

**SURSURUNGA
MORPHOPHONEMICS**

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1 INTRODUCTION

Sursurunga is an Austronesian language spoken by approximately 2400 people who inhabit 19 villages on the east coast of New Ireland, and one on the west coast. The 19 east coast villages extend south from Kudukudu (about 41km south of Namatanai) to encompass an area 50km long, finishing at Pulpulu. Suraili, the sole west coast Sursurunga village, is about 64 km from Namatanai, and thus 105 km by road, or 2 days walk across the interior of the island, from the rest of the Sursurunga area.

A preliminary phonology of Sursurunga was written in 1974 and published the following year (Hutchisson 1975), and an updated version of this has been completed recently. Part of the updated version is this present paper which discusses the morphophonemic changes that occur in the language. In writing this paper I have taken a partial generative approach: generative because it seems to fit the language well, and partial because I am only barely familiar with generative phonology.

My appreciation is extended to Bob Bugenhagen, who helped me develop and test the morphophonemic rules discussed here, and to Wietze Baron, who took some of my discoveries and wrote two rules to explain them. I also appreciate Eileen Gasaway's comments and advice on a much earlier draft of this paper.

2. GENERAL FEATURES AND CONSTRAINTS

Sursurunga is a language with quite a bit of morphophonemics, but without a great deal of complexity in the morphophonemics. The changes discussed and illustrated in this paper occur mainly on the verbs and inalienable nouns, but there are also some which affect pronouns. Most operate on the word level when there are changes of person number to 3rd person singular from some other person (either as a direct object for verbs, or as the possessor in the case of nouns). This 3rd person singular change also affects possessive pronouns,

but it is the first person singular possessive ('my') that undergoes change when joined to another morpheme or word beginning with a velar. Dual is also a conditioning environment for pronouns.

Certain vowels effect change, certain other vowels are affected by change, and one vowel (u) seems neither to affect any others or be itself affected. The mid vowels (e, á, and o) are those which effect change in the other vowels (i and a). Vowel harmony operates both left to right in certain contexts, and right to left in other contexts. The latter type is operational only across one consonant; the presence of two intervening consonants blocks it. The vowel á not only effects changes in other vowels, but is itself affected by the other 2 mid vowels in certain environments.

Voiceless stops change the point of articulation of the prenasalization on following voiced stops. Syllable-final positions do not allow voiced stops, so these are changed to voiceless stops or to nasals depending on the following segment.

Geminates are forbidden within the word, and within the phrase on pronouns and modifiers. This constraint has implications for "dialect" differences, was confirmed by psycholinguistic testing, and helps to settle the matter of how to write certain words originally thought to contain geminate vowels. These issues are discussed in reports on the dialect survey and on psycholinguistic testing, and mentioned also in the updated phonology, Section 8.3.3.2.

Nonreduplicated unprefixated transitive verbs prefer two syllables to three, and two rules operate to reduce the number of syllables when the transitive suffix increases the amount. Further, it has been noted that these verbs prefer certain syllable patterns in their surface forms,¹ and the syllable-dropping rules operate to ensure that the patterns are followed.

In addition to the predictable changes, Sursurunga has quite a number of changes that occur on an unpredictable basis, and these have been analyzed as morphological classes. These exceptions and complications are discussed in a separate section, and deal with the unpredictable changes which occur in inalienable nouns, modifiers, and reduplicated verbs.

3 MORPHOPHONEMIC RULES

3.1 Distinctive Features Charts

Consonants (and contrasted with vowels):

	p	t	k	b	d	g	s	h	m	n	ɲ	l	r	w	y	ʋ
cons	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	-
*syl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
nasal	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-
son	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+
vd	-	-	-	+	+	+	-	-	+	+	+	+	+	+	+	+
cor	-	+	-	-	+	-	+	-	-	+	-	+	+	-	-	
ant	+	+	-	+	+	-	+	-	+	+	-	+	+	-	-	
cont	-	-	-	-	-	-	+	+	-	-	-	+	+	+	+	+
lat												+	-			
lab	+	-	-	+	-	-	-	-	+	-	-	-	-	+	-	

Vowels:

	i	e	á	a	u	o
High	+	-	-	-	+	-
Low	-	-	-	+	-	-
Back	-	-	+	+	+	+
Round	-	-	-	-	+	+

3.2 Morphophonemic rules

Of the 17 rules which follow, there are two groups of them which need to be ordered. Rules 1 - 7 comprise the first group and deal mainly with changes which occur on transitive verbs and inalienable nouns. The second group, Rules 8 - 12, describe changes on pronouns and inalienable nouns. The third group, Rules 13 - 17 are unordered in that they occur without reference to any other rule.

Rule 1. Syllable reduction metathesis (SRM)

V C + i ----> C V i [Verb Class I]

When the specific suffix is added to the verbs of Verb Class I, metathesis of the final vowel and consonant of the verb stem occurs to prevent a 3-syllable verb. There are only 4 members of this class of verbs.

Keles	+	i		change	+	3ps
Kelsei		(SRM & FF)		'he changes it'		

punam + i	hide + 3ps
punmai (SRM & FF)	'he hides it'

Rule 2. Morpheme-final a raising (MEA)

```
a ----> a / ____ C [3ps]
                        [specific]
                        [non-initial action]
```

This rule applies to the final a found:

- (1) in the stems of possessive pronouns and inalienable nouns,
- (2) in the stems of transitive verbs, and
- (3) as the irrealis suffix on pronouns.

In pronouns and inalienable nouns, the a is raised to ä in the context of the 3rd person singular suffix -n.

In verbs, it is raised in the context of the specific² suffix, -i, when it occurs on a consonant-final stem.

As the irrealis suffix, it is raised when it is followed by the non-initial action suffix, -k.

In all cases, the a is raised to á preceding a consonant.

On pronouns and nouns:

ka + n	pspn + 3ps
kán (MFA & FF)	'his, her, its'
mata + n	eye + 3ps
*matán (MFA)	

On transitive verbs:

gagas + i	claw with hand + 3ps
*gagási (MFA)	

As irrealis suffix:

ina + k	ips.irrealis + non-initial action
inák (MFA & FF)	'I will then...'

Rule 3. a Harmony (AH)

<u>a</u> ---->	[αfront] /	U	C (C)	___
	[-αback]	[αfront]		
		[-αback]		
		[-high]		
		[-low]		

Schwa harmonizes with the preceding vowel, separated from schwa by at least one consonant. The only vowels which initiate this left to right harmony are e and o.

kema + n	footprint + 3ps
*Kemán (MFA)	
kemen (AH & FF)	'his footprint'
girot + án	patterned + mdf
*giroton (AH)	
kerma + n	tongue + 3ps
*Kermán (MFA)	
kermen (AH & FF)	'his tongue'

Rule 4. Morpheme-initial a raising (MIA)

U	---->	-low /	___	C	U
[+low]					[-high]
[+front]					[-low]
					[-front]
					[-back]

This vowel harmony operates in a right to left direction, and harmonizes the a of the stem with the following schwa if they are separated by only a single consonant.

*matán
 mátán (MIA & FF) 'his eye'

*gagási
 *gágási (MIA)

Rule 5. Syllable dropping (SD)

The second vowel of 3-syllable verbs or modifiers derived from verbs drops out to reduce the word to 2 syllables.

*gágási
 *gágsi (SD)

*giroton
 girton (SD & FF) 'patterned'

matuk + án ripe + mdf
 matkán (SD & FF) 'ripe'

Rule 6. n deletion (ND)

V n ----> Ø / V C ____ [-sg]

n ----> Ø / V C C V ____ [-sg]

The third person singular form of inalienable nouns becomes the stem for nonsingular ones. The n '3ps' is always deleted, but the previous vowel is deleted only if separated from the rest of the word by only one intervening consonant.

mátán + giur his eye + we (2,excl)
 mát giur (ND & FF) 'our(2) eyes'

kermen + git his tongue + we (pl)
 kerme git (ND & FF) 'our (pl) tongues'

tudun + diar her genitals + they 2
 *tud diar (ND)

páwán + gam his thigh + you (pl)
 *páw gam (ND)

Rule 7. Voiced stop replacement (VSR)

$$\begin{array}{c}
 C \quad \text{---->} -vd \ / \ ___ \# \\
 [+vd] \\
 [+stop]
 \end{array}
 \quad
 \begin{array}{c}
 ___ C \\
 [-vd]
 \end{array}$$

$$\text{---->} +nas \ / \ ___ C \\
 \quad \quad \quad [+vd]$$

Syllable-final voiced stops become voiceless word finally or preceding a voiceless consonant, and become nasal preceding a voiced consonant.

*tud diar
tut diar (VSR & FF) 'their (2) genitals'

*gágsi
gáksi (VSR & FF) 'claw it'

See Derivation Chart, Section 3.3, (tabar + i) for an example with a nasal.

Rule 8. a rounding (AR)
$$\begin{array}{c}
 \underline{a} \quad \text{---->} [+high] \ / \ S \ ______ [dual] \\
 [+low] \quad \quad [+round] [+round]
 \end{array}$$

In the context of dual, a becomes high and round (u) following a round segment (in this case either m or u).

gim + ar we (excl) + dual
*gimur (AR)

gam + ar you + dual
*gamur (AR)

kamu + ar your + dual
*kamuur (AR)

Rule 9. m deletion (MD)
$$\begin{array}{c}
 m \quad \text{---->} \emptyset \ / \ [dual] \\
 \quad \quad \quad [nominative]
 \end{array}$$

m is deleted in the context of dual nominative.

*gimur
giur (MD & FF) 'we (2,excl)'

*gamur
gaur (MD & FF) 'you (2)'

Rule 10. Liquid metathesis (LM)

$$V \quad C \quad V + \text{---} \rightarrow V \quad V \quad C \quad [3ps]$$

[liquid]

Intervocalic liquids trigger metathesis with the following morpheme-final vowel in the context of 3rd person singular.

```
aru + n          face + 3ps
*auru           (LM)
```

```

lulu + n          head + 3ps
*luuln    (LM)

```

Rule 11. Consonant cluster reduction (CCR)

$$C \dashrightarrow \emptyset / C + \underline{\quad} \#$$

As consonant clusters are not allowed within the syllable, this rule operates to delete the 2nd consonant of such a cluster caused by a suffix added to the stem of inalienable nouns.

```
*aurn
aur (CCR & FF)      'his face'
```

```
*|uu|n
*|uu| (CCR)
```

Rule 12. Geminate reduction (GR)

$$S_{\alpha} S_{\alpha'} \longrightarrow S_{\alpha}$$

Any two identical segments that occur contiguous to each other are reduced to one.

*kamuur
kamu (GR & FF) 'your (2)'

*luul
lu (GR & FF) 'his head'

```
git + tul      we (pl,incl) + 3
qitul (GR & FF)  'we (3,incl)'
```


Rule 13. Prenasalization harmony (PH)

$$\begin{array}{ccc}
 C_i & \text{---->} & [+cons] \\
 [+vd] & & [+nasal] \\
 [-son] & & [\alpha cor] \\
 & & [\alpha ant]
 \end{array}
 \quad C_i \quad / \quad \begin{array}{c} [+cons] \\ [-son] \\ [\alpha cor] \\ [\alpha ant] \end{array} \text{---}$$

The prenasalization of voiced stops word medially harmonizes with the point of articulation of the voiceless stop or s which immediately precedes it.

pukdai	'translate'	busbus	'bubbles'
[puk ⁿ dai]		[bus ⁿ bus]	

Rule 14. Voiced stop prenasalization (VP)

$$\begin{array}{ccc}
 C_i & \text{---->} & [+cons] \\
 [+vd] & & [+nasal] \\
 [-son] & & [\alpha cor] \\
 [\alpha cor] & & [\alpha ant] \\
 [\alpha ant] & &
 \end{array}
 \quad C_i \quad / \quad \left\{ \begin{array}{c} [-cons] \\ (\#) \end{array} \right\} \text{---}$$

Note: (#) = applies optionally in word initial position

Voiced stops are prenasalized at their own point of articulation intervocally and following h, and optionally word initially.

midán	'message'	behbeh	'temporary shelter'
[mi ⁿ dán]		[beh ^m beh]	
		or	
		[^m beh ^m beh]	

Rule 15. Mid vowel diphthongization (DP)

$$\begin{array}{ccccc}
 \emptyset & \text{---->} & V & / \# C & V & C & \text{---} & + i \\
 & & [-high] & & [-high] & & & \\
 & & [-low] & & [-low] & & & \\
 & & [\alpha front] & & [\alpha front] & & & \\
 & & [\alpha back] & & [\alpha back] & & &
 \end{array}$$

The vowel of verb stems in the shape CVC, where V is a mid vowel, causes the transitive specific suffix to become a diphthong which harmonizes with the stem vowel.

mer + i	decorate + 3ps
mer <i>ei</i> (DP & FF)	'decorate it'
káh + i	carry + 3ps
káh <i>ái</i> (DP & FF)	'carry it'
dor + i	kiss + 3ps
dor <i>oi</i> (DP & FF)	'kiss him'

Rule 16. Velar dissimilation (VD)

$$K \xrightarrow{\quad} \eta / \quad \# K$$

$$\quad \quad \quad / \quad + g$$

k becomes ŋ word or morpheme finally preceding another velar stop.

kak kalik	my + child
kaj kalik (VD & FF)	'my child'
 kak + gitul	 my + we 3 (incl)
kangitul (VD & FF)	'our (3,incl)'

Rule 17. u symbolizing (US)

```
[u] ----> w / . ____ v
      ----> u / elsewhere
```

The phonetic [u] is realized phonemically as the consonant w when it occurs syllable-initially preceding a vowel. Elsewhere, it is symbolized as the vowel u.

liw + 0	be alive + 0
liu (US & FF)	'to live, be alive'
beuna + redup	'carry under the arm'
beubewan (US & FF)	
*páw gam	
páu gam (US & FF)	'your (pl) thighs'

3.3 Further Derivations

Following are some further examples which involve the application of several rules each.

	tabar+i 'give'	leper+tán 'flat'	ka+ya+n 'his,hers'	bala+n 'stomach'	kábulu+n 'neck back'	kepsa+n 'chin'	káli+n 'shoulder'
IF	tabari	leperán	Kayan	balan	kábulun	kepsan	kálin
MFA	tabári		Kayán	balán		Kepsán	
AH		leperen				kepsen	
MIA	tábári		káyán	bálán			
SD	tábri	lepren					
VSR	támri						
LM				bááln	kábuuln		káiln
CCR				báál	kábuul		káil
GR				bál	kábul		
FF	támri	lepren	káyán	bál	kábul	kepsen	káil

4 EXCEPTIONS AND COMPLICATIONS

As with any set of rules, there are certain exceptions, and Sursurunga is no "exception" to this. In this section, I will list and discuss the words, sets, and classes that do not fit the preceding rules.

4.1 Inalienable nouns

Certain of the inalienable nouns do not fit any rules, or there are so few of them that operate alike that it does not seem prudent to make a complicated rule just for them.

kiki + n	leg + 3ps	tiki + n	feces + 3ps
keken	'his leg'	teken	'his feces'

These would seem to be a class all their own except that:

mingi + n	right + 3ps
*mengen	
mingin	'his right (hand)'

Furthermore, these 2 words do not fit the very regular pattern of other inalienable nouns regarding nonsingular formation. All other nouns like this form the nonsingular stem from the third person singular form of the noun (so you would expect *kek di 'their feet' and *tek di 'their feces'). However, although these two use much the same process, the stem used is the first/second person singular form, thus, kik di 'their feet' and tik di 'their feces'.

For these reasons I feel it best to assign them as exceptions rather than write two more rules for only these two words.

Other inalienable nouns simply do not "obey" the rules that should apply to them:

nala + n	torso + 3ps	tura + n	friend + 3ps
nalán (MFA)		turán (MFA)	
*nálán (IA)		*tuárn (LM)	
*naaln, (LM)		turán (FF)	'his friend'
naáln			
nalán (FF)	'his torso'		

4.2 Modifiers

The modifierizing suffix -án can be attached to quite a number of intransitive verbs to form modifiers which precede nouns. Many of these are affected by morphophonemic rules:

marang + án	old + mdf
*marangán (IF)	
marngán (SD & FF)	'old'
morot + án	decayed + mdf
*morotán (IF)	
*moroton (AH)	
morton (SD & FF)	'decayed'

Quite a significant number of modifiers, however, do not "obey" the rules that should apply to them, or do not obey all the rules:

kalis + án	curly + mdf
kalisán (IF & FF)	'curly'
*kalsán (SD)	
merok + án	tired + mdf
merokán (IF)	
merokon (AH & FF)	'tired'
*merkon (SD)	

In addition to the "obedient" and "disobedient" modifiers, there are two other classes of modifiers in Sursurunga. One class, composed of only two known members, takes -un rather than -án as a modifierizing suffix with no changes to the verb stem. The other class takes no suffix, but simply occurs in its verbal form preceding nouns.

My feeling, therefore, is that it is simplest to consider Sursurunga modifiers as composed of four classes, only one of which is affected completely by morphophonemic rules, and another of which is affected only partially by those rules.

4.3 Reduplication

Verbs can be divided into three different classes based on the way they reduplicate.

1. 2-segment reduplication

This occurs in only a few 2-syllable verbs and quite a number of single-syllable verbs. The first 2 segments of the stem are the part that is reduplicated and they occur preceding the stem.

$$S_1 S_2 \% \text{ ----} \rightarrow S_1 S_2 S_1 S_2 \%$$

All verb stems which are CVVC are in this class:

káik	'vomit'	baut	'sew'
kákáik		babaut	

Other verbs are drawn from various syllable patterns:

sira	'sell'	bor	'cover'
sisira		bobor	'wrap up'
kas	'scoop'	bing	'kill'
kakas		bibing	'commit suicide'
arat	'bite'		
ararat			

2. 3-segment reduplication

This type occurs on some single-syllable verbs and on the majority of 2-syllable verbs. Here it is the first 3 segments of the stem which are reduplicated preceding the stem.

$$S_1 S_2 S_3 \% \text{ ----} \rightarrow S_1 S_2 S_3 S_1 S_2 S_3 \%$$

Various syllable patterns are represented in this type, and the other listed morphophonemic rules operate (i.e. VSR and US):

siu	'wash'	kas	'scrape'
siusiu		kaskas	
gálta	'ask'	bawar	'yell'
gálgálta		baubawar	
kumur	'cut hair'	pusak	'carry on shoulder'
kumkumur		puspusak	

In reduplicated words where a voiced stop occurs syllable finally, the voiced stop goes to either its voiceless or its nasal counterpart. There is no apparent conditioning factor governing the choice of one over the other. In a few cases, either one is acceptable; in only one known case is only the voiceless stop allowed; and in most cases only the nasal is acceptable. The choosing of the nasal is not conditioned by its being contiguous to only

voiced segments, as with transitive verbs (USR); it occurs contiguous to both voiced and voiceless segments.

pidan	`talk'	kabin	`because'
*pitpidan		kapkabin	
pinpidan		*kamkabin	
kabat	`tie'		
kapkabat			
kamkabat			

3. Irregular

There are also certain verbs which do not show a regular pattern in their reduplication:

beuna	`carry under	bana	`meet'
beubewan	the arm'	banbanah	

FOOTNOTES

1. Syllable pattern distribution is discussed in the phonology paper, Section 5.1. It is helpful at this point, however, to note that Sursurunga transitive verbs prefer CV(C) or CUV in the final syllable.

2. The suffix -i "marks one of two classes of transitive verbs, and is suffixed to the verb itself as a direct object. It may precede an explicit direct object, or stand without one to mean 'him, her, it'... There is both a grammatical and a semantic condition for its occurrence: it only occurs when (1) no other pronoun or proper name follows, or (2) when semantically the clause speaks of a specific direct object rather than a general action." (Hutchisson: to be published) I have chosen to gloss it 3ps in the examples for two reasons. First, percentage-wise, it carries this load most of the time, and second, this gloss indicates the similarity of environment for this rule when applied to nouns and pronouns as well as verbs.

ABBREVIATIONS

ant	anterior	nas	nasal
C	consonant	Ø	zero, deletes to nothing
cons	consonantal	pspn	possessive pronoun stem
cor	coroneal	pl	plural
excl	exclusive	S	any segment either consonant or vowel
FF	final form	sg	singular
IF	initial form	son	sonorant
incl	inclusive	vd	voiced
mdf	modifierizer	V	vowel
#	space (indicates word boundary)	-	indicates the absence of a feature
1ps	1st person sg	+	indicates a morpheme break; indicates the presence of a feature
3ps	3rd person sg	.	syllable break
---->	becomes	α	has the same value (+ or -)
()	optional (in formulas/rules)	*	does not occur, or does not occur in this exact form on the surface
%	rest of the word		

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