

# THE CONSONANTS OF CHAMORRO

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## 1. INTRODUCTION

This paper completes the presentation of my analysis of Chamorro phonology. Vowel phonology was described in considerable detail in a recent paper (1975); previous views and controversies about Chamorro vowels were discussed in an earlier paper (1973).

The dialect of Chamorro being described is that of Guam, specifically of the area of the capital city, Agaña [ha.gáʔ.ña].<sup>1</sup> This description focuses on the Casual style of speech, which is one of four styles which can be conveniently recognized in the repertoire of most speakers.<sup>2</sup> My terms for these four styles of speech are: Pedantic, Careful, Casual, and Fast. Both Pedantic and Fast speech involve frequent distortions of speech norms, and are better left for special descriptive treatment. Careful speech is the most understandable to a novice, but lacks many natural changes. Casual is a relatively well-balanced style, in terms of communicative efficiency, for both native and novice. It is low in distortions which make for misunderstanding; it is not overly fast or slow; and it is the natural style for relaxed conversation. By way of contrast, Fast speech is difficult at times for even a native to understand, due to speed and slurring, and the informative function is further diluted by tension and the emotional connotation (as in speaking under stress of excitement, anger, or anxiety). Pedantic speech, on the other hand, is excessively slow, and features being demonstrated are over-emphasized. This often results in placing stress on a normally unstressed syllable, to show the normatively correct pronunciation of its segments (at the expense of mispronouncing the whole word or phrase). For these reasons. Casual speech provides the best illustration of the norms of Chamorro pronunciation.

## 2. THE CONSONANT PHONEMES

## 2.1. CONSONANT CHART

The consonant phonemes are given below:

CHART 1  
Consonant phonemes.

p	t	k	ʔ
b	d	g	
		gw	
	ts		
	dz		
f	s		h
m	n	ñ	ŋ
	l		

Three multi-segment consonant phonemes /ts dz gw/ are given here in their phonetic forms, as opposed to the use of /t̤ ʒ g/, so that their relationships with their single-segmented allophones will be more obvious.

From Spanish, and occurring only in Spanish loan words, Chamorro now has the following additional consonants :<sup>3</sup>

/r/	fíó.řis	< flores,	<i>flower</i>
/tr/	tróŋ.kun há̃.dzɥ	<i>tree</i>	< tronko, <i>tree-trunk</i>
/bl/	l'ép <sup>1</sup> .bɪɥ	< libro,	<i>book</i>
/nʷ/	nʷé̃.bu	< nuevo,	<i>new</i>

Of uncertain historical or derivational origin is [pʷ], occurring in at least one native word [pʷéŋ.ŋi] *night*, as well as in Spanish loan [pʷes] *then*. See Section 4.4. for further discussion.

## 2.2. CONSONANT FREQUENCIES

Consonant frequencies are of considerable importance, as they indicate and document certain preferential trends in consonant phonology. These trends, in turn, can often be related to known or probable historical sound changes. For example, /b/ is very rare in Chamorro, and it is known that /b/ in Indonesian cognate languages (Tagalog, for one) appears as /p/ in Chamorro in a high percentage of cases. One might then expect /p/ to be a very common Chamorro consonant. However, a tendency in Chamorro to replace Indonesian /p/ with /f/ keeps the

frequency of /p/ down to an average percentage.

A consonant frequency chart follows:

CHART 2

Consonant phoneme frequencies. Average occurrence = 6%

Consonant	Initial	Medial	Final	Totals	%
p	18	20	2	40	5
b	4	5	0	9	1
t	41	46	10	97	12
d	14	24	0	38	5
k	16	24	18	58	7
g	26	32	0	58	7
ʔ	0	46	49	95	12
gw	16	8	0	24	3
ts	20	17	0	37	5
dz	9	6	0	15	2
f	17	15	10	42	5
s	25	12	10	47	6
h	43	39	0	82	10
m	25	21	5	51	6
n	22	29	9	60	7
ɲ	1	8	0	9	1
ŋ	2	9	3	14	2
	<u>321</u>	<u>389</u>	<u>114</u>	<u>823</u>	<u>100</u>

### 2.3. CONSONANT SOUND SHIFTS.

The consonant phoneme frequency chart indicates some trends in Chamorro phonology which have been documented elsewhere. A number of consonant sound shifts have been mentioned by Safford (1903), Conant (1911), Witucki (1974a), and others. The most important of these changes are given below, with examples taken from recent publications, except in two cases when informants were used. The change rules given, in the form /x/ → /y/, indicate that the phoneme /x/ in the related languages is found as /y/ in Chamorro. Languages cited are those most closely related to Chamorro; such languages are found in the Philippines (Tagalog, Bisayan, Dayak, etc.) and in Sumatra, Java, the Celebes, and near islands.

## Abbreviations and sources:

Cham.	=	Chamorro (Guam):	See Note 1.	
Tag.	=	Tagalog (Luzon):	Ramos 1971.	
Man.	=	Manobo (Mindanao):	Elkins 1968.	
Ind.	=	Indonesian (Jakarta informant).		
Tond.	=	Tondano (Celebes):	Sneddon 1970.	
Rat.	=	Ratahan (Celebes):	Sneddon 1970.	
Cham.	Tag.	Man.	Ind.	Tond.

## /p/ → /f/:

<i>fire</i>	gwafi	apóy	hapuy	api	api
<i>tooth</i>	nifin	ŋipin	ŋipen		
<i>what?</i>	hafa	anú		apa	sapa

(This change would work to reduce the frequency of Chamorro /p/; however, the shift next listed maintains its frequency at an average level, and also explains the rarity of /b/ in native Chamorro words.)

## /b/ → /p/:

<i>ashes</i>	apu	abó		abu	awu
<i>moon</i>	pulan	buwan	bulan	bulan	wulan (Rat.)
<i>new</i>	pa?gu	bágo	begu	baru	wəru
<i>star</i>	puti?un	bituwín	bitu?en	bintaŋ	tambuleleŋ (Rat.)

The consonant /h/ is one of the most frequent in Chamorro; this is partly explained by the following shift.

## /k/ → /h/:

<i>I</i>	gwahu	akó?	si?ak		aku
<i>man/male</i>	lahi	laláki		oraŋ laki	
<i>louse</i>	huto	kúto?		kutu	kutu
<i>thou</i>	hago	kayó	ka	kamu	ko

The frequency of /h/ is further augmented by the following shift:

## /r | d/ → /h/:

<i>blood</i>	haga?	dugó?		darah	raa?
<i>leaf</i>	hagun	dáhon	dahun	daun	lalaina
<i>sleep</i>	matuhuk	matúlug		tidur	-təkəl

A similar shift contributes to the high frequency of /ʔ/:

## /r | d/ → /ʔ/:

<i>name</i>	na?ani	paŋálan	nazan	nama	ŋaran
<i>nose</i>	gwi?iŋ	ilóŋ	izun	hidun	irun (Rat.)

Some of the frequency of /ʔ/ is also probably due to the reduction of stops occurring syllable-final before C, where it is difficult to distinguish /p t k/ from /ʔ/.

Another of the most frequent Chamorro consonants is /t/. I do not know of any historical shift which helps to explain this; however, the present tendency is to change /r l d/ in loan words to /t/, whenever these consonants occur syllable-final before C, and word-final:

Spanish			Chamorro
color	( <i>color</i> )	→	kolótʔ
español	( <i>Spaniard</i> )	→	ʔèspanyótʔ
papel	( <i>paper</i> )	→	papitʔ
carne	( <i>meat</i> )	→	katʔ ni
verde	( <i>green</i> )	→	betʔ di

(In all Chamorro examples, stress is on the penultimate syllable unless otherwise indicated.)

### 3. GENERAL FEATURES OF CHAMORRO PHONOLOGY

Certain features of Chamorro phonology affect the production of both vowels and consonants; others affect consonants only, applying equally to all consonants of a given type in each case. Section 3 deals with these phenomena.

#### 3.1. LENGTH

Length is not phonemic. In both vowels and consonants, length is a reflex of relative stress and speed. Length usually increases with strength of stress, and decreases with greater speed. Length-specifying rules for Chamorro are rather complex, due to the intimate connection between length and the ideals for shape of stressed syllables. These ideals vary for specific sound components; i.e., syllable shape depends in part upon features of the vowels or consonants involved. Furthermore, how one produces a proper syllable under stress is partly determined by factors external to the syllable in question. For example, the shape of a stressed syllable is sometimes determined by the nature of the C<sub>1</sub> of the following syllable. In short, rules for length are rules for syllabic norms, given varying stresses and varying segmental components. These rules will be described in the next section.

#### 3.2. STRESS

Stress is not phonemic, except in a very few cases. These are rare exceptions, similar to optional English *pérmit*, *permít*, but the stress-meaning shift is obligatory in Chamorro:<sup>3</sup>

/tsatííʔiʔ/	<i>to hate</i>
/tsátííʔiʔ/	<i>poor eye-sight</i>
/apási/	<i>to pay (for)</i>
/ápasì/	<i>pay (noun)</i>
/atúŋuʔ si hosé/	<i>He knows Jose.</i>
/átuŋùʔ/	<i>friend</i>

In each of the above pairs, the form with stress on the initial syllable may be regarded as a substantive; this usage violates the norm (given below) for placement of primary stress in Chamorro.

Stress levels often can be referred to as simply high stress versus low stress, but these general categories each comprise two specific stress levels. The two general and four specific stress levels are symbolized and defined as follows:

**High stress:**

- " Double stress; most stressed syllable in a breath-group.<sup>4</sup>
- ' Primary word stress.

**Low stress:**

- ` Secondary word stress.
- ˘ Minimal or no stress (unmarked).

High stress levels are accompanied by low pitch, which generally rises thereafter by even steps to the end of the word-unit.

The use of these four stress levels is illustrated in the following Chamorro sentence:

#tsáḡkʼtsakʼ	ʔún.nu	na si.bódʼdzas	ni	dáŋ.ku.lù#
<i>Chop</i>	<i>one</i>	<i>onion</i>		<i>which (is) large.</i>

The basic stress rule for Chamorro decrees that primary word stress falls on the penultimate syllable of every 'free' form with two or more syllables. It rather often happens that short phrases are treated as such 'word' units; a major stress on a minor word is then reduced:

...pà.rʌ . l.gwáḡ.fl#	...for the fire.
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(The separate word /para/, *for*, lacks a primary stressed syllable.)

The penultimate syllable stress rule does not hold in the following cases:

Words with reduplication of the final syllable (rare):

dí.kì.kìʔ	<i>little, small</i>
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**Expletives:**

ʔái dḡḡx	( <i>Scaring away pig in garden</i> )
xʼí ʔʌ déi	( <i>Chasing cats off the porch.</i> )

## Loan words:

/kolót/	<i>color</i> (Spanish color)
/lugwát/	<i>place</i> (Spanish lugar)
/tsàpənís/	<i>Japanese</i>

Most loan words are Spanish, and since Spanish also has a strong preference for penultimate syllable stress, many such loan words retain the Spanish stress placement at the same time that they adhere to the Chamorro stress rule:

/flóris/	<i>flowers</i> (Spanish flores)
But: /florís-hu/	<i>my flowers</i>

The regular stress rules follow; all of the high stress rules are specifications for the high stressed syllable plus the following syllable. In 95% of Chamorro words, these are the penultimate and ultimate syllables.

## 3.2.1. Double Stress

Rule 1: CV. + CV.. / \_\_\_\_ .CV(C)<sup>5</sup>

Both moras of the lengthened vowel are voiced before a voiced consonant, and before /h/ and /ʔ/. The first mora has greater stress and length; this is especially evident in the diphthong vowels, where the second mora has a different articulation and is quite short:

gǎa <sup>i</sup> .gi	<i>it is (located)</i>
mǎa <sup>u</sup> .lik <sup>ʔ</sup>	<i>good</i>
hǎa.dzy	<i>wood</i>
ma.líi.ŋ	<i>lost</i>
gwǎa.ha	<i>there is, are (existing)</i>
tsúu.líʔ	<i>bring!</i>

Before a voiceless consonant (except /h/ and /ʔ/), the second mora fades into voicelessness before the especially distinct syllable break:

bʌ.lǎǎg.tiʔ	<i>sea slugs</i>
gi tǎǎg.si	<i>in the sea</i>
?a.fííj.tu	<i>fry!</i>

Rule 2: CVC. + CVC.. / \_\_\_\_ .CV(C)

This rule states that before C<sub>2</sub>.C<sub>3</sub>, the double-stressed vowel is usually not lengthened; C<sub>2</sub> is lengthened:

dǎŋ.ku.lù	<i>large</i>
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A stop is always unreleased in this environment; the lengthening is of the holding time:

tǎt <sup>ʔ</sup> .lu	<i>again</i>
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## 3.2.2. Primary Stress

Under primary word stress, vowels are short (with exceptions noted below). The norm for the final two syllables of any word of two or more syllables is  $C\acute{V}C.CV(C)$ .

Rule 1:  $CV. \rightarrow CVC_2. / \underline{\quad}.C_2V(C) : V_1 \neq /ai, ao/.$

$/ma.tu/$  to arrive  $\rightarrow$   $mát'tu$  arrived  
 $/gu.ma?/$  house  $\rightarrow$   $gi.gfm.mə?$  in the house

If the following  $C_2$  is complex, only the first segment doubles (to provide a closing consonant for the first syllable):

$íók'kwí?$  also  
 $?i ?ót'třy$  the other (one)

Exceptions: A primary stressed vowel lengthens before /g/, /h/, and /b/ -- except before /b/ (Spanish br), which becomes [p<sup>h</sup>.bɪ]:

/g/:  $ga?.lá.gy$  dog  
 /h/:  $gwá.ha$  there is, are  
 /b/:  $hó.bɪn$  young (Spanish joven)  
 /bɪ/:  $lép.bɪu$  book (Spanish libro)  
 $póp.bli$  poor (Spanish pobre)

Before fricatives /s, f/, there is free variation between double stress and primary stress rules for open syllable:

$táʃ.si \sim tás.si$  sea  
 $gwáʃ.fi \sim gwáf.fi$  fire

$CV.V(C)$  follows Rule 1, as  $V + V$  are automatically separated with [ʔ] before the second  $V$ . The consonantal feature [ʔ] is doubled when the first  $V$  is under primary stress:

$/putiun/$  star  $\rightarrow$   $putíʔ ?un$

With  $CVC.CV(C)$  there is no change; neither vowel nor consonant is lengthened, as realization of preferred (primary stressed) syllable shape (CVC) is inherent:

$mai.góʔ.ñʌ$  his sleep  
 $tát'.lu$  again

Diphthongs serve as long vowels, so primary stressed Cai, Cao also undergo no change:

$/maigu?/$  sleep  $\rightarrow$   $mái.go?$  sleep

Rule 2:  $CVC_2.V(C) \rightarrow CVC_2.C_2V(C)$

The rule states that before a vowel-initial syllable, the final C of the stressed syllable doubles to provide an initial C for the next syllable:



/dadalak/ *tail*, plus /-i/ benefactive  
 → dʌ.dʌ.láʔ.ki *he followed (after someone)*

### 3.2.3. Low Stress

Syllables retain underlying CV or CVC shape with low stress condition (secondary or no stress):

gi tʌʔ.si *to the sea*  
 gi.nɛn ha.gátʔ.nʌ *from Agaña*  
 máʔ.u.likʔ nʌ táu.toʰ *The man is good.*

A CVC.V(C) series becomes CV.CV(C):

/ha| + um/ → hà.lum *inside*

### 3.2.4. Reduplicated Series Stress

Reduplicated series of syllables fall under the low stress length rule, no matter what the stress; there is no lengthening of vowels or consonants, as the whole series of two or three syllables is uttered in the time-beat of one syllable. The reduplicated syllable is normally the (underlying form of the) stressed syllable, and the stress is also reduplicated, up to the primary stress level. However, in a final syllable, the next lesser stress level generally occurs:

/ma.tsúʔ.tsúʔ.tsùʔ/ *They were working.*  
 /mà.naʔ.íʔ.íʔ.stu/ *They were getting ready.*

## 3.3. FORCE

The pronunciation of Chamorro is much more forceful than is that of (American) English. Two features result from this: First, Chamorro pronunciation is much more sharp and distinct, so that even final, least-stressed syllables are clearly enunciated. Second, breath expenditure is much greater, especially on emphasized syllables with voiceless segments:

/makahna/ → ma.káʔH.na *a mountain on Guam*  
 /tuhni/ → ʔi.tʔʔH.nin *the support poles of (the window)*

[H] = a very forceful aspirated sound, without oral obstruction.

Before sentence or discourse pause, a final vowel usually ends with an aspirated off-glide:

... gi ʔun bʌn.dʌʰ# *...on one side.*

In the same environment, a vowel-final syllable (which does not start with a voiced stop) may become totally voiceless, and strongly aspirated:

...ʔi ʔótʔ .tru <sup>h</sup> #	...the other (one).
...bi.dá·.mu <sup>h</sup> #	...your doing.

### 3.4. GLOTTAL BREAKS

The glottal stop is a separate consonant phoneme in Chamorro, but it also occurs as a regular non-phonemic feature of pronunciation in the environments # \_\_V and V \_\_V:

# __V:	ʔá·.ga	ripe banana
	ʔun-	you sg., subject pronoun
V __V:	/puti/ flash + /-un/	able to
	+ pu.tíʔ.ʔun	star
	Spanish dios → si dzú .	

Note that between vowels, [ʔ] under primary stress.

### 4. SPECIFIC CONSONANT REALIZATIONS

The descriptions of 'phonetic norms', which are given in this section, refer to the consciously preferred pronunciation of the consonant phonemes, as they are produced in Casual speech (conversational speed and stress).

Rule symbols:	!! = obligatory rule
	! = preferred rule
	no symbol = optional rule
Stress:	" = phrase (double) stress
	' = primary
	` = secondary
	— = low or no stress

Allophonic variations described in specific rules will not include those alterations explained previously as features of Chamorro phonology in general, nor those to be explained hereafter as features common to a whole class of consonants (e.g., stops).

#### 4.1. STOPS

With the exception of /b/ and /g/, all stop consonants, including the stop segment of an affricate, double after primary stress when they stand alone at a syllable boundary (see 3.2.2., Rules 1 and 2). Discussion of doubling will not be repeated in comments on allophonic variation in the sections to follow.

All stops occurring either word or syllable final are single segments; affricates and /gw bl tr ñ/ are not permitted before any juncture.

Stops are always voiceless and unreleased when word-final. With a few exceptions, this rule also applies in syllable-final position.

Phonetically similar stop phonemes contrast only in syllable-initial position. Examples are given below.

Contrasts between voiceless stops and voiced stops:

/t d/:	/tagu?/	to send	/dagu/	yam
	/mata/	eye	/tsada?/	egg
/ts dz/:	/tsalan/	road	/dzamak/	to mash
	/matsalik/	to laugh	/tadza?/	never
/p b/:	/pukpuk/	swelling	/bukbuk/	uproot
	/tupu?/	well	/tuba/	coconut wine
/k g/:	/kanu?/	to eat	/gagu/	to ask for
	/pu?kat/	to walk	/pugas/	raw rice

Contrasts between simple stops and affricates:

/t ts/:	/tsalan/	road	/ta?iu/	again
	/tautau/	person	/tsu?tsu?/	to do
/d dz/:	/dagi/	to tell a lie	/dza/	to like
	/tsada?/	egg	/tadza?/	never

Contrasts between /g/ and /gw/:

/g gw/:	/gimin/	to drink	/gwihan/	fish, n.
	/pugas/	raw rice	/pugwa?/	betelnut

Contrasts between /ʔ/ and /p t k/:

/ʔ p/:	/tsada?/	egg	/nigap/	yesterday
/ʔ t/:	/pu?kat/	to walk	/tsada?/	egg
/ʔ k/:	/li?i?/	to see	/maulik/	good

#### NORMS AND VARIATIONS OF INDIVIDUAL STOPS:

/p/: The norm is unaspirated, lenis. Initial /p/ before a stressed vowel varies from aspirated through unaspirated to a fortis, almost glottalized [p̚]. The fortis realization is infrequent before most vowels, but preferred before /u/.

Rule 1: /p/ → [p=] ~ [p<sup>h</sup>] ~ [p̚] /#\_\_\_<sup>́</sup>.  
 páʔ.gy ~ p<sup>h</sup>áʔ.gy ~ p̚áʔ.gy                      now

Rule 2: /p/ → [p̥] /#\_\_ú.  
 p̥ú.gwa?      *betelnut*  
 p̥ú.gʌs      *raw rice*

/b/: The norm is as in English. /b/ is rare in Chamorro; it most often occurs in definite loan words from Spanish or Philippine languages.

Rule 1: /b/ → [p=] /#\_\_ (phrase or sentence-initial)  
 # ?l̥.bu.tís.mu ~ # pu.tís.mu      *your baptism*  
 # bài hu hán.no<sup>u</sup> ~ # pà<sup>i</sup>.u.há .no<sup>u</sup>      *I will go.*

/t/: The norm is dental, unaspirated. It is the most common consonant in Chamorro.

Rule 1: /t/ → [t<sup>h</sup>] /#\_\_  
 # tá.si ~ # t<sup>h</sup>á: si      *sea*

Rule 2: /t/ !! → [d] /V.\_\_V  
 tsét<sup>l</sup>.nut<sup>l</sup>      *sore* → tsét<sup>l</sup>      *wounded*

/d/: The norm is as in English. /d/ is of average frequency in Chamorro. /d/ often appears to have doubled after primary stress in lone medial position; e.g., [sá<sup>d</sup>.d<sup>l</sup>duk<sup>l</sup>] underlying /saduk/. However, as neither /b/ nor /g/ tend to double in the same position, it is likely that the phonemic form for *river* may be /sa<sup>d</sup>duk/. This can be deduced from numerous instances where carefully pronounced [ʔ.d] → [d<sup>l</sup>.d] in casual and fast speech. For example:

/su<sup>?</sup>da/      *to meet* → ?un.só<sup>?</sup>.da ~ ?un.só<sup>d</sup>.d<sup>ə</sup>      *you meet*

/k/: The norm is unaspirated, but otherwise as in English or Spanish. It has no allophones other than being doubled and unreleased as described elsewhere as changes undergone by all voiceless stops.

/g/: The norm is as in English; it is of average frequency relative to the other consonants. As usual for simple voiced stops, /g/ does not double in lone medial position, but like /d/, it occasionally appears to do so. Topping (1973:38) gives an example of this in [még.ge<sup>i</sup>] *many*. However, this and similar cases are better interpreted differently; that is, [még.ge<sup>i</sup>] *many* is not from phonemic /miga<sup>i</sup>/, but from phonemic /mi<sup>?</sup>ga<sup>i</sup>/. /mi<sup>?</sup>/ has the meaning of *lots of*, as in /mi<sup>?</sup>mi<sup>?</sup>/ *to urinate*; /mi<sup>?</sup>salap<sup>i</sup>/ *lots of money*. /ga<sup>i</sup>/ refers to something with specific time-space existence, as in /ga<sup>i</sup>g<sup>i</sup>/ *there is, are* (physical entity located somewhere). When /mi<sup>?</sup>/ is unstressed, the ending glottal is usually lost. In a stressed syllable, it assimilates to a following stop, as in /mi<sup>?</sup>ga<sup>i</sup>/. The stressed /i/ in a closed syllable becomes [ɛ], giving [még.ga<sup>i</sup> ~ még.ge<sup>i</sup>]. (See Witucki 1975 for allophonic variations of vowels.)

/gw/: The norm is as Spanish /gu/ in /guapo/, *handsome*. It is of low frequency, and is probably a relatively recent historical development. Only in Chamorro do we find /gw/ where related languages usually have /w/, /h/, or /ʔ/. Similarly, in English loan words initial /w/ usually becomes /gw/: Watkin (name) → gwát¹.kin.

Rule 1: /gw/ !! → [g] / \_\_\_u (usually occurring as part of the infix /-um-/)

/gwaidza/ *to love* → gu.mái.dzʌ dzù?  
I loved (ongoing process)

Rule 2: /gw/ !! → [kw] /V?.\_\_\_

(At the same time, the preceding [ʔ] assimilates to the following stop.)

/lu?gwi?/ *also* → ló?.kwí? ~ lók¹kwí?  
/hi?gwa?/ "I don't know" (idiom without literal meaning)  
→ hék¹kwa

/gw/ is explained by Topping (1973:25, 34) as /g/ plus semi-vowel /w/. However, [w] as a possible semi-vowel in Chamorro words regularly occurs only after [g] and [a]. I interpret these occurrences as /gw/ and /au/, respectively, since such limited distribution argues strongly against independent phonemic status for [w]. Furthermore, consonant clusters are not permitted in word- or syllable-initial position, in native Chamorro words. Hence /gw/, which is a relatively frequent initial consonant, is better seen as a complex stop like /ts/ and /dz/.

/ʔ/: The glottal stop is as highly frequent as is /t/, and is difficult to differentiate from /t/ in the word-final position, and syllable-final before an alveolar consonant, as /ʔ/ tends to assimilate to the alveolar position.

Rule 1: /ʔ/: ! → [t] / \_\_\_C<sub>alv.</sub>

/haga?ña/ *Agaña* → hagát¹.ñʌ  
/ga?lagu/ *dog* → gat¹  
/tsu?tsu?/ *to eat* → tsót¹.tsu?

Rule 2: /ʔ/ → [∅] in low-stressed syllable.

/mi?salapí/ *much money* → mì.sʌ.láp¹.pí  
/lu?gwi?/ *also* → lò.kwí? ~ lò.kwí

/ts/: The norm is as in English *sits* (alveolar), but optionally /ts/ may be slightly palatalized (alveolar-palatal), in which case the pronunciation is closer to [ç] in English *chin*. In addition to the contrasts noted earlier, /ts/ is also distinct from /s/:

/tsalan/ *road* /saga/ *to stay*  
/tsuli?/ *to bring* /suha/ *to come out*

However, in fast or careless speech, optionally, /ts/ → [s]:

ʔì.tsi.tsóʔ.ñʌ	~	ʔì.tsi.sóʔ.ñʌ	<i>his doing</i>
tsóʔ.da	~	sóʔ.da	<i>banana plant</i>
tsá.daʔ	~	sá.daʔ	<i>egg</i>

/dz/: The norm is alveolar, with optional slight palatalization approximating but not identical to /j/. Like /ts/, /dz/ reduces to its fricative in fast or careless speech, optionally:

tá.dzaʔ	~	tá.za	<i>never</i>
ha.dzú.tiʔ	~	ha.zú.ti	<i>he threw away</i>
dzá.hu	~	zá.hu	<i>I like</i>
dza ~ za		(tì.u.má.no <sup>u</sup> )	<i>And (I did not go)</i>

#### 4.2. FRICATIVES

Chamorro fricatives are /f s h/. They contrast with similar phonemes as follows:

/f p/:	/fiʔun/	<i>near,</i>	/piʔut/	<i>beach plum</i>
	/fatsi/	<i>dirty,</i>	/paʔgun/	<i>child</i>
/s ts/:	/suha/	<i>to come away,</i>	/tsuiiʔ/	<i>to bring</i>
	/saga/	<i>to stay,</i>	/tsalan/	<i>road</i>
/s f/:	/siha/	<i>they,</i>	/fihu/	<i>all the time</i>
	/siña/	<i>to be able,</i>	/finaʔ-/	<i>made of</i>
/h ʔ/:	/haga/	<i>daughter,</i>	/ʔagaʔ/	<i>banana, ripe</i>
	/mahlus/	<i>smooth,</i>	/maʔpus/	<i>departed</i>

/f/: The norm is as in English.

Rule 1: /f/ → [s] / \_\_.  $\begin{bmatrix} b \\ p \\ m \end{bmatrix}$  (dissimilation)

gòf	~	gòs mái.pi	<i>very hot</i>
gòf	~	gòs mʌm.pus	<i>very intense</i>
gès		pí.ka.rù	<i>very mischievous</i>
gòs		bá.ba	<i>very bad</i>
gòs		ʔáp <sup>l</sup> .mʌm nʌ tyém.pu	<i>very long ago</i>

Rule 2: /f/ ( + [s] ) → [z] / \_\_.d

gòf	~	gòs	~	gòz dáŋ.ku.lù	<i>very large</i>
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/s/: The norm is as in English.

Rule 1: /s/ !! → [z] /\_\_\_d

ka.páz.di?      *capacity*      < Spanish *capacidad*  
 gòz.dáŋ

Similarly, /s/ before voiced consonant will become [z] in any loan word. On the other hand, /z/ in a voiceless environment will become [s] in loan words:

English		Chamorro
<i>news</i>		nú·s
<i>zipper</i>		síʔ <sup>1</sup> .pɾ <sub>1</sub>
<i>reason</i>		rí·.sʌn

Also in loan words, /s/ → [ʃ] /\_\_\_iV, preferentially. (This sequence never occurs in native Chamorro words, and so there is no native occurrence of [ʃ].)

Spanish		Chamorro
<i>maldición</i>	<i>curse</i>	mʌt <sup>1</sup> .di.ʃyó·n
<i>siete</i>	<i>seven</i>	ʃyét <sup>1</sup> .ti

/h/: The norm is as English /h/ in initial position; e.g., in *head*, *hole*, *hat*. /h/ occurs syllable final, but not word-final.

Rule 1: /h/ → !! [H] /V̄\_\_\_CV(C)

That is, under double stress, /h/ becomes [H], a very forceful aspiration without oral stricture.

/tuhni/    *support*    → t<sup>ó</sup>H.ni  
 /mahlau/    *shame*    → máH.io<sup>u</sup>

Rule 2: /h/ → [ʔ] /#\_\_\_V

ha.gáʔ.ñʌ    ~    ʔa.gáʔ.ñʌ    *Agaña*  
 hũ·.luʔ      ~    ʔú              *up*

Rule 3: /h/ →  $\begin{bmatrix} y \\ w \end{bmatrix}$  /  $\begin{bmatrix} i \\ u \end{bmatrix}$  ·\_\_\_V

/siha/    *they*                      → sí·.ha    ~    sí·.yʌ  
 /suha/    *to come away*    → sú·.ha    ~    sú<sup>u</sup>.wa

Rule 4: /h/ ! → [∅] /V\_\_\_CV̇(C) (No stress.)

/tuhni/    *support*    → ʔì.tu.nfn.ñʌ    *his support (poles)*

Rule 5: /h/ ! → [C<sub>1</sub>] /C<sub>1</sub>·\_\_\_V̇, V̇\_\_\_C<sub>1</sub>

That is, in a syllable under primary stress, /h/ preferentially assimilates to a preceding or following consonant.

/tuhni/ support → tón.nin supports of  
 /tuhlai/ bridge → tól.lai  
 /lihgwa?/ to stir → léǵ.gwa?

## 4.3. RESONANTS

Resonants are the nasals /m n ñ ŋ/, plus lateral /l/, with norms as in English. Nasals occasionally dissimilate, when the same nasal is repeated either adjacent to or in the same syllable as the first. Nasals almost always assimilate to stops, both within words and within close-knit phrases. This change is relatively more likely in fast speech and within words. Contrasts follow.

/m/:	/mangi/	to write	/mami/	our	/halum/	inside
/n/:	/na?li/	to give	/gwini/	here	/hanun/	to burn
/ñ/:	/ñalhun/	enough	/siña/	to be able	-----	
/ŋ/:	/ŋaŋa/	duck (n.)	/tuŋu?/	to know	/matsiŋ/	monkey
/l/:	/lasas/	skin (n.)	/tsalan/	road	-----	

/m/:

Rule 1: /m/ → [n] /\_\_\_·C<sub>alv.</sub>, C<sub>alv.</sub> ·\_\_\_

gá.l.lun.tǎ·nu? in the jungle (fast speech)

< /gi halum tanu?/

pit<sup>l</sup>.ní·si permission < Spanish permisión

há.n.zu you (pl.) < /hamdzu/

Rule 2: /m/ → [n] between bilabials (dissimilation).

Spanish *compadre*, godfather → /kumpalll/ + /-um-/

→ dós na kù.mun.pái.li two *compadres* (reciprocal)

Rule 3: /m/ → [n<sup>v</sup>ŋ] /\_\_\_·m (dissimilation).

/tinanum/ plants + /-mu/ your → tì.næ.nó<sup>n</sup>·mu

~ tì.næ.nóŋ.mu your plants

/n/:

Rule 1: /n/ → [ŋ] /\_\_\_·k<sup>g</sup>

tì.?<sup>i</sup>.nǎ·tan.gwì? he had not looked at him

< /ti inatan gwì?/

?ù.paŋ.gú they will have a party

< /u+pan+guput/

Rule 2: /n/ → [ŋ] /\_\_\_·h

gì.fi.?<sup>ú</sup>ŋ.hu near me < /fi?un+hu/



Rule 3: /n/ → [m] /\_\_\_\_.b<sup>p</sup>  
 ?ì.m.pam.p<sup>h</sup>es.k<sup>h</sup> we are going fishing  
 < /In+pan+peska/  
 ?úm. byã<sup>i</sup>.he<sup>i</sup> one time < Spanish un viaje

Rule 4: /n/ → [∅] /V\_\_\_\_# ([Vn#] → [Ṽ#])  
 ñái.hun ~ ñái.hũ enough

/ñ/:

Rule 1: /ñ/ → [n] /C.\_\_\_\_a (in unstressed final syllable)  
 ?ì.s<sup>h</sup>l.gán.ñ<sup>h</sup> ~ ?ì.s<sup>h</sup>l.gán.n<sup>h</sup> < /i saga+ña/ its place  
 ?ì.gi.má<sup>h</sup>?ñ<sup>h</sup> ~ ?ì.gi.má<sup>h</sup>?n<sup>h</sup> < /i guma?+ña/ his house

/ŋ/:

Rule 1: /ŋ/ → [n] /\_\_\_\_.ñ  
 ?ì.gæ?<sup>h</sup>.tsón.ñ<sup>h</sup> his companion < /i ga?tsuŋ+ña/  
 gì tɛ?.lá<sup>h</sup>n.ñ<sup>h</sup> to his bone < /gi tu?laŋ+ña/

/l/: The /l r/ range of sounds in Chamorro varies from English /l/ and /r/, to Spanish flap /ɾ/, to a voiced palatal fricative rather like an aspirated English /r/. Whether native or loan, these /l r/ sounds occur only syllable-initial, or as the second consonant of a borrowed cluster (e.g., fló<sup>r</sup>.<sup>r</sup>is < Spanish flores). When syllable-final, borrowed /l r/ become [t<sup>r</sup>]:

l <sup>u</sup> .gwá.t <sup>r</sup>	place	<	lugar	(Spanish)
kát <sup>r</sup>	meat	<	carne	"
bót <sup>r</sup>	pocket	<	bolsa	"

The norm for /l/ in Chamorro words is quite close to English /l/; this pronunciation occurs in the following:

má <sup>u</sup> .l <sup>l</sup> ik <sup>h</sup>	good		l <sup>l</sup> s.s <sup>h</sup> s	skin (n.)
tsá <sup>l</sup> .l <sup>l</sup> an	road		l <sup>l</sup> ?. <sup>l</sup> ? <sup>h</sup>	to see
l <sup>l</sup> t <sup>r</sup> .ts <sup>h</sup> an	west (from Agaña)		tá <sup>h</sup> .l <sup>u</sup>	again

The more fricative sound (here written as [r<sup>c</sup>]) tends to occur between vowels where [u] is the second and unstressed vowel:

ts <sup>h</sup> l.mó <sup>r</sup> .r <sup>c</sup> u	Chamorro
tɛn.dé <sup>r</sup> .r <sup>c</sup> u	store keeper

[r<sup>c</sup>] also occurs in place of Spanish /ɾ/:

r <sup>c</sup> a.r <sup>c</sup> ái.na	queen	<	Spanish la raina
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In Spanish loans, elsewhere, both /ɾ/ and /l/ retain the Spanish pronunciation if syllable-initial, but Spanish /ɾ/ becomes [l] as the second consonant of a borrowed cluster:

	libro	<i>book</i>	→	lɛ̃pʲ.bɫu	<i>book</i>
	madrina	<i>godmother</i>	→	ʔi.mʌtʲ.lɪf.na	<i>the godmother</i>
But:	siempre	<i>always</i>	→	sɛ̃m.pʃi	<i>future-certain</i>
	tronko	<i>trunk</i>	→	tʃɔ̃ŋ.ku	<i>tree</i>

## CONSONANTS OF CHAMORRO

### N O T E S

1. My analysis of Chamorro is based on speech data from four informants, all of whom derive from the same general geographical area, the environs of Agaña, the capital city of Guam. Two of these informants, Ruperta Blas and Robert Underwood, were Chamorro-speakers temporarily living in Los Angeles. The other two were Rosario Sablan and Remedios Perez, who generously aided me during a summer (1971) of field work on Guam.
2. The division of one language dialect into four styles of speech was suggested by James Harris' treatment of Spanish in his *Spanish Phonology*, 1969.
3. All Chamorro forms are given in this paper in phonetic notation, unless specifically placed in phonemic slants. Phonetic symbols have commonly assigned values, with the following exceptions: [ɥ] represents the usual [ʊ], but with the additional feature of being produced with the lips rounded as for [u]. [ɸ] represents an unaspirated, fortis variant which often sounds almost glottalized. A syllable break is indicated by a period between segments, thusly: [CVC.CV].
4. A breath-group usually consists of a clause composed of one or two phrases.
5. Chamorro has vowel-initial words, but this lack of initial phonemic C is not reflected in the formulas, as it would entail functionless repetition. Phonetically, all words are C-initial, since initial vowels are always preceded by consonantal feature [?].

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