	bemiti	bemiti

Plus all u class verbs in the Imperative, as noted on page 16 of the Phonology section of Zia-Suena Grammar, (see Appendix).

Examples:

'run'	su	sumu	sumu
'carry'	diu	dimu	dimu

b) Where proto N was an /n/.

'billabong'	dia	dinV	dini
'womb'	tia	tinV	tini
'rotate'	aise-	anise-	anise-

c) Where proto N was an /nd/.

'skin'	aiso	andiso	aiso (andiso in Ewa Ge

Type 2: VŋV became VwV

English	Zia	Proto	Suena
'raft'	ẹwą	eŋa	ewa (enga in Parahara
'hand'	wąwọ	waŋV	wana
'branch'	bọwą	boŋa	bona
'middle'	tọwą	toŋa	sona ('horizon')
'they'	ąwọ	aŋo	ana ('what's-his-name
'fear'	ąwą	aŋa	--

Plus all First Person Singular Far Past morphemes:

'I did'	y-ẹwą	y-eŋa	wena
'I said'	s-ẹwą	s-eŋa	sena

Evidence that a Proto-Binandere /ŋ/ became /g/ or /w/:

In the word for 'canoe'

Notu	nga
Korafe	gaka
Zia	wą
Suena	wa

In the word for 'nest'

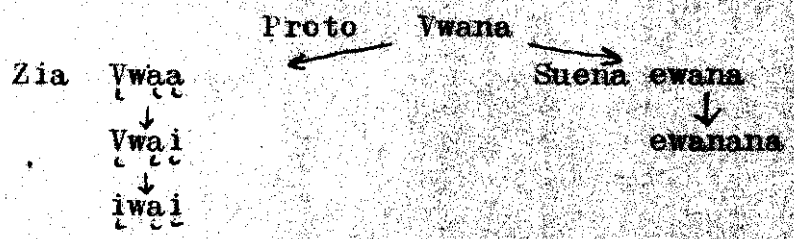
Orokaiva	ŋa
Zia	ụwą
Suena	wa

Type 3: aNa became ai

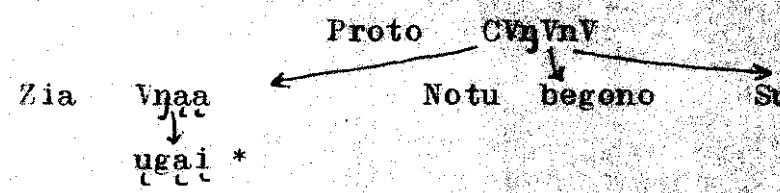
Theory: Lest a syllable be lost, intervocalic nasal between two low vowels became a nasalized two-syllable glide. In contrast, a lost nasal between two high vowels, being unable to glide higher, elided.

Evidence that aNa became ai:

In the word for 'good', Zia has iwai and Suena has ewana. I assume the derivation to be:



In the word for 'steal', Zia as ugai and Suena has bewana. I assume the derivation to be:



* Note: In this illustration we are concerned only with the fact that aNa became ai. Later we will trace how the ŋ became g.

Evidence that uNu became u:

English	Zia	Proto	Suena
'sit'	adu	andumu	arumu
'join'	susu	susumu	susumu

B. Nasalization as the result of a lost final ŋ.

1. Monosyllabic words:

English	Phonetic Zia	Proto-Zia	Zia orthography
'night'	pi̯	piŋ	ping
'shame'	me̯	meŋ	meng
'enough'	te̯	teŋ	teng
'dibble'	ti̯	tiŋ	ting

It is interesting to note that this lost final ŋ could account for the tone phoneme in Suena.

2. Poly-syllabic words:

'power'	puto̯u̯	putouŋ	putoung
'face'	benau̯	benauŋ	benaung
'greens'	za̯wi̯	zawiŋ	zawing
'drum'	gogo̯i̯	gogoiŋ	gogoing

w does not block nasalization
g blocks it

Evidence that these words are derived from a Proto -Vŋ rather than from a Proto -VNV comes from Suena. If they had been derived from a Proto VNV we would expect to find in Suena something like:
'power' putono, 'face' benana, 'greens' zani, 'drum' gogoni
But in fact the Suena is:
'power' putou, 'face' benau, 'greens' zawi, 'drum' gogoi.

That is, the Suena segmental phonemes are the same as the Zia segmental phonemes, minus the nasalization.

3. Bi-morpheme words:

English	Phonetic Zia	Proto-Zia	Zia orthography
'desist'	yą-do	yaŋ-do	yangdo
'tender leaf'	mǫ-da	moŋ-da	mongda
'soft'	i̧ya̧-sao	iyaŋ-sao	iyangsao
'white'	nȩya̧-yao	niyaŋ-yao	neyangyao
'black'	simi̧-yao	simiŋ-yao	simingyao
'one'	deka̧o̧-ka	dekaoŋ-ka	dekaongka
'hidden'	pu̧-yao	puŋ-yao	pungyao
'send'	i̧yȩ-tao	iyeŋ-tao	iyengtao
'completely'	ba̧i̧-tao	baiŋ-tao or baÑa-tao	baingtao

In most of these words we can no longer identify the root meanings of the individual morphemes. A few we can:

yao	'to do'
sao	'to say'
da	'leaf'
do	'cease'
ka	'honorific'

nasalization does not cross + segment phrase boundaries (some) wgt

3. Phonology Rules

The confusion over where to write the nasalization symbol has been clarified by determining which consonants allow nasalization to pass through them to another vowel, and which prevent nasalization from passing through them.

The following chart of consonant phonemes summarizes the findings, where:

circled phonemes --- obstruct nasalization
underlined phonemes -- pass on nasalization
boxed phoneme --- sometimes passes and sometimes obstructs nasalization
unmarked phonemes --- no occurrence found contiguous to a nasalized vowel

p	t	k
b	d	g
	r	
m	n	
	s	
	z	
w	y	

Rule #1: The slight nasalization of vowels contiguous to nasal consonants is not phonemic nasalization.

Thus the verb 'eating' is written as /mininasani/, rather than as per Mailander's orthography: mingningnangganing. Likewise, 'dark' is written simply /mume/, not mungmeng.

Rule #2: Nasalization of a vowel passes to a contiguous vowel

'face' benau from Proto benauŋ through benau

'drum' gogoi from Proto gogoiŋ through gogoi

Rule #3: Nasalization passes through w and y.

Examples:	iwai	'good'
	iyetao	'to send'
	zawi	'greens'

Rule #4: Nasalization is obstructed by p, t, k, b, d, m, n, and s.

Examples:

/p/	apuka	'short'
/t/	iyetao	'to send'
/k/	apuka	'short'
/b/	tibe	'cockroach' (Kate loanword, and only exampl of the sequence Vb in Zia)
/d/	ada	'fish's tail'
	moda	'tender leaf'
/m/	bamuwa	'I went'
	gugumuwa	'I packed up'
/n/	benau	'face'
/s/	asi	'vine'

Rule #5: Nasalization is obstructed by /g/ if the /g/ was historically a stop. But if the /g/ was historically a velar nasal or velar fricative, then the nasalization passes through the /g/.

Examples of historic stop:

gogoi	'drum'
gigiwa	'I saw'

Examples of historic fricative or nasal:

wagau	'barren'
ugai	'steal'

On the next page I have given a possible reconstruction of the Proto form of ugai 'steal' to indicate how it is that a present stop appears to allow nasalization to pass through.

A possible evolution of ugai 'steal'

I have already traced the way in which I believe the ai came from ana. (See above under B. 3).

Proto: CV-ŋVnV

Zia	Notu	Suena
Vŋai	begono	bewana
ugai		

It is possible that the initial syllable, marked as CV, was entirely lost in Zia, and that the present u- is a result of a /w/ in an earlier form. A possible evolution would be:

ŋai --> gai --> wai --> ugai --> ugai

Supporting evidence:

The word for 'nest'

Orokaiva	ŋa
Zia	uwa
Suena	wa

Example of historic velar nasal plus stop:
One final problem remains, and that is the word uwe or ue 'story'. My theory is that it derived from a velar nasal plus velar stop as follows:

ungge

Zia	Suena
uge	uge
uge	
uwe or ue	

Apparently the lost stop historically prevented nasalization from passing to the -e. Yet the loss of the /g/ is so far back in time that many speakers today feel that the nasalizatinn does pass to the -e. This accounts for the following Voting results:

Phonetic	Orthog.	Voters	Reasons
uwe	ungwe	31%	Sense the lost /g/
uwe	ungweng	29%	Sense the lost /g/, yet feel that nasalization
uwe	uweng	41%	Do not sense the lost

((This is the end of the digression on the Results of Further Analysis of Nasalization.))

c) Prenasalized Stops

Another problem with nasalization has been whether there really are prenasalized stops, or whether they are voiced stops following a nasalized vocoid.

The following chart is concerned with whether the native speaker of Zia feels this "prenasalized stop" to be a true nasal or not.

Chart #3: PRENASALIZED STOPS

		Dictation		Voting	
word	testees	no nasal	nasal	no nasal	nasal
magayao 'to die'	84	85	15	50	50
nugu 'close'	24	75	25	52	48
manga 'gums'	18	44	56	--	--
timbe 'cockroach'	83	41	59	40	60
nebu 'friend'	22	86	14	64	36
nabao "lie side by side'	18	100	0	--	--
angda 'tail'	84	34	65	9	91
yangdo 'cease'	55	42	58	8	92
mongda 'leaf'	52	62	38	26	73

From Chart #3 we can draw the following conclusions:

1. The phenomenon called "prenasalized stop" is rare in Zia. The nine words on the chart were the only ones Phanuel and several others could think of.

2. Of the prenasalized /g/, it seems clear that the vast majority do not wish to symbolize it for magayao 'to die' and nugu 'close'. The status of manga 'gums' is uncertain due to the small number of testees.

3. Of the prenasalized /b/, it is clear that the vast majority do not wish to symbolize it for nebu 'friend' and nabao 'to lay side by side'. We were hard put to explain their desire to write a nasal in timbe 'cockroach' until Phanuel pointed out that this is a loan word from Kate. (In Kate it means 'ant lion'.) I searched the Zia Dictionary containing over 1,000 entries and could not find another example of the sequence -ibe with which to contrast this loan word. I conclude that the sequence -ibe does not occur in Zia.

4. Of the prenasalized /d/ the words yangdo 'desist' and mongda 'tender leaf' appear to be compound or bi-morpheme words, since the forms do 'stop' and dang 'leaf' are common. Thus this medial /d/ is accounted for by viewing yang- and mong- as prefixes whose distribution is limited to these two words. This is further confirmed by the fact that 31% of the testees wrote yangdo as opposed to 27% for yando; and for mongda 23% as opposed to monda 15%.

This leaves only the word angda 'fish's tail'. Here 38% wrote anda, and 26% angda. For sake of consistant analysis I interpret this as a bi-morpheme word after the pattern of yangdo and mongda. That is, as a stop following a nasal vowel, since there is no contrast between this "prenasalized stop" and a voiced stop preceded by a nasal vowel.

One final note. Eliminating timbe 'cockroach' because it is a loanword, and eliminating the bi-morpheme words angda, yangdo, and mongda, we are left with the words: magayao, nugu, manga, nebu, and nabao, all five of which begin with a nasal consonant. As noted previously (Phonology Rule #1), vowels contiguous to nasals have a non-phonemic nasalization. This nasalization probably causes some speakers to feel that the stop is prenasalized.