

# Supplemental Discussion for Tainae Phonology Essentials

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## 1. Introduction

This paper is written as a supplement to *Phonological processes and syllable structure in Tainae*, an MA thesis submitted to fulfill the requirements of the PNG branch for a phonology essentials paper. Following the introduction will be three sections, each answering a particular question or group of questions presented to me by the reviewing consultants. Section 2. will deal with specific questions about possible erroneous data (including typographic errors), or interpretations of the data. Section 3. will discuss the incorporation of loan-words within the Tainae phonological system. In section 4. I will present a re-analysis of the voiceless intervocalic stops. Section 5. will be set aside for re-interpretation of certain surface forms and variant spellings. Finally, section 6. will present a more complete analysis of stress than was found in *Phonological processes and syllable structure in Tainae*.

## 2. Errata

In this section I will first address specific questions about typographical errors which have a possible effect on the analysis of data or which are confusing to the reader, and then answer the questions about specific analytical interpretations. I will not include corrections of simple English misspellings.

### 2.1. Typographical Errors

Beginning with Henry Whitney's questions, the compound form in (6)c, p. 11 should be [kʷabimæ]. The bilabial stop is voiced in this case.

On page 13, the proper representation for 'necklace' ought to be [horoʔpe]. In this instance the bilabial is voiceless.

In example (37) p. 30, the glosses for [fi'nanu], and [fəbinu], should be 'one' (CL:FLAT) and 'one' (CL:FFM) respectively. Only [fonu] should be glossed as 'one' (CL:MASC).

The third item in example (59), p. 44, [kʷæ], is improperly labeled *b*. It should be *a*.

The slash marker (/) indicating "in the environment of" was omitted in examples (64), p. 45, and (68), p. 47. In both examples it should immediately precede the underlining indicating the insertion point of the segment(s).

On p. 92, example (142) d, the underlying form should be /uako/.

Moving on to Eileen Gasaway's comments. Concerning comment 3a regarding labeling on the inset map, I believe there are no mistakes in the placement of numbers.

Concerning comment 3b, footnote 6 states that the question of glottal stops status as a consonant or suprasegmental would be discussed later on in the paper, as it was in section 2.2.

Comment 3c is the same as one of the questions Henry had, and has been addressed above.

Comment 3d. On p. 18, the last line of the first paragraph should read "from /tC/ or /Ct/".

Comment 3e. The second paragraph on p. 27 states that it is as a result of stress application searching for a penultimate syllable to which to attach itself that the nasals in words like [ˈmgaɪ̃] and [ˈmɔ̃ɛ] become syllabified.

### 3. Incorporation of Loanwords

In most instances, the incorporation of loanwords into the Tainae phonological system is fairly straightforward, involving a simple substitution of Tainae phonemes for the corresponding loanword phonemes. Due to the different patterns of consonant clusters allowed or disallowed by Tainae, the transfer of consonants is much more problematic than that of vowels. In this section I will list each Tainae phoneme along with the various sounds for which they may substitute, along with examples for each sound. Following that, I will present any rules of incorporating loanwords which fall outside a strict substitution.

#### 3.1. Vowels

Vowels in Tainae substitute for those vowels in the loanwords which are closest to them phonetically. As the range of Tainae vowels is fairly extensive — 12 phonetic from 6 phonemic — this is a fairly straightforward process and normally needs no explanation. I shall first list the individual Tainae consonants and the consonants for which they are substitutes, and then list some examples under the heading of each phonemic vowel. In each example will be listed the orthographic representation (which closely parallels the phonemic representation), its phonetic pronunciation, and the loanword. All loanwords will be English examples unless followed by (tp), indicating a Tok Pisin word.

#### (1) Vowel Substitutions<sup>1</sup>

<u>Tainae</u> <u>Vowel</u>	<u>Loanword</u> <u>Sound</u>	<u>Tainae</u> <u>Vowel</u>	<u>Loanword</u> <u>Sound</u>
a	[a, ʌ, ə]	o	[o]
e	[e, ɛ, ɪ]	u	[u]
i	[i, ɪ]	æ	[æ]
ɪ	[i, i, ɪ, u, ʊ]	ao	[ɔ]

#### (2) *i*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
Inoko	[iˈnogo]	Enoch (name)
Aisako	[aiˈsago]	Isaac (name)
wine	[ˈwini <sup>2</sup> ]	win
mpati	[ˈmbari]	balus (tp-airplane)

<sup>1</sup>In this figure and in figure 2, loanword segments are listed in phonetic transcription to demonstrate the range of substitutions possible. In the subsequent examples the loanwords will be written in their respective orthographic representations.

<sup>2</sup>When said on a word in isolation or phrase finally, a final *e* in Tainae is pronounced as a high open front vowel, [ɪ].

(3) *e*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
Epitihamo	[ebiri'hamo]	Abraham (name)
Teti	['teri]	Terry (name)
scene	['seni]	sen (tp-zippers)
Adaepi	[a'dæbi]	Adah (name)

(4) *a*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
anikise	['anigisi]	onyx
kapike <sup>3</sup>	['kabiɣi]	kap (tp-cups)
Adaepi	[a'dæbi]	Adah (name)
Me'tusetao	[metu'serɔ]	Methuselah (name)

- (5) *i*
- The high central vowel is used in loan words mainly as an epenthetic vowel to break up unacceptable consonant clusters, and its use as such will be discussed in a following section. The other occurrences of *i* in loanwords involve labialization and palatalization, so that the resultant surface forms are [u], [ʊ], [i] and [ɪ].

(6) *u*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
Sumpato	[su'mbaro]	Jubal (name)

(7) *o*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
kope	['kobi]	kopi (tp-coffee, plural form)
Me'tusetao	[metu'serɔ]	Methuselah (name)
Sumpato	[su'mbaro]	Jubal (name)

### 3.2. Consonants

Substitution of Tainae consonants in loanwords is necessarily more complex because of the limited number of consonants, and because of the limitations upon consonant clusters. In this section I shall first list the individual Tainae consonants and the consonants for which they are substitutes, then examples for each. Explanation will follow the examples only when necessary.

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<sup>3</sup>On most borrowed common nouns, though never on proper nouns, the letter *k* is suffixed before plural or noun class markings. In the case of the word root ending in a consonant, an epenthetic *i* is inserted between the root and the *k*, to avoid an unacceptable consonant cluster.

## (8) Consonant substitutions

Tainae	Loanword	Tainae	Loanword
<u>Consonant</u>	<u>Sound</u>	<u>Consonant</u>	<u>Sound</u>
p	[p, b, f]	h	[h]
t	[t, r, d, l, ɹ, θ, ð]	f	[f]
k	[k, g]	s	[s, z, ʃ, ʒ, tʃ, dʒ]
d	[d]	v	[v]
m	[m]	w	[ʊ]
n	[n, ŋ]	y	[i, dʒ, h]

(9) *p*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
pase	['pasɪ]	pas (tp-letters)
pepae	['pebæ]	paper (plural)
kapike	['kabɪɹ]	kap (tp-cups)
mpikwe	['mbug <sup>w</sup> ɪ]	books
Sepite	['seɪɪɹ]	Jeffrey (name)

As can be seen above, *p* substitutes normally for a voiceless bilabial stop, though it becomes voiced intervocalically. While it is certainly possible within the Tainae system for it to remain voiceless intervocalically, the relatively infrequent occurrence of this sound leads the native speaker to interpret intervocalic bilabial stops as voiced. This pattern will be evident for *t* and *k* as well. *P* also combines with a homorganic nasal to substitute for word initial [b], again, as *t* and *k* do for initial [d] and [g] respectively. Note the final example in (9); normally, Tainae *f* substitutes for the sound [f], but in the borrowed name 'Jeffrey', the sound [b] is substituted. It may be in this case that the name was originally borrowed into Tok Pisin, where a [p/b] substitution for [f] is fairly common, and then it was borrowed into Tainae.

(10) *t*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
tanimineti	[tanimi <sup>h</sup> neri]	tainim (tp-turn)
Teŋ	['teri]	Terry (name)
ptɛŋyame	[bdɛri <sup>h</sup> amɪ]	bdellium
Mante	['mandɛ]	Mande (tp-Monday)
atetikiti	[a <sup>h</sup> rerigiri]	let (tp-belt)
Seto	['sero]	Seth (name)

While *t* patterns similarly to *p*, it also is used for [l, ɹ, θ, ð]. In most cases where a loanword begins with the letter 'l', the Tainae letter *a* is prefixed, thus preserving for the speaker a differentiation between initial 'l' and 't'.

(11) *k*

<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
kapike	['kabɪɹ]	kap (tp-cups)
ŋavimano	[ŋgavi <sup>h</sup> mano]	gavman (tp-government official)

(12)	<i>d</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	Danieto ~	[da'njero ~	Daniel (name)
	Ntanieto	nda'njero]	
	Adacpi ~	[a'dæbi ~	Adah (name)
	Antaepi	a'ndæbi]	

Note that in the case of *d*, it is very often perceived as a prenasalized sound by the Tainae speaker. In such an instance, in order to be consistent with the spelling of other stops when prenasalized, it is written as *nt* rather than *nd*. There is no language internal motivation for positing the sequence /nd/.

(13)	<i>m</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	masise	['masisi]	mases (tp-matches)
	simene	[si'meni]	simen (tp-cement)
	mpikwe	['mbug <sup>w</sup> i]	books

(14)	<i>n</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	nitike	['nirigi]	nīl (tp-nails)
	simene	[si'meni]	simen (tp-cement)
	Mante	['mande]	Mande (tp-Monday)
	nkote	['ŋkoti]	gold

Note from the above example that in the sequence *nt* the *n* is realized phonetically as [n], while in the sequence *nk* it is realized as [ŋ].

(15)	<i>h</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	Hamo	['hamo]	Ham (name)
	Mahatateto	[mahara'rero]	Mahalalel (name)

(16)	<i>f</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	Fitanisisi	[fi'ranisisi]	Francis (name)
	Yufitetisu	[ɟufi'rerisu]	Euphrates (name)

(17)	<i>s</i>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	sene	['seni]	sen (tp-zippers)
	masise	['masisi]	mases (tp-matches)
	Aisako	[ai'sago]	Isaac (name)
	Misaepi	[mi'sæbi]	Misha (name)
	Sekopo	[se'gobo]	Jacob (name)

Though I have found no instances yet of *s* substituting for the sounds [ʒ] and [tʃ], because it does substitute for [dʒ] and [ʃ], I would surmise that it would also for the former two sounds if words containing them are ever borrowed into the language. In the case of a Tainae substitution for [dʒ], in word initial position followed by *i*, *e*, *a*, or *o*, the letter substituted is *s*; when followed by *u*, the substitutionary letter is *y*.

(18)	<b>v</b>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	Havita	[ha'vira]	Havilah (name)

I have noted no occurrences of word initial *v* in any loanwords, though I know of nothing which would preclude the possibility of such occurring if a borrowed word began with the sound.

(19)	<b>w</b>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	pitawae	[pi'raʷæ]	plaua (tp-flour)

(20)	<b>y</b>		
	<u>Orthographic</u>	<u>Phonetic</u>	<u>Loanword</u>
	Yufitetisu	[jufi'rerisu]	Euphrates (name)
	Yutepi	[ju'rebi]	Julie (name)
	Meyusaito	[meju'sairo]	Mehujael (name)

As can be seen from the final entry in (20), *h* is not allowable after *e* in Tainae, and so is changed to *y*.

#### 4. Reinterpretation of Voiceless Intervocalic Stops

In previous work I proposed that voiceless intervocalic stops were the result of an underlying sequence /kC/ (Carlson, 1988:18-22) that was realized on the surface in slow speech as [ʔC] and in rapid speech as simply [C]. I noted that while the bilabial and coronal stops, /p/ and /t/ occurred as the first segment of consonant clusters, the velar stop /k/ never did so. By positing /k/ in the initial position of a consonant cluster which obligatorily became deleted (in fast speech) or turned to glottal stop (in slow speech), I was able to avoid including glottal stop within the phonemic inventory. Although this analysis is somewhat abstract, it did account for the data, and since glottal stop never appeared by itself on the surface, there was no conclusive evidence of its existence.

I would like to propose now however, that my previous analysis was in error, and that glottal stop does in Tainae, albeit with a very limited distribution. I will draw support for this change in analysis from three independent areas. These are: 1) its occurrence in other Angan languages; 2) the absence of initial /k/ in clusters can be accounted for by a sonority hierarchy; and 3) simplicity of analysis.



#### 4.1. Occurrence of Glottal Stop in other Angan Languages

To posit a glottal stop in the phonemic inventory of Tainae would not be a unique analysis for an Angan language. In one analysis of Baruya it infrequently occurs intervocalically, but when occurring before a voiceless stop causes the stop to remain voiceless and prevents it from becoming a fricative:<sup>4</sup>

- |      |    |            |              |                       |
|------|----|------------|--------------|-----------------------|
| (21) | a. | /wɔyɔʔɛlo/ | [ʋɔjɔʔɛ:lɔ:] | (boy's name)          |
|      | b. | /dɔʔpɔʔko/ | [ndɔp:ɔk:ɔ:] | 'Let them cut!'       |
|      | c. | /dɔpɔno/   | [ndɔβɔnɔ:]   | 'here'                |
|      | d. | /ɔʔtɔ/     | [ɔt:ɔ]       | 'hand'                |
|      | e. | /yɔtɔ/     | [jɪtɔ]       | 'Look!' (exclamation) |
|      | f. | /tɔʔkɔ/    | [tɔk:ɔ]      | 'armband'             |
|      | g. | /yɔkɔlɔ/   | [jɔvɔlɔ]     | (ant species)         |

The word in a. of example (21) shows one of the rare occurrences of glottal stop intervocalically. Of the remaining six words, note in b., d., and f. that the glottal stop before *p*, *t*, and *k*, causes them to remain voiceless (and lengthens them), while in c., e., and g. the same stops become fricatives.

In Angaatiha, glottal stop "occurs only intervocalically, with one exception (/ʔɔtɔtɔ:ʔɛ/ 'he said to you'), and before /w/." (Huisman, Huisman, and J. Lloyd, *Angaatiha Syllable Patterns*, in Healey, 1981:55). In this case, while the glottal stop does not occur in most consonant clusters (so that its effect on a succeeding consonant is unknown) it does clearly function as a consonant intervocalically.

Healey lists glottal stop as a part of the phonemic inventory of Kapau (also known as Kamean, Hamdei, Hamtai) (Healey, A., *The Phonological Complexity of Kapau*, in Healey, 1981:95).

In Cochran, West and Weimer's analysis of Ampeeli-Wojokeso, glottal stop is regarded as a prosodic feature<sup>5</sup> as it only occurs syllable finally and does not contrast with other stops in a similar position (Cochran, West and Weimer, *Ampeeli-Wojokeso Consonant Clusters*, in Healey, 1981:85). Whether this analysis of glottal stop as a suprasegmental feature is correct or not, note, however, that sequences of /Vʔ/ and /CVʔ/ can occur:

- |      |     |           |          |
|------|-----|-----------|----------|
| (22) | Vʔ  | /aʔ.a.mu/ | 'person' |
|      | CVʔ | /naʔ.u/   | 'mother' |

In Angave, Speece also analyzes glottal stop as a suprasegmental, citing its peculiar distribution (syllable final vs. syllable initial for other consonants), its high frequency in comparison to other consonants, the fact that it often is deleted in normal speech, and the speakers' lower perception of it (often dropped out when a word is said slowly to demonstrate syllabification) as support for this analysis (Speece, 1981:73-74). Some examples:

<sup>4</sup>Data are from Lloyd, J. and A. Healey, *Baruya Phonemes*, in Healey, 1981:6,7.

<sup>5</sup>By this I believe the authors mean a suprasegmental feature.

<sup>6</sup>The data here are taken from Cochran, West and Weimer, *Ampeeli-Wojokeso Consonant Clusters*, in Healey, 1981:85. Although syllable breaks are indicated within phonemic brackets, I do not believe it was the intent of the authors to imply that syllable breaks are phonemic.

(23)	/ʼemʌ/	[ʼemə]	'away'
	/ʼēmʌ/ʳ	[ʼeʔmə]	'again'
	/ʼaTōo/	[ʼaroʔo]	'grandfather'
	/ʼaTōō/	[ʼaroʔoʔ]	'cockatoo'

While the analyses differ as to the status of glottal stop from case to case, its presence is not questioned by any of the authors.

#### 4.2. Tainae Sonority Hierarchy

When attempting to determine the make-up of syllables, certain authors make use of the term *sonority* as used by Bloomfield in *Language* (1933:120-1) as an aid in resolving possible syllable types and allowable sequences of phoneme clusters. Goldsmith states that the sonority hierarchy shown in (24) is generally accepted (Goldsmith, 1990:111):

#### (24) Sonority hierarchy

vowels  
     low vowels  
     mid vowels  
     high vowels  
 glides  
 liquids  
 nasals  
 obstruents  
     fricatives  
     affricates  
     stops

He further gives an example of an effort to quantify sonority, this particular attempt being attributed to Selkirk (1982):

#### (25) Sonority hierarchy

<u>Sound</u>	<u>Sonority Index</u>	<u>Sound</u>	<u>Sonority Index</u>
a	10	s	4
e, o	9	v, z, ð	3
i, u	8	f, θ	2
r	7	b, d, g	1
l	6	p, t, k, ʔ	0.5
m, n	5		

The claim is then made by some that a scale such as this may be used to make an exact statement about the requirements of allowable phoneme sequences within a given language. While many languages may have fairly strict requirements about the numerical spread between adjacent segments in a cluster, for

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<sup>7</sup>Note that because of his analysis, Speece represents glottal stop phonemically as a macron over the vowel which is closed by a glottal stop.

some sequences Tainae seems to allow a very minimal difference between neighboring segments, yielding such phonetic sequences as [bd] and [bg] in the syllable onset position. The presence of such sequences and the absence of [gC] on the surface was in part responsible for the previously mentioned proposal that the sequence /kC/ was responsible for the surface forms [ʔC] and [C] (where C remains voiceless).

I would like to propose that for Tainae, the sequence of allowable consonant clusters is determined in part by such a sonority hierarchy along with certain articulatory restrictions.<sup>8</sup> Consider the following examples of consonant clusters:

- |      |    |        |       |         |    |         |          |            |
|------|----|--------|-------|---------|----|---------|----------|------------|
| (26) | a. | /mma/  | [mma] | 'rain'  | e. | /ntiki/ | ['ndigi] | 'yours'    |
|      | b. | /mpae/ | [mbæ] | 'money' | f. | /nkake/ | ['ŋgagi] | 'noises'   |
|      | c. | /mte/  | [mɔ]  | 'hair'  | g. | /ptaio/ | ['bdaio] | 'lorikeet' |
|      | d. | /mke/  | [mgi] | 'eggs'  | h. | /pke/   | [bgi]    | 'vines'    |

In all of the above examples the of the sonority index pairs are 5-5 (a), 5-1 (b-f) or 1-1 (g, h). The data seem to indicate that such clusters in Tainae may have either an equal sonority index (a, g, h), or a decreasing index (b-f). By observation (no examples of 1-5 are found) the sonority value of the first segment of a consonant cluster must equal or exceed that of the second, eliminating such strings as /pm/, /tm/, /pn/, /tn/, or /km/. Because these observations do not rule out the possibility of sequences such as /nm/, /np/, /tp/, /kp/, or /kt/, I believe it is possible that another parameter is acting in conjunction with sonority ordering to restrict the set of possible consonant clusters.

I would like to posit that the point of articulation of each segment in a consonant cluster is relevant to its potential for pronunciation in Tainae. Since Tainae differentiates four (or five if glottal stop is accounted full phonemic status) points of articulation, I will assign a value to each of them in the following manner:<sup>9</sup>

(27)	Point of articulation	Value
	Bilabial	5
	Labiodental	4
	Alveolar	3
	Velar	2
	Glottal	1

By this system, the further forward in the mouth a consonant is pronounced, the higher its value. For instance, the phoneme /p/ would have a value of 5, while the value of /k/ would be 2. Applying this scheme to the data in (26) (ignoring all else but the point of articulation of the consonant clusters), the following sequences would result:

<sup>8</sup>For purposes of simplicity I am omitting discussion of palatalization and labialization of consonants. These processes do not seem to have any bearing on the present discussion.

<sup>9</sup>The assignment of a value to the point of articulation at this stage is arbitrary as to whether those sounds in the front of the mouth or those in the back are accorded a higher value. My reasons for assigning those further forward in the mouth a higher value will become apparent as the argument proceeds. The crucial detail at this stage is that the numbering be sequential.

- (28) a. /mna/ 5-3 'rain' e. /ntiki/ 3-3 'yours'  
 b. /mpae/ 5-5 'money' f. /nkake/ 3-2 'noises'  
 c. /mte/ 5-3 'hair' g. /ptaio/ 5-3 'lorikeet'  
 d. /mke/ 5-2 'eggs' h. /pke/ 5-2 'vines'

In each of the words in (28), the value of the first segment is greater than or equal to that of the second. For each pair of consonants then, two index pairs would exist: a sonority index pair and an articulation index pair. For any given consonant cluster to be allowable in Tainae, each pair of indices must meet the following requirement:  $C_1 \geq C_2$ . The following matrix shows which clusters are allowable (indicated by a blank in the grid), those that are disallowed by their sonority index pair (s), and those disallowed by their articulation index pair (a):

(29) Allowable consonant clusters

		second segment in cluster				
first segment in cluster		m	p	n	t	k
	m					
	p	s		s		
	n	a	a			
	t	s,a	a	s		
	k	s,a	a	s,a	a	
	?	s,a	a	s,a	a	a

The confluence of the two indices indicated in (29) correctly reflects the data shown previously in (26) and prevents the occurrence of the sequences /nm/, /np/, /tp/, /kp/, or /kt/, which the sonority indexing could not accomplish by itself.

There remain a few questions, however. According to the chart, geminate clusters should be allowable, but with the exception of /tt/ (which results in [d], see Carlson, 1988:13-16), none of the others appear in any data. Given that consonant clusters obligatorily voice in Tainae, it is possible that such clusters occur and then regularly degeminate, which would make them indistinguishable from a single consonant in a /VCV/ sequence. A second problem is with the sequence /tk/, which neither sonority nor point of articulation constraints would disallow, yet which does not occur in the data. It is possible that the formula for constraining allowable clusters is not restrictive enough for the point of articulation, but if it were modified so that if two segments were of equal sonority, they would be required to be separated articulatorily by a factor of 2 or greater, it would account for the absence of the sequence /tk/.

A more difficult problem than either of the two previously mentioned involves the status of glottal stop itself. The value of glottal stop in the point of articulation chart in (27) is 1, as it is the farthest back in the mouth of any of the consonants. If it patterns as do other consonants, then no sequence beginning with a glottal stop would be allowed, as (29) shows. The trouble is that /ʔC/ is the very sequence I would like to claim results in a voiceless consonant on the surface. One possible solution would be to relegate glottal stop to the status of a suprasegmental feature which attaches itself to the following consonant resulting in a voiceless consonant. As a suprasegmental feature, it would not interact with adjoining consonants in exactly the same way as a full phoneme would. I feel this solution is less than optimal, but it would account for the data, and in light of glottal stop's status as a suprasegmental in the analysis of other Angan languages, is not implausible.

### 4.3. Simplicity of analysis

In spite of the few difficulties listed at the end of section 4.2., taking into account the sonority and articulatory placement of the segments in determining whether a cluster is allowable is a more straightforward analysis than positing an underlying /kC/. The rule of K Deletion, which obligatorily changed /k/ to a glottal stop in slow speech, or deleted it altogether in fast speech, is no longer necessary. Instead, simple glottal deletion - a process which evidences itself in both Baruya and Angave - would occur after the rule of intervocalic stop voicing was applied, yielding derivations of the following type:

(30) Glottal Deletion examples

	a. /aʔto/ 'spleen'	b. /ato/ 'grandfather'	c. /aptae/ 'okari nut'
stop voicing	—	aro	—
glottal deletion	ato	—	—
cluster voicing	—	—	abdae
phonetic form	[ato]	[aro]	[abdæ]

  

	d. /hotoʔpe/ 'beads'	e. /katope/ 'sweet potato variety'
stop voicing	horoʔpe	karobe
glottal deletion	horo	—
cluster voicing	—	—
phonetic form	[horopi]	[karopi]

Such an application of rules accounts for all the surface forms, without the additional step of a /k/ in a cluster becoming a glottal stop before it is deleted.

Because of the evidence cited, namely occurrence in other Angan languages, the interaction of sonority and articulation indices, and simplicity of analysis, I believe it is advantageous to posit glottal stop as a suprasegmental feature of Tainae.

## 5. Reinterpretation of Spellings

On the basis of data gathered at the time I wrote *Phonological processes and syllable structure in Tainae*, I made some assumptions about the spelling of certain labialized and palatalized words which are now clear to me were in error. In this section I will list phonetic sequences involving labialization and palatalization, their possible interpretations, and criteria for choosing the appropriate spelling.

### 5.1. [ug<sup>w</sup>], [uɣ<sup>w</sup>]

In *Phonological processes and syllable structure in Tainae* the claim was made that the phonetic sequence [ug<sup>w</sup>] derives from two underlying phonological sequences: /uk/ and /iku/. There is no need at this time to change the analysis as there exist unambiguous examples of each sequence:

- (31) a. /fu'ka/      ['fu.k<sup>w</sup>ə]      'two' (INDT)  
       b. /nikua/      ['nu.ɣ<sup>w</sup>ə]      'we (pl) ate'

The process works in the same way when the consonant in the sequence is /f/. **Orthographic conventions:** when the underlying sequence is unambiguously /ikw/ or /ifw/ (as at morpheme boundaries) spell *ikw* and *ifw*. In all other instances, spell *uk* and *uf*.

## 5.2. [uC<sup>w</sup>] (other labialized consonants)

In *Phonological processes and syllable structure in Tainae* the claim was erroneously made that the phonetic sequences [um<sup>w</sup>] and [ub<sup>w</sup>] derive from underlying phonological sequences similar to those shown in 5.1.: /um/ and /imu/, and /up/ and /ipu/. Since that time I have discovered that although the sequences /imw/ and /ipw/ do result in [um<sup>w</sup>] and [ub<sup>w</sup>], there are no unambiguous examples of the sequences /um/ or /up/ resulting in labialized consonants, and numerous counter-examples where the consonant remains unlabialized.

- (32) a. /yupeti/     [yu.'be.ri]     'soar'  
       b. /sumapke/     [su.'ma.bgi]     'covers'

**Orthographic conventions:** all instances of [um<sup>w</sup>] and [ub<sup>w</sup>] are derived from underlying /imu/ and /ipu/ and will be spelled *imw* and *ipw*.

## 5.3. [ig<sup>j</sup>]

In *Phonological processes and syllable structure in Tainae* the claim was made that the phonetic sequence [ig<sup>j</sup>] derives from two underlying phonological sequences: /ik/ and /iki/. This process is similar to that shown in 5.1. However, in subsequent examinations of data, it has become clear that there are no unambiguous examples of [ig<sup>j</sup>] deriving from /iki/. All unambiguous examples show the derivation to be from /ik/.

- (33) a. /fi'ka/     ['fi.k<sup>j</sup>a]     'two' (ANIMATE)

Add to this the fact that unlike [g<sup>w</sup>] no words begin with the sequence [g<sup>j</sup>], and there exist no grounds for positing the sequence [ig<sup>j</sup>] as deriving from /iki/. **Orthographic conventions:** all instances of [ig<sup>j</sup>] are derived from underlying /ik/ and will be spelled *ik*.

## 6. Stress

Normally, in both nominals and verbs, stress in Tainae is automatically assigned to the penultimate syllable of the word. However, if the vowel in the penultimate syllable is /i/, stress recedes to the first syllable (if any) which contains a vowel other than /i/. The exception to this would be a two syllable word.

- (34) a. /inko/      ['i.ŋg<sup>1</sup>o]      'the bird'  
 b. /fantewo/    [fa.'ndc.wo] 'the scorpion'  
 c. /hamtito/    ['ha.mdi.ro] 'the snake'  
 d. /himke/      ['hi.mgi]      'springs'

The avoidance of /i/ as a stressed syllable is so strong that stress will attach to and syllabify a nasal before it will attach to /i/.

- (35) a. /mpwihac/    ['m.b<sup>w</sup>i.hæ]      'banana' (species)  
 b. /mpinu/        ['m.bi.nu]        'one' (FLUID)  
 c. /mpati/        ['mba.ri]        'airplane'

In example (35) c. above, it can be seen that when a vowel other than /j/ is in an antepenultimate syllable beginning with a nasal, the nasal does not syllabify. This same syllabification process occurs on the monosyllabic words like /mkai/. Stress recedes, finds no vowel, so another rule syllabifies the nasal, after which stress is added, resulting in ['m.gaj̥].

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