7 A phonological description of Fordata

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1 Introduction

Fordata is an Austronesian language included among the Central Malayo-Polynesian languages (Blust 1978) and is located in the eastern Indonesian province of Maluku. Fordata is spoken mainly in the northern part of the Tanimbar archipelago (see Map 1). It is the vernacular on the islands of Fordata, Larat, Lutur, Nuswotar, Labobar, Teneman, Molo, Maru and north-western Yamdena, along with one island, Sera, in the southern part of the Tanimbar archipelago. The language most closely related is Kei, spoken approximately 100 miles away in the Kei Islands.

In addition to the above areas, the larger trade centers of Saumlaki and especially Ambon now have sizeable communities of Fordata speakers. The current total number of speakers is approximately 23,000–25,000.

The data for this paper were collected by the author during residences totalling twelve months between 1988 and 1990 in the Fordata language area. The majority of that time was spent in the village of Romean, on the island of Fordata. All the villages on Fordata have been visited by the author, along with several on Larat, West Yamdena, and Sera in order to gather word lists, do sociolinguistic surveys, and ascertain dialect boundaries.

1.1 Previous linguistic work

Among previous linguistic research efforts, the first writings mentioning Fordata were done by Catholic missionaries. One sketch by Riedel (1886) largely consisted of ethnographic observations. Geurtjens (1928) wrote a paper on idioms in Tanimbar, using the work of P. Drabbe, also a Catholic priest. Drabbe's grammar sketch (1926) and dictionary (1932) have given this author helpful insights into the language. In his sketch of Fordata grammar, Drabbe briefly discusses his orthographic decisions, which include morpheme breaks and compounding. Drabbe (1926:2) concluded that there were five vowels and fifteen consonants, overlooking the glottal phoneme, and also states that word stress is penultimate on the root, regardless of any affixation. More recently McKinnon's

Charles E. Grimes, ed., *Spices from the East: papers in languages of Eastern Indonesia,* 181-235.
Canberra: Pacific Linguistics, 2000.

book, *From a shattered sun* (1992), which describes the Fordata alliance and exchange system, contains a small amount of linguistic information, much of it being quotes from Drabbe. A native Fordata-speaking teacher at Pattimura University in Ambon, J. Vatkaat, has written two unpublished manuscripts dealing with aspects of Fordata phonology (1984) and language use (1989). Vatkaat's phonology paper is mainly a segmental analysis of the phonemes and distributional statements regarding consonants and vowels. He did not include any comments on the morphophonemics. These two papers have been of some use in this phonological analysis. Brief mention of Fordata is also included in several comparative studies (Blust 1978, Collins 1982, Hughes 1987).

1.2 Economic considerations

People in the Fordata speaking area are mainly subsistence-level farmers and fishermen. The cash crop base of the Fordata area has traditionally been *copra* (dried coconut), from which coconut oil is made. In recent years, several factors have been changing the importance of *copra*. Market prices have dropped dramatically for *copra*. New markets in topshells, sea cucumbers, shark fin, bird nests, fruit, and dried fish have also opened up. Improvements in long-range transportation have brought in many more ships to the district ports to trade in these commodities. This broader economic base, along with greatly increased government development programs, has linguistic implications (§1.4) as well. The greater amount of available cash has enabled many families to send most of their children to high school or higher on other islands. The great majority of young people who finish high school (a high percentage in the Fordata area) will not return to the village, but will look for work in larger commercial centers. More Fordata people are now travelling to other parts of Maluku and Indonesia.

1.3 Religious considerations

Almost 100 percent of ethnic Fordata people call themselves Christian. The majority belong to the *Gereja Protestan Maluku* (Moluccan Reformed Church), with small groups of Catholics and Pentecostals. The villages of Labobar and Karatat are mostly Muslim, being comprised of people from other ethnic groups, such as Geser and Bugis, who have been migrating into the area for several generations. These Muslim villages historically have taken on Fordata as their *lingua franca*, although language use and attitudes are currently poor.

1.4 Language use

Although Fordata is the vernacular of the area, there is increasing influence from Ambonese Malay, the trade language of central and south Maluku. The domains in which Fordata is used seem to be stable at this point in time. These domains are the home, in the field, on the trails, and traditional law (*adat*). Standard Indonesian and Ambonese Malay are used in schools, government (community) meetings, and most church activities. Most parents will speak mixed Fordata and Malay to children. For this reason, Fordata people do not become proficient in all areas of the vernacular until the mid to late teen years. Those who go off to

high school normally will not become fluent in using Fordata in anything but surface conversations. Many of the young people in this category could be considered semi-lingual, not knowing any language really well.

1.5 Dialect considerations

Fordata people state that most of the villages speak the same language, with lexical and intonational differences. They all point to Sera as being the most divergent. Time that I have spent in many Fordata villages bears this out, along with corroborating evidence from word lists (Hughes 1987) and sociolinguistic surveys. I propose that there are four dialects: *Romean, Sofyanin, Molo* and *Sera*, with Sera being the most divergent. Figure 1 below[1] shows the phonological variations between the dialects:

Romean	*Sofyanin*	*Molo*	*Sera*
[#ʔV]	[#ʔV]	[hV]	[#ʔV]
[VʔV]	[VʔV]	[VʔV]	[V:]
[VhV]	[VhV]	[VhV]	[V:]
[ai]	[e:],[ɛ:]	[ai]	[e:], [ɛ:]
[aʔi]	[eʔe]	[aʔi]	[e:]
[au]	[ɔ:]	[au]	[ɔ:]
[aʔu]	[ɔʔɔ]	[aʔu]	[ɔ:]
[ea]	[e:], [ɛ:]	[ea]	[e:], [ɛ:]
[ahɪ,i]	[ɛhɛ]	[ahɪ,i]	[e:]
[ahu]	[ɔhɔ]	[ahu]	[ɔ:]
[Va#]	[V:#]	[Va#]	[V:#]

Figure 1: Variations between the four Fordata dialects

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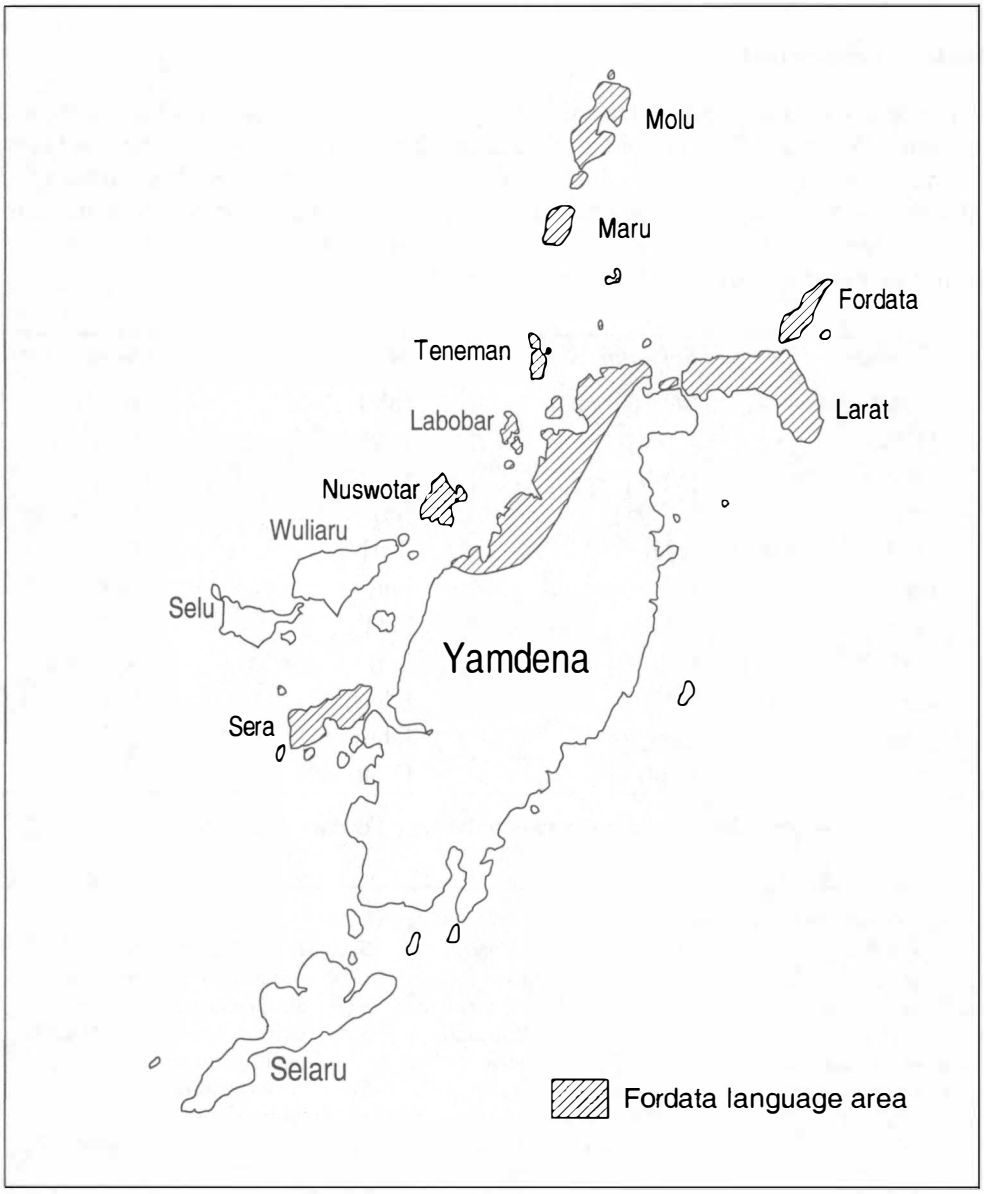
[1] Abbreviations and symbols used in this paper:

σ	syllable	C	consonant	S_1	final syllable of root.
*σ	stressed syllable	CAUS	causative	S_2	penultimate syllable of root
[Âant]	anterior	CAUS, NOM, experiencer		S_3	antepenultimate syllable
[ßcor]	coronal	DUP	reduplication	S_d	ultimate syllable of a disyllabic
[-cont]	continuant	GEN	genitive		genitive enclitic suffix
[+nas]	nasal	incl	inclusive	SF	sentence form
[-son]	sonorant	INTRANS (active)		S_m	monosyllabic enclitic
[+syll]	syllabic	INTRANS intransitive		S_n	pre-penultimate syllables
[-syll]	non-syllabic	lab	labial	S_p	penultimate syllable
[+voice]	voiced	lat	lateral	STATE (accidental or unspecified	
1pe	first person plural exclusive	nas	nasal		causer)
1pi	first person plural inclusive	NOM	nominaliser	STATE (in process)	
1s	first person singular	PART	particle	STATE (progressed or finished)	
2p	second person plural	PL	plural	STATE (progressive, on going)	
2s	second person singular	QNT	quantity	V	vowel
2s	second person singular	RCP	reciprocal	vd.	voiced
3s	third person singular	s.o.	someone	vl.	voiceless

Intonation pattern differences also exist between the dialects, and even between villages, with Sera again being the most divergent.



The Tanimbar Islands, showing the Fordata language area

2 Segmental phonology

The Fordata phoneme system has five vowels and sixteen consonants.[2] Stress, which falls on the penultimate syllable of the root, is completely predictable and therefore is not marked in this paper, except in the §4 on word stress. Contrasts between consonants and between vowels are illustrated by minimal pairs in Appendix A.

2.1 Consonantal segments

		Labial	Apical	Laminal	Dorsal	Glottal
Stop	**vl.**		t		k	ʔ
	vd.	b	d			
Fricative	**vl.**	f	s			h
	vd.	v				
Nasal		m	n		ŋ	
Liquid:	**Lat**		l			
Trill			r			
Semivowel		w		y		

Figure 2: Fordata consonants

In Figure 2 above, the points of articulation are labelled as such to show a good symmetrical distribution. In the apical position, /t/ is phonetically dental and /d/ and the other apicals are alveolar. Laminal /y/ is justified as a separate phoneme because of distributional limitations (§3.1). The glottals /h/ and /ʔ/ also display differences in distribution and behaviour (§3.1).

2.2 Description of consonants

2.2.1 Stops

The two stops that are conspicuously missing are the voiceless labial [p] and the voiced dorsal [g].[3]

The phoneme /t/ is a voiceless apico-dental stop and is found in all positions, for example:

(1)	[titi]	/titi/	'girl'
	[temar]	/temar/	'bamboo'
	[lotar]	/lotar/	'defend'
	[tetar]	/tetar/	'hop quickly'
	[manut]	/manut/	'bird'

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2 Fordata speakers also make use of the following loan phonemes: /c/, /p/, and /j/. These are borrowed from Malay and are not included in the inventory of inherited phonemes.

3 There are several examples of PAn **p* becoming *f* in Fordata. **pa* 'CAUS' becomes *fa* and **paRi* 'stingray' becomes *fari*.

[balit]	/balit/	'left'
[tniri]	/tniri/	'kingfish'
[tranan]	/tranan/	'south'
[taltelun]	/tal-telu-n/[4]	'in threes'
[fatvelar]	/fa-ta-velar/	'turn s.t. over'

The phoneme /k/ is a voiceless dorsal stop, occurring in all positions, for example:

(2)

[kidə]	/kida/	'friend'
[kesi]	/kesi/	'food for a journey '
[lokat]	/lokat/	'every'
[kikur]	/kikur/	'tail'
[nafraik]	/na-fraik/	'he blows s.t.'
[n̥lorak]	/na-lorak/	'he cuts s.t.'
[kba:]	/kbaa/	'board'
[kyavu]	/kyavu/	'dust'
[n̥siklabir]	/na-si-ka-labir/	'he lies'
[katkatan]	/kat-katan/	'scorpion'

The phoneme /ʔ/ is a glottal stop appearing only intervocalically. Its occurrence is not, however, predictable in this intervocalic position. Phonetically, glottal stops occur also before all vowel-initial words, but are not contrastive in this position (§3.3). Note the following examples:

(3)

[ʔaʔan]	/a'a-n/	'his sibling'
[ʔaʔit]	/a'it/	'centipede'
[muʔu]	/mu'u/	'banana'
[sŋaʔut]	/snga'ut/	'fast'
[n̥siʔik]	/na-si'ik/	'he looks at s.t.'
[daʔut]	/da'ut/	'rain'

The phoneme /b/ is a voiced bilabial stop.[5] It is found word-initially and -medially, but never word-finally in normal speech in word roots,[6] for example:

(4)

[n̥belat]	/na-belat/	'he fences'
[bobən]	/boban/	'casket'
[yabi]	/yabi/	'skill'
[kaban]	/kaban/	'cone shell'
[branə]	/brana/	'male'
[blaŋar]	/blaŋar/	'coral trout'
[nabla:n]	/na-blaan/	'he coughs'
[rabrubi]	/rabrubi/	'yellowfin tuna'

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4 Hyphens denote morpheme breaks, either for derivational or inflectional affixes or for reduplicated morphemes.

5 Reflexes of PAn *p in Fordata are interesting, as the labials /b/ and /f/ represent historical *p, for example *bana* 'go' is from *panaw and *fana* 'arrow, shoot arrow' is from *panaq.

6 Non-nasal labials, e.g. /b f v/ do not occur word-finally in normal speech. However, in fast speech, final vowel deletion (§6.7.1.2) will permit these non-nasal labials to occur in word-final position.

The phoneme /d/ is a voiced apical stop, occurring in all positions,[7] as demonstrated in the following examples:

(5)			
	[dalaŋ]	/dalaŋ/	'very'
	[dekut]	/dekut/	'orphan'
	[kidə]	/kida/	'friend'
	[didə]	/dida/	'our (incl.)'
	[wahad]	/waha-d/	'our (incl.) face'
	[yatad]	/yata-d/	'our (incl.) liver'
	[nakduvul]	/na-ka-duvul/	'he sank'
	[dakdokun]	/dak-doku-n/	'DUP-sit-PART'

2.2.2 Fricatives

The phoneme /f/ is a voiceless labio-dental[8] fricative and does not occur word-finally in normal speech, for example:

(6)			
	[fenu]	/fenu/	'turtle'
	[faliak]	/faliak/	'expression'
	[n̥fofə]	/na-fofa/	'he floats'
	[lafar]	/lafar/	'starvation'
	[fteni]	/fteni/	'parrot fish'
	[tfuri]	/tfuri/	'triton shell'
	[naftofi]	/na-f-tofi/	'he's doing wash'
	[fatfitun]	/fat-fitu-n/	'in sevens'

The phoneme /s/ is a voiceless apical fricative occurring in all word positions, as can be seen in the following examples:

(7)			
	[sula:r]	/sulaar/	'sailfish'
	[suhut]	/suhut/	'disease'
	[tesin]	/tesin/	'original'
	[maresən]	/maresan/	'chile pepper, spicy'
	[n̥labas]	/na-labas/	'he chases s.t.'
	[kalumus]	/kalumus/	'mud'
	[slaru]	/slaru/	'corn'
	[sŋa:t]	/sŋaat/	'spear'
	[salsolə]	/sal-sola/	'fish spear'
	[saksakan]	/saksakan/	'wave'

The phoneme /h/ is a voiceless glottal fricative appearing only intervocalically,[9] for example:

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7 The phoneme /d/ word-finally has a limited occurrence, appearing only as a 1pi possessive suffix.

8 The inner lower lip to teeth is the specific point of articulation for both /f/ and /v/.

9 One word, *hi'i* 'truly, really', has been recorded in which /h/ is initial. This word was not found in Drabbe's (1932) dictionary. As previously mentioned in §1.5, speakers of the Molo sub-dialect add an /h/ to word-

(8)	[suhut]	/suhut/	'disease'
	[ʔihin]	/ihi-n/	'his flesh'
	[vavahan]	/va-vahan/	'mud'
	[vahi]	/vahi/	'paddle'

The phoneme /v/ is a voiced labio-dental fricative. Among some of the younger speakers of Fordata, the contrast with /w/ has been lost and /v/ has been replaced by /w/.[10] It occurs word-initially and -medially but not word-finally in normal speech, for example:

(9)	[vata]	/vata/	'female'
	[vinik]	/vinik/	'peel'
	[vavu]	/vavu/	'pig, boar'
	[nanavut]	/na-navut/	'he is drunk'
	[vrekə]	/vreka/	'type of lizard'
	[vra:]	/vraa/	'hermit crab'
	[savsovu]	/sav-sovu/	'hot sauce'
	[varvuru]	/varvuru/	'small bore bamboo'

2.2.3 Nasals

The phoneme /m/ is a voiced labial nasal appearing in all word positions, though it has a limited occurrence in word-final position, appearing only as 2sg. genitive suffix.

(10)	[maŋun]	/maŋun/	'guest'
	[manovən]	/manovan/	'rat'
	[kamɛrən]	/kameran/	'late'
	[kamat]	/kamat/	'testicle'
	[limәm]	/lima-m/	'your (sg.) arm'
	[ninim]	/nini-m/	'your (sg.) gum'
	[mŋaʔun]	/mŋa'un/	'true'
	[mɳɛrən]	/mneran/	'hunting tools'
	[marma:r]	/marmaar/	'north'
	[makmukur]	/makmukur/	'round'

The phoneme /n/ is a voiced apical nasal occurring in all word positions, for example:

(11)	[nara]	/nara/	'star'
	[naɪ̯t]	/nait/	'wind'
	[binən]	/binan/	'plate'
	[lunə]	/luna/	'carry'

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initial vowels (instead of [ʔ]). Historically, Molo speakers came from the other sub-dialect areas. In the Sera dialect, /h/ has disappeared altogether.

10 The vast majority of speakers who are fluent in speaking Fordata do use /v/. The degree to which this loss of contrast occurs varies from village to village. In Larat (the town) and outside of the Fordata language area (Ambon, Saumlaki, etc.) this neutralisation is much more pronounced (my own observations). Young speakers also are more likely to produce /w/ instead of /v/. This may be due to influence from Malay, which does not have the voiced labio-dental fricative phoneme /v/. The /f/ and /v/ in Malay words (phonetically speaking) are replaced by /v/ in Fordata (§8).

[lawan]	/lawan/	'appearance'
[latan]	/latan/	'stick'
[tnabar]	/tnabar/	'stomping dance'
[ŋneə]	/ŋnea/	'hot'
[faŋnanaŋ]	/fa-ŋnanaŋ/	'cause to remember'
[banbanan]	/ban-bana-n/	'journey'

The phoneme /ŋ/ is a voiced dorsal nasal and occurs in all word positions, which can be seen in the following examples:

(12)			
	[ŋeən]	/ŋean/	'garden fence'
	[ŋorə]	/ŋora/	'full'
	[suŋu]	/suŋu/	'pierce s.t.'
	[noŋə]	/na-oŋa/	'it lights'
	[dalaŋ]	/dalaŋ/	'very'
	[weəŋ]	/weaŋ/	'deceive'
	[ŋgrovə]	/ŋrova/	'grass'
	[ŋtoən]	/ŋtoan/	'black'
	[ŋatŋatul]	/ŋat-ŋatul/	'gecko'
	[nafŋai]	/na-f-ŋai/	'he clears (a garden)'

2.2.4 Liquids

The phoneme /l/ is a voiced apical lateral occurring in all word positions, for example:

(13)			
	[lanu:n]	/lanuun/	'land, ground'
	[liŋat]	/liŋat/	'forest hut'
	[amfalak]	/am-falak/	'we (incl) say'
	[sula:r]	/sulaar/	'sailfish'
	[nail]	/na-ail/	'he dives'
	[n̥watɪl]	/na-watil/	'he jumps'
	[slaru]	/slaru/	'corn'
	[vlunur]	/vlunur/	'type of tree'
	[salsolal]	/sal-solal/	'slippery'
	[siklabɪr]	/si-ka-labir/	'to lie'

The phoneme /r/ is a voiced apical trill. It occurs in all positions, and word-finally can at times can be heard in free variation with the voiced alveolar flap [r], for example:

(14)			
	[ralan]	/rala-n/	'his insides'
	[renən]	/rena-n/	'his mother'
	[n̥mɛrət]	/na-merat/	'he is clean'
	[mara:n]	/maraan/	'light (weight)'
	[livur]	/livur/	'village'
	[n̥fana?ur]	/na-fa-na'ur/	'he fishes'
	[fra:]~[fra:]	/fraa/	'iron wood'
	[brana]	/brana/	'male'
	[marmuri]	/marmuri/	'young'
	[nakreti]	/na-kreti/	'it is shallow'

2.2.5 Semivowels

The phoneme /w/ is a high back non-syllabic semivowel appearing word-initially and word-medially, as is illustrated in the following examples:

(15)	[wahan]	/waha-n/	'his face'
	[waʔar]	/wa'ar/	'root'
	[ʔawan]	/awa-n/	'his spouse'
	[dawan]	/dawan/	'big'

The phoneme /y/ is a high front non-syllabic semivowel and occurs word-initially. This semivowel occurs in non-initial positions within a morpheme,[11] but not intervocalically, for example:

(16)	[yaha]	/yaha/	'dog'
	[yai]	/yai/	'shark'
	[fyawan]	/fyawa-n/	'its price'
	[ŋyebə]	/na-yeba/	'it lights'
	[yatyatak]	/yat-yatak/	'top of a roof'
	[yadyadu]	/yad-yadu/	'shivering'

The phonemes /w/ and /y/ are consonants that occur in the non-nucleus position of a syllable. Since CC onsets can occur in the stressed syllable and at the boundaries of the stressed syllable and a preceding syllable, and sequences of only two vowels are allowed, the following phonemic representations are proposed:

(17)	/bwea/	[bweə]	'crocodile'
	/bwaa/	[bwa:]	'maggot'
(18)	/lyawan/	[lyawan]	'clear'
	/ilyaan/	[ʔɪlya:n]	'tomorrow'
	/u-yadu/	[uyadu]	'I shiver'
	/na-yeba/	[ŋyebə]	'it illuminates'

2.3 Vowel segments

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

Figure 3: Vowels

2.4 Vowels: description

Fordata has five vowels. The following is a description of these five vowels.
The phoneme /i/ is a high tense[12] front unrounded vowel, for example:

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[11] The phoneme /y/ fills the medial slot only in reduplicated forms.

(19)	[ʔiə]	/ia/	'he/she/it'
	[ʔiŋi]	/iŋi/	'lingua wood'
	[fitik]	/fitik/	'lightning'
	[liək]	/liak/	'other'
	[diti]	/diti/	'female of nobility'
	[vaʔi]	/va'i/	'garden'

It occurs in all positions, except preceding /r/ or /l/, where its lax variant [ɪ] occurs, for example:

/i/ _ [-tense]/ ___ C
[+son]
[-nas]

(20)	[ʔɪrə]	/ira/	'they'
	[ʔɪrit]	/irit/	'thin rope'
	[lahɪr]	/lahir/	'superlative'
	[n̥bahɪr]	/na-bahir/	'he pays'
	[basɪl]	/basil/	'true'
	[n̥watɪl]	/na-watil/	'he jumps'

The phoneme /e/ is a mid tense front unrounded vowel.

(21)	[ʔevun]	/evu-n/	'his stomach'
	[ʔetal]	/etal/	'piece'
	[n̥leal]	/na-leal/	'he is'
	[kedən]	/kedan/	'a little'
	[te]	/te/	'or'
	[ne]	/ne/	'that'

It occurs in all positions,[13] except preceding /r/, where its lax variant [ɛ] occurs,[14] for example:

/e/ → [-tense] / ___ C
[+son]
[-nas]
[-lat]

(22)	[sɛrə]	/sera/	'sago'
	[lɛrə]	/lera/	'sun'
	[n̥mɛrat]	/na-merat/	'he's clean'
	[wɛrin]	/weri-n/	'its fin'

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12 The tense and lax distinctions make no claims of tenseness of musculature in Fordata, but are conventional terms for close and open vocoids.

13 There are a few examples of /e/ occurring word-finally that have been discovered so far: [ne] /ne/ 'that' and /ma/ + /ne/ 'will', which is frequently heard as /ma'nene/ or shortened to /me/, and [te] /te/ 'or'.

14 In a few instances, [ɛ] has been recorded preceding /l/ and /n/. In all of these instances, the form was shortened either as a result of rapid speech (vowel elision or colloquial shortening). The word [weən] is frequently spoken [wɛn], [vɛrin] as [vɛn]. The word /wahal/ becomes [wɛl] depending on its grammatical position in the sentence. In summary, /e/ becomes [ɛ] before /l/ in a mono-syllabic morpheme.

The phoneme /a/ is a low lax central unrounded vowel occurring in all positions, for example:

(23)			
	[ʔara]	/aru/	'viper'
	[ʔahu]	/ahu/	'village'
	[blaman]	/blaman/	'deep'
	[nail]	/na-ail/	'he dives'
	[ʔivar]	/ivar/	'news'
	[n̥foar]	/na-foar/	'he is stupid'
	[n̥kaʔa]	/na-ka'a/	'he knows'
	[nara]	/nara/	'star'

Its allophone [ə] occurs when the preceding stressed syllable contains a non-low vowel and the following consonant is either /n/ or /k/. The allophone [ə] also occurs in word-final syllables with no coda.[15] I posit the following rule for [ə]:

$$/a/ \dashrightarrow ə \;/\; \underset{[-low]}{V} \; C \_\_ \; (C) \; \# \quad (n,k)$$

(24)			
	[ʔalemən]	/aleman/	'heavy'
	[voən]	/voan/	'spider'
	[n̥fonək]	/na-fonak/	'he hides s.t.'
	[faŋofək]	/fa-ŋofak/	'turn over'
	[lɛrə]	/lera/	'sun'
	[kidə]	/kida/	'friend'
	[favɪrə]	/favira/	'split bamboo'
	[n̥lekə]	/na-leka/	'he falls'

The phoneme /u/ is a high tense back rounded vowel and is found in all word positions, as illustrated by the following examples:

(25)			
	[ʔubun]	/ubu-n/	'his grandchild / grandfather'
	[ʔuru]	/uru/	'spoon'
	[dubɪl]	/dubil/	'arrow'
	[vulən]	/vulan/	'moon, month'
	[taul]	/taul/	'small bucket'
	[daʔuk]	/da'uk/	'brother / sister in-law'
	[vutu]	/vutu/	'ten'
	[vatu]	/vatu/	'rock'

The phoneme /o/ is a mid tense back rounded vowel appearing word-initially and word-medially, for example:

(26)			
	[ʔovən]	/ovan/	'night'
	[ʔoar]	/oar/	'river'
	[boku]	/boku/	'some'
	[naŋtoən]	/na-ŋtoan/	'he is black'

[15] The lax allophone [ə] does occur in certain grammatical positions at the end of a clause or sentence; e.g., [ə mə], [ə nə] and [ə bə], which are particles plus a conjunction. When the a morpheme occurs with none of the above conjunctions, or when the conjunctions do not have a preceding [a], the [a] is tense.

All word-initial vowels are initiated with a phonetic glottal. There is no contrast with its absence, so the glottal stop in this position is not phonemic. That the glottal stop is omitted when the stem is prefixed is a further reflection of its purely phonetic role in initial position, for example:

(27)	[myail]	[mi]+[ʔail]	'you all dive'
	[rotu]	[ra]+[ʔotu]	'they make/do s.t.'

Note that in both examples the resulting vowel cluster is resolved. See the discussion on verb prefixing in §6.1.

2.5 Vowel sequences

In Fordata each vowel forms a syllable peak or nucleus. Thus, sequences of like and unlike vowels cross syllable boundaries. The syllable will be more thoroughly discussed in §5.1, and 5.2. There are no dipthongs in Fordata.

(28)	[na^{i}t]	/nait/	'wind'
	[romeən]	/romean/	'Romean village'
	[bweə]	/bwea/	'crocodile'
	[voən]	/voa-n/	'it's smell'
	[ʔoar]	/oar/	'stream, river'

To interpret [na^{i}t] as /nayt/ would introduce a new CV pattern (§5.1). Thus, the above examples, plus words such as [voən] 'it's smell', with sequences of vowels in either order, are best interpreted as vowel sequences: /ia/, /ai/, /au/, /ea/, /oa/, and /ua/.[16] The section on stress (§4) will further clarify the decision to interpret vowel sequences as segments instead of diphthongs.

The following illustration shows the relationship of vowels, syllables and stress, which in Fordata is on the penultimate syllable of the word (99 percent of the time this is the root; §4.1). The syllable is represented by [σ] and the stressed syllable by [*σ].

(29)

	*σ	σ		
/	|	|	\	
(C)	V	V	(C)	
|	|	|	|	
	o	a		'2s'
t	u	a	t	'palm brandy'
w	e	a	n	'like, as'
t	a	u	l	'bucket for drawing water'

Geminate vowel sequences in Fordata are manifested by phonetic length and like non-geminate vowel sequences, occur across syllable boundaries with the first vowel carrying the stress. Geminate sequences are found on the phonemes /a/, /i/, and /u/.

---

[16] Several other Central Malayo-Polynesian languages, such as Buru (Grimes 1991), Roma (Lee Steven, pers. comm.), and Meher (John Christensen, pers. comm.) also permit vowel sequences.

(30)

σ		*σ	σ		
|	/	|	|	\	
(V)	(C)	V	V	(C)	
|	|	|	|	|	
	b	a	a		'where'
a	r	a	a		'jellyfish'
		u	u	ŋ	'sarong'
	n	u	u	ŋ	'coconut'
i	ŋ	i	i	r	'foul smell'

The following examples illustrate the contrast between single vowels and geminate vowel sequences:

(31)	[la'la:r]	/lalaar/	'peninsula'
	['lalar]	/lalar/	'heated coconut milk'
(32)	['ʔalan]	/ala-n/	'its gills'
	[ʔa'la:n]	/alaa-n/	'his arm'
(33)	[ra:]	/raa/	'outrigger'
	[ra]	/ra/	'plural'
(34)	[ma:]	/maa/	'come'
	[ma]	/ma/	'so that'
(35)	[ma'ra:n]	/maraan/	'light (weight)'
	[maran]	/maran/	'type of cloth'
(36)	[ni:ŋ]	/niiŋ/	'smile'
	[niŋ]	/niŋ/	'my'
(37)	[naf'ni:t]	/na-fniit/	'he spits'
	['fnitə]	/fnita/	'ladder'
(38)	[ʔi'ŋɪ:r]	/iŋiir/	'bad smell'
	['ʔiŋi]	/iŋi/	'iron wood'
(39)	['fu:n]	/fuun/	'bottom'
	['funu]	/funu/	'banana cluster'
(40)	['lu:n]	/luu-n/	'his tear'
	['lunə]	/luna/	'carry'
(41)	['vu:t]	/vuut/	'hair'
	['vutu]	/vutu/	'ten'

These phonetically long vocoids are phonemically two homogeneous vowels, and as with all vowels, form individual syllable peaks. Evidence for this analysis can be found in four areas.

First, contrast between [a] and [a:] and [i] and [i:] has clearly been shown in examples (31–38) above; thus the contrastive nature of vowel length can be readily established. Second, CV patterns (non-geminates containing mid vowels) described in sections §3.2 and §3.3 permit two-vowel sequences to be interpreted as separate syllabic segments, for example V.V. The third area of evidence is found in word stress. Stress is always

penultimate, thus the following words with phonetically long vowels must be analysed as two adjacent vowels, each in separate syllables, for example:

(42)	[la'la:r]	/lalaar/	'peninsula'
	[ma'ra:n]	/maraan/	'light (weight)'
	[la'la:n]	/lalaan/	'long time ago'

In the examples above, if phonetic vowel length is analysed as being phonemically short, or treated as one syllable, the resulting words would have ultimate stress, thus introducing a new stress pattern.

Lastly, if stems with phonetically long vowels are analysed as short vowels and they undergo reduplication, the resulting forms are incorrect, for example:

Analyzed as V (yields incorrect form)			Analyzed as V.V (yields correct form)	
Structure of root **CV:(C)**	Expected under reduplication **CVC.CVC**		Structure of root **CVV(C)**	Expected under Reduplication **CV.CVV(C)**
bu:k	*bakbuk	*buuk*	'suck'	*babuuk*
la:r	*larlar	*laar*[17]	'sail'	*lalaar*
ŋai	*ŋaiŋai	*ŋaŋai*	'clear'	*ŋaŋai*

Figure 4: Reduplicated words with V.V sequence

For a full discussion on reduplication, see §7.

3 Distribution

3.1 Consonants

The phonemes /b v f m d t s n l r k h ŋ ' w y/ are distributed as follows:

(a) All consonants, with the exception of /h/ and /'/, occur morpheme-initially.

(b) All consonants, with the exception of /y/, occur intervocalically.

(c) All consonants except the labials /b f v/ and glottals /h/ and /'/ occur morpheme-finally in normal speech. As mentioned previously in §2.2.2 and §2.2.3, the occurrence of /d/ and /m/ morpheme-finally is limited to marking nouns for 1pi and 2s possession.

(d) Consonant clusters occur across syllable and morpheme boundaries. Geminate clusters are not allowed. Glottals /h/ and /'/ do not occur in either the first or second slot of a consonant cluster. Semivowels /w/ and /y/ do not occur in the initial position of a CC cluster. Labials and sonorants comprise most of the second position cluster options.

[17] The loss of historical *y from *layaR 'sail' accounts for the Fordata form *laar* with homogeneous vowels.

Clusters do occur within a derived syllable type (§5.2.1, §6.7.1.1) at the beginning of a word. The first consonant in a complex (CC) onset can be filled only by an obstruent. Any consonant (except /h/ and /'/) can fill the second position.

3.2 Vowels

Any vowel, with the exception of /o/, can occur in any position. There are, however, restrictions on which vowel sequences can co-occur. The phonemes /i e a o u/ all occur initially in the vowel sequence. Only /i/, /a/ and /u/ occur in the second position, as /i/ and /u/ occur only when following /a/, or when the vowels form a geminate sequence, as in /ii/ and /uu/.

	i	**e**	**a**	**o**	**u**
i	*dii* 'base'		*fiaŋ* 'time'		
e			*wear* 'water'		
a	*nait* 'wind'		*araa* 'jellyfish'		*raun* 'true'
o			*voa-n* 'smell-its'		___[18]
u			*ruat* 'tide'		*ruun* 'sea cow'

Figure 5: Vowel sequences

3.3 Consonant and vowel combinations

The consonants /b d t k v f s m n ŋ l r/ co-occur with all vowels. In syllable-final position, however, /e/ is preceded only by /t/ and /n/ (see §2.4 for the discussion of /e/). The phoneme /h/ has a limited distribution and never occurs with mid vowels. All vowels occur preceding /'/, but only /a/, /i/ and /u/ can occur following /'/. However, in word-initial position, all vowels can follow the purely phonetic appearance of [ʔ] (see §2.4).

Co-occurrence restrictions exist also with semivowels. The phoneme /y/ is followed only by non-high vowels and /w/ can precede any vowel except /u/.

Co-occurrence restrictions between the onset and vowel peak of a syllable are shown as follows:

[18] The vocative *-mou* 'call a dog' is the only example found to date with this vowel sequence.

Onset	Vowel Peak
b	i e a o u
v	i e a o u
f	i e a o u
m	i e a o u
w	i e a o
d	i e a o u
t	i e a o u
s	i e a o u
n	i e a o u
l	i e a o u
r	i e a o u
y	e a o
k	i e a o u
h	i a u
ŋ	i e a o u
ʔ	i e a o u

Figure 6: Co-occurrence restrictions

4 Stress

Word stress is described using a metrical grid (cf. Goldsmith 1990:169ff). Stress falls on the penultimate syllable of phonological words (being defined as a root plus any affixation) and is not affected by prefixes, infixes or by extrametrical monosyllabic enclitics, such as the phrase level plural marker *ra* and the particle *a*. The notion of extrametricality states that some languages ignore certain sequences or specific morphemes in building the metrical structure of a word.

(43)

				x								
		(x)		x			x			(x)		
(C)		V	-	(C)	V	(C)	V	-	(C)	V		
|		|		|	|	|	|		|		
				v	a	h	i					'paddle'
				v	a	h	i		r	a		'paddles'
				v	a	h	i			a		'paddle-PART'
n		a		v	a	h	i					'3s-paddles'
				l	i	m	a		n			'hand-3sGen'

Some monosyllabic genitive enclitic suffixes are also extrametrical when the final consonant of the root is /r/,[19] in that they also do not participate in stress assignment.

[19] All roots that require a genitive enclitic suffix are vowel final, except for a very small number of nouns that end in *r*.

(44)

					x			
					x	x	(x)	
s	u	m	a	r	-a	n		'stomach-3sGen'
b	u	b	u	r	-a	m		'chest-2sGen'
	e		a	r	-a	ŋ		'ear-1sGen'

Stress is not phonemically significant, so it will only be written in phonetic renderings when word stress is focused.

4.1 Stress with disyllabic genitive enclitic suffixes

The following figure shows both the mono and disyllabic genitive enclitic suffixes.

	1s	1pi	1pe	**2s**	2p	**3s**	3p
normal	-ng -k[20]	-dida -d	-mami	-m	-bira	-n	-rira -r
root ends in /r/	-ang	-ad		-am		-an	

Figure 7: Genitive enclitic suffixes

When disyllabic genitive enclitic suffixes are added to the root, the main stress shifts from the root to the new penultimate syllable.

(45)

					x			
					x	x		
y	a	n	a					'child'

(46)

					x			
				x		x	x	
y	a	n	a	-r	i	r	a	'child-3pGen'

(47)

					x			
		x	x		x		x	
w	a	a	-d	i	d	a		'place, position-3piGen'

The plural enclitic *ra*, when added after a disyllabic genitive suffix, still has no effect on the word stress.

(48)

					x				
x		x		x		x		(x)	
a	w	a	-b	i	r	a	-r	a	'spouse-2pGen-PL'

[20] The genitive enclitic suffix *-k* 'my' has a very restricted use, only appearing with the root *yana-* 'child' and *ina-* 'like, desire'.

4.2 Stress with vowel loss

There is a general pattern in Fordata to drop vowels before a syllable that takes primary stress (see §6.7.1.2 for a more complete discussion). In the example below, the vowel loss is from a non word-final geminate vowel sequence before a stressed syllable.

(49)

x		
x x x		
s u l a a r	'sailfish'	
m e l a	'nobility'	
x		
x x x x		
s u l a r .m e l a	'sailfish of nobility'	

The combination of more than two roots does not change the pattern of the penultimate syllable in a stress group taking the primary stress.

(50)

x	
x x x	
t a m a t a	'person'
i s a a	'one'
w a t a n	'only'
x	
x x x x x x	
t a m a t .i s a .w a t a n	'only one person'

Where there is more than one stress group in a grammatical phrase, the phrase stress occurs on the final stressed syllable of the phrase.

(51)

x	
x x x	
t a m a t a	'person'
d a w a n	'big'
i s a a	'one'
w a t a n	'only'
x	
x	
x x x x x x x x	
t a m a t .d a w a n .i s a .w a t a n	'only one big person'

5 Larger phonological structures

The phonological word, defined earlier in §4 as a root plus any affixation, can be further clarified as: where a person-subject marking prefix or derivational prefix is present, this defines the onset of the word. If both prefixes are present, the subject-person prefix is always the first prefix. Similarly, a genitive enclitic suffix, when present, defines the coda of a phonological word.

5.1 Syllables

There are four canonical syllable types represented in Fordata underlying forms. These are all derived from the abstract (C)V(C).

(52)

V	*a*	'BE'
VC	*al*	'to, for'
CV	*ma*	'so that'
CVC	*wel*	'NEG'

These four canonical syllable types are organised around the following notation:

		x				
x	x	x	x	x	x	x
(S_n)	(S_3)	S_2	(S_1)	(S_m)	(S_d)	(S_p)

S_m is the monosyllabic enclitic (either the genitive suffix, plural marker, or the particle *a*), which does not affect stress. S_d is the ultimate syllable of a disyllabic genitive enclitic suffix. Only with this suffix does the stress shift to the penultimate syllable (S_m position) of the suffix. The plural marker enclitic *ra* is the only member of S_p and it does not affect stress. S_1 is the final syllable of the root. S_2 is the penultimate syllable of the root and always takes stress if disyllabic S_d is not present. S_3 is the antepenultimate syllable of the root. S_n are pre-penultimate syllables.

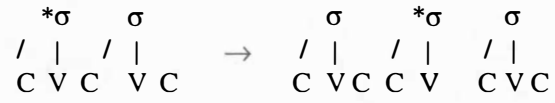
5.2 Syllable patterns

Monomorphemic trisyllabic roots are uncommon. Most words with more than two syllables can be shown to be compounds, "frozen" forms or loans. The syllable in Fordata always has a vowel as the syllable peak with its associated consonants. As mentioned above, the general shape of the syllable is (C)V(C). A list of the various shapes, with examples, of a phonological word is found in Appendix B.

A set of ordered rules (adapted from Grimes 1991:55) provides a framework for understanding how syllables are constructed and modified under certain conditions (resyllabificaton) in Fordata. The following rules associate consonants with syllable peaks, building from left to right.

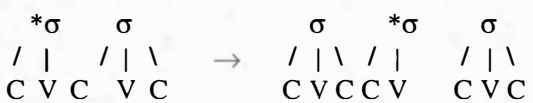
Consonants (C) immediately preceding a syllable peak (V) are associated with that peak.

Rule 1



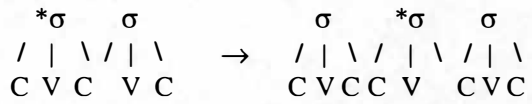
Any unassociated consonants immediately following a syllable peak are then associated with that preceding peak.

Rule 2



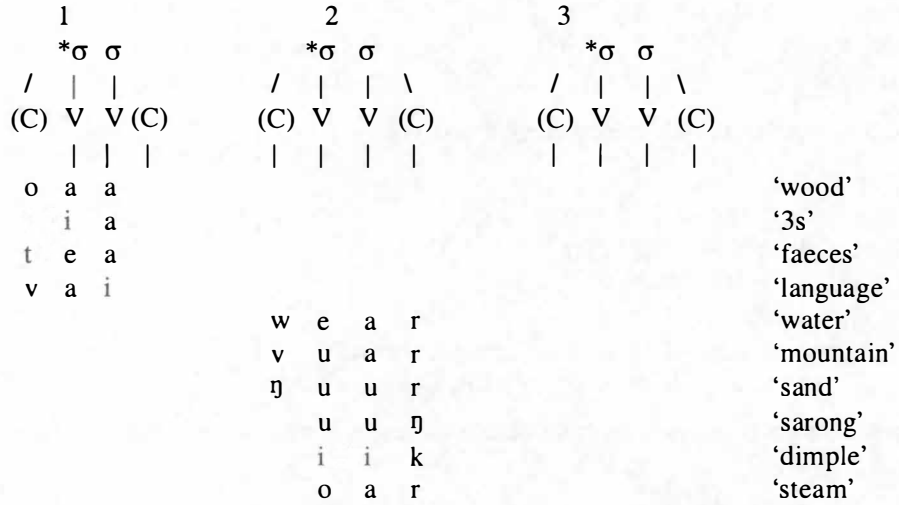
If a syllable peak is followed by another syllable, consonants immediately to the right of the syllable peak are ambisyllabic (cf. Clements and Keyser 1983:36). Therefore, instead of having discrete syllable boundaries, the consonants in this environment are associated with both peaks. The impact of ambisyllabicity will be discussed further in section §6.7.2.

Rule 3

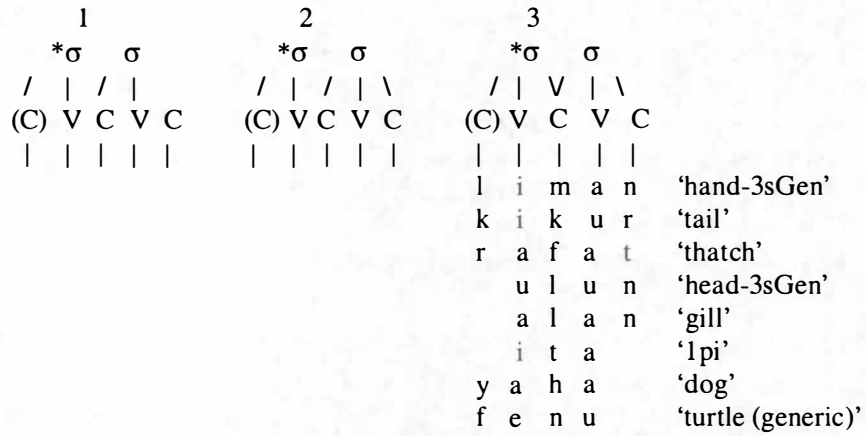


The following examples show the patterns of association with each of the three rules.

(53)

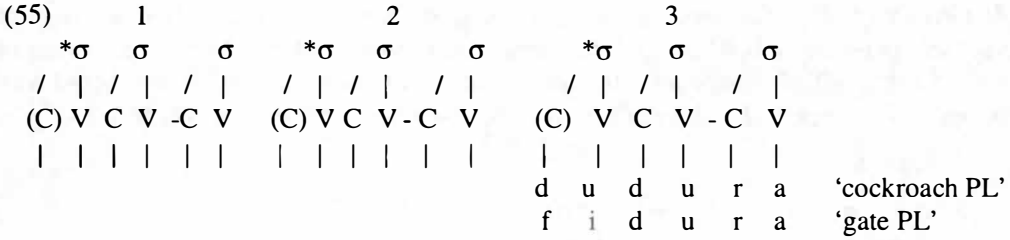


(54)

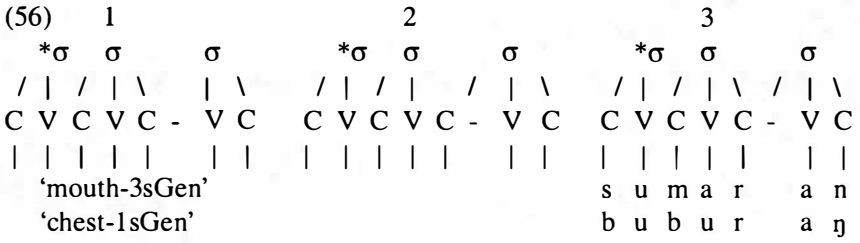


The addition of monosyllabic enclitic suffixes results in the following associations:

(55)

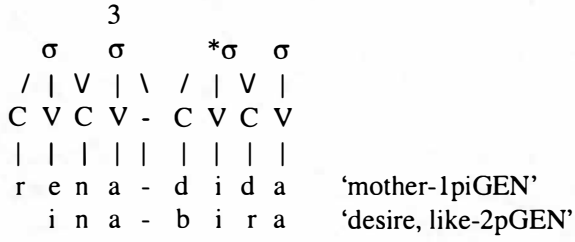


(56)



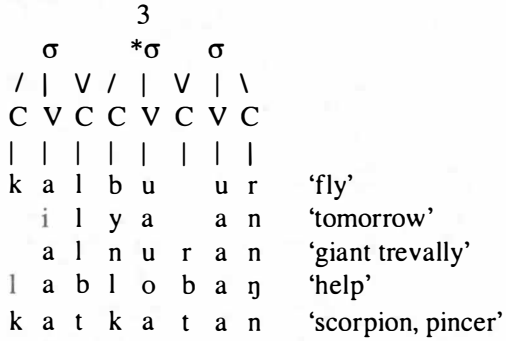
Stress shifts with disyllabic genitive enclitic suffixes:

(57)



Consonant clusters occur in some trisyllabic roots and when roots are partially reduplicated.

(58)



5.2.1 Disyllabic roots

Disyllabic roots that have not been modified[21] conform to the following pattern:

(59)
```
        *σ      σ
      /  |  \   |  \
    (C)  V  (C)  V  (C)
```

The following example illustrates disyllabic root patterns:

(60)	'VV	*aa*	'wood'
	'VVC	*ear*	'tongue'
	'VCV	*ita*	'Ipi'
	'CVV	*buu*	'large legume'
	'CVVC	*viiŋ*	'pull s.t. in'
	'CVCV	*leta*	'cross over s.t.'
	'CVCVC	*bisak*	'blow s.t.'

Where initial CC clusters are found in surface forms of disyllabic roots, there is a good possibility that these CC clusters probably result from an historical loss of antepenultimate vowels (§6.7.1.1).

(61)	*fnita*	'ladder'
	mnelat	'adolescent female'
	bwaa	'maggot'

5.2.2 Monosyllabic roots

Most monosyllabic roots follow the syllabic shape of CV.[22] Many conjunctions and particles are monosyllabic in their full forms. Only one monosyllabic root with the shape V has been observed to date (*a* 'copula, focus').

(62)	*ma*	'so that, then'
	na	'and'
	ba	'then, so'
	ta	'because'
	al	'to, in order to'

5.2.3 Polymorphemic words

Lexical roots combine with affixes and clitics and with other roots in compounding to form polymorphemic words. In following sections, polymorphemic words will be illustrated and discussed.

---

21 Modified by affixation, compounding, etc.

22 One monosyllabic root, *wel* 'NEG', with a CVC pattern has been observed. It is highly probable that *wel* is a contraction of *wahal* 'NEG'.

5.3 The shape of enclitic suffixes of a phonological word

The shape of both (S_p) and (S_d) are always CV. The syllable that is represented by (S_m) has a shape of (C)V(C). The morphemes in S_m are very limited, for example

(63)	*a*	'PART, singular, focus'
	ra	'PL'
	aŋ, am, an	'1s, 2s, 3sGEN'

5.4 The shape of the final syllable of canonical roots

The final syllable (S_1) of a canonical root has a (C)V(C) shape.

(64)	*aa*	'wood'
	beat	'type of mango'
	nara	'star'
	betan	'rotten'

5.5 The shape of the penultimate syllable of the root

The shape of the penultimate syllable (S_2) of the root is (C)V.[23] This syllable takes word stress unless there is a disyllabic genitive enclitic suffix.

5.6 The shape of pre-penultimate syllables

The pre-penultimate syllables S_3 and S_n have shapes of (C)V(C). The sources of these syllables are from a) prefixes and combinations of prefixes, b) historical trisyllabic roots, c) compounding, and d) loans. Most of the S_3 and S_n syllables that occur with prefixes, loans or historical trisyllabic roots have the vowel /a/ as a peak.

(65)	**Prefix**		
	ta-otu	[totu]	'lpi-do'
	na-rata	[nrata]	'3s-go'
	mu-fa-doku	[fwadoku]	'2s-CAUS-sit'
(66)	**Historical trisyllabic**		
	kalbuur	'fly (insect)'	
	daŋweʔu	'hermaphroditic'	
	ilyaan	'tomorrow'	
	abaa	'who (PL)'	
(67)	**Loan**		
	kareda	'church'	
	valada	'Dutchman or Holland'	

[23] When conditions cause resyllabification, CCV, CVC, and CCVC syllable shapes are derived (§6.7.1.1, §6.7.2).

6 Morphophonemic processes

Several processes bring about changes in the underlying forms of roots and words in Fordata. These changes occur across syllable, morpheme, and word boundaries. Possibly the most significant process involves the deletion of syllable peaks in the antepenultimate syllable and root or word-medial and final positions and resulting resyllabification.

6.1 Subject-marking prefix on the verb

All verbs (transitive, intransitive, stative or active/non-active, etc.) are obligatorily marked for subject. The general rule is that verb roots with simple labial consonant onsets[24] take markers from **Set 1**, simple non-labial consonant onsets take **Set 2**, vowel-initial (V) roots take **Set 3**, and roots with complex onsets (CC) take **Set 4**. **Set 4** prefixes are the underlying forms.[25] The following table displays each subject-person marker in each set:

Verb root begins with		1s	2s	3s	1pi	1pe	2p	3p
Set 1	C [+lab]	u-	-w-	n-	t-	am-	-y-	r-
Set 2	C [-lab]	u-	m-	n-	t-	am-	m-y-	r-
Set 3	V	ø[26]	m-	n-	t-	am-	my-	r-
Set 4	CC	u-	mu-	na-	ta-	ama-	mi-	ra-
Abstract form		u-	mu-	na-	ta-	ama-	mi	ra-
Historical source		*(ak)u	*(ka)mu	*(i)a	*(ki)ta	*(k)ami	*(ki)miu	*(si)Da

Figure 8: Subject-person marking prefix paradigms

6.1.1 Paradigm rules

I propose the following rules to enhance the discussion of the four types of subject-marking prefixes. **Rules 1** through **7** are crucially ordered and apply disjunctively:

Rule 1 states that *u* is deleted preceding a root-initial vowel, which applies only to **Set 3**, for example:

Rule 1. $u \rightarrow \varnothing$ /___+V

(68)	mu-ahu	*mahu*	'2s-go.(in a direction)'
	mu-etan	*metan*	'2s-cut.down.s.t.'

---

[24] **Sets 1** and **2** could be combined into one set. In separating them, however, the important distinction between labial and non-labial consonant onsets and how they affect surface forms can more easily be seen.

[25] This set of subject marking prefixes is adapted from Coward and Coward's analysis (in this volume) of Selaru, which is structurally similar to Fordata.

[26] In Drabbe's (1932) material and in personal communication with a few of the very old (80 years plus) Fordata speakers, there was a 1s prefix (*u-*) marking all verbs, no matter what the initial CV pattern was; *uail 'I dive' was an acceptable form at that time.

Rule 2 applies only to **Set 2** and states that *u* is deleted when following a non-syllabic phoneme and preceding a non-syllabic non-labial phoneme simple onset:

Rule 2. $u \rightarrow \varnothing$ / [-syll] ___ [-syll] [+syll] [-lab]

(69)	mu-rafat	*mrafat*	'2s-put.thatch.on.s.t.'
	mu-suŋu	*msuŋu*	'2s-puncture.s.t.'

Rule 3 applies to **Sets 1**, **2**, and **4** and states that high vowels become non-syllabic following a non-syllabic phoneme and preceding a root-initial vowel or an optional non-syllabic non-palatal onset, i.e., everything except /y/:

Rule 3. [+syll] [+hi] → [-syll] /[-syll] ___ + ([-syll])[+syll] [-pal]

(70)	mi-doku	*mydoku	'2p-sit'
	mu-yari	*mwyari	'2s-rest'

Rule 4 states that a semivowel is deleted preceding a semivowel (abbreviated by the character S). **Sets 1** and **2** are affected by this rule, which is as follows:

Rule 4. S → ∅ /___ S

(71)	*mw-yari	*myari*	'2s-rest'
	*my-yatak	*myatak*	'2p-cap.the.top.(usually a thatch roof)

Rule 5 applies to **Sets 1** and **2** and is a metathesis rule, where in a sequence of consonant–semivowel–consonant, the second and third positions metathesise, for example:

Rule 5. C S C → 1 3 2
1 2 3

(72)	*my-doku	*mdyoku*	'2p-sit'
	*mw-fedan	*mfwedan	'2s-kill.s.t.'

Rule 6 is very limited in that it applies only to one stem-initial phoneme. It states that /v/ becomes non-continuant following a labial consonant, and is summarised in the following manner:

Rule 6. v → [-cont] / C ___ [+lab]

(73)	*mw-vahi	**mbwahi*	'2s-paddle'
	*my-visal	**mbyisal*	'2p-destroy.s.t.'

Rule 7 states that /m/ is deleted preceding a labial consonant that was the second consonant in a complex onset of the initial syllable of a word. **Rule 7** applies only to **Set 1**, and is written as follows:

Rule 7. m → ∅ / #___ C [+lab]

(74)	*mbwahi	*bwahi*	'2s-paddle'
	*mbyisal	*byisal*	'2p-destroy'

The final rule, **Rule 8**, applies to **Sets 1**, **2**, and **4** and states that /a/ is deleted in the following contexts: (1), following a non-syllabic onset and preceding an utterance-initial non-syllabic phoneme with a different point of articulation, e.g. *non-geminate* consonants and semivowels; (2), preceding a vowel-initial root.

Rule 8. $a \rightarrow \varnothing$ / ([-syll]) ___ ([-syll]) [+syll]
[α pl] [ß pl]

(75)			
	na-data	*ndata*	'3s-come'
	ta-otu	*totu*	'1pi-do'

Examples of words from each of the four sets are given with all of the subject-person prefixes represented. All eight rules will be tested on word derivations to see which ones apply. These examples follow in the order of the prefixes in Figure 8.

6.1.2 Root-initial labial consonant

In this section, three words are chosen. The verb *falak* 'say' shows how the labials */f/*, */m/*, and */b/* in a root-initial position react to the subject-person marking prefixes. The verb *vara* 'carry' illustrates **Rule 6** and *welat* 'stop by' illustrates **Rule 4**.

(76) *falak* 'say'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-falak	mu-falak	na-falak	ta-falak	ama-falak	mi-falak	ra-falak
1							
2							
3		mwfalak				myfalak	
4							
5		mfwalak				mfyalak	
6							
7		fwalak				fyalak	
8			nfalak	tfalak	amfalak		rfalak
SF	*ufalak*	*fwalak*	*nfalak*	*tfalak*	*amfalak*	*fyalak*	*rfalak*

In example (74) above, the first rule to apply is **Rule 3**, where high vowels lose their syllabicity. The 2s and 2p paradigms undergo metathesis in **Rule 5**, then the /m/ is deleted preceding labials word-initially in **Rule 7**. Finally, in **Rule 8**, /a/ is deleted before roots with a simple onset.

(77) *vara* 'carry'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-vara	mu-vara	na-vara	ta-vara	ama-vara	mi-vara	ra-vara
1							
2							
3		mwvara				myvara	
4							
5		mvwara				mvyara	
6		mbwara				mbyara	
7		bwara				byara	
8			nvara	tvara	amvara		rvara
SF	*uvara*	*bwara*	*nvara*	*tvara*	*amvara*	*byara*	*rvara*

(78) *welat* 'stop by'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-welat	mu-welat	na-welat	ta-welat	ama-welat	mi-welat	ra-welat
1							
2							
3		mwwelat				mywelat	
4		mwelat				myelat	
5							
6							
7							
8			nwelat	twelat	amwelat		rwelat
SF	*uwelat*	*mwelat*	*nwelat*	*twelat*	*amwelat*	*myelat*	*rwelat*

6.1.3 Root-initial non-labial consonants

There are also three examples in this section. The verb *doku* 'sit' illustrates the basic non-labial consonant, *toruŋ* 'agree' illustrates the failure of **Rule 8** due to the presence of geminate consonants, and *yatak* 'cover' shows the unusual morphology of /y/-initial roots:

(79) *doku* 'sit'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-doku	mu-doku	na-doku	ta-doku	ama-doku	mi-doku	ra-doku
1							
2		mdoku					
3						mydoku	
4							
5						mdyoku	
6							
7						dyoku	
8			ndoku	tdoku	amdoku		rdoku
SF	*udoku*	*mdoku*	*ndoku*	*tdoku*	*amdoku*	*dyoku*	*rdoku*

(80) *toruŋ* 'agree'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-toruŋ	mu-toruŋ	na-toruŋ	ta-toruŋ	ama-toruŋ	mi-toruŋ	ra-toruŋ
1							
2		mtoruŋ					
3						mytoruŋ	
4							
5						mtyoruŋ	
6							
7							
8			ntoruŋ		amtoruŋ	mtyoruŋ	rtoruŋ
SF	*utoruŋ*	*mtoruŋ*	*ntoruŋ*	*tatoruŋ*	*amtoruŋ*	*mtyoruŋ*	*rtoruŋ*

In example (54), the /a/ deletion (**Rule 8**) is blocked by the presence of identical consonants on either side in 1pi (geminates are not allowed). Metathesis takes place with the 2p prefix, but the /m/ is not deleted, since the following consonant is not labial.

(81) *yatak* 'cover'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-yatak	mu-yatak	na-yatak	ta-yatak	ama-yatak	mi-yatak	ra-yatak
1							
2		myatak					
3							. .
4							
5							
6							
7							
8			nyatak	tyatak	amyatak		ryatak
SF	*uyatak*	*myatak*	*nyatak*	*tyatak*	*amyatak*	*miyatak*	*ryatak*

The 2p prefix in example (79) does not undergo **Rule 3**. The phoneme /y/ is the only non-syllabic not to undergo this rule. If *i* became non-syllabic and **Rule 4** deleted one of the semivowels, the *m* would retain syllabic qualities, thus causing a pronunciation like the 2s form, which is incorrect for 2p.

6.1.4 Complex onsets in verb roots

Only one example is needed to illustrate prefixing with complex root onsets, since none of the rules apply, for example:

(82) *slavat* 'trap'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	uslavat	muslavat	naslavat	taslavat	amaslavat	mislavat	raslavat
1							
2							
3							
4							
5							
6							
7							
8							
SF	*uslavat*	*muslavat*	*naslavat*	*taslavat*	*amaslavat*	*mislavat*	*raslavat*

6.1.5 Vowel-initial roots

The **Set 4** paradigms in Figure 8 are illustrated in this section. **Rules 1**, **2**, **3**, and **8** apply to vowel-initial roots, and VVV sequences are not allowed.

(83) *ail* 'dive'

Rule	1s	2s	3s	1pi	1pe	2p	3p
	u-ail	mu-ail	na-ail	ta-ail	ama-ail	mi-ail	ra-ail
1	ail						
2		mail					
3						myail	
4							
5							
6							
7							
8			nail	tail	amail		rail
SF	*ail*	*mail*	*nail*	*tail*	*amail*	*myail*	*rail*

6.1.6 Variant verbs

There are some exceptions, which comprise approximately one percent of the lexicon, to the above rules. They are prefixed with the form that is associated with a complex onset. There do not seem to be any phonological processes affecting these forms. The underlying forms, along with the expected and actual ones are shown in the examples below. These particular roots behave the same with any of the person-number prefixes.

Underlying	Expected	Actual	Gloss
na+finin	*nfinin	*nafiŋin*	'he plays'
mi+rata	*mryata	*mirata*	'you all go'
ra+terak	*rterak	*raterak*	'they choke'
na+rawan	*nrawan	*narawan*	'it rusts'
ta+navut	*tnavut	*tanavut*	'we are drunk'

Figure 9: Irregular verbs

Further investigation is necessary to adequately account for these type of forms.

6.2 Consonant insertion

At the levels of phonological phrase and phonological word, the insertion of a phonetic transitional epenthetic voiced stop with the same articulation point as the preceding nasal occurs when the nasal is followed by /r/. The phone [d] is inserted between /n/ and /r/, while [b] is inserted between /m/ and /r/ and then [g] between /ŋ/ and /r/. On the phrase level, the voiced stop is inserted between phonological words. On the word level, the insertion occurs between the prefix and the root.

	'already big'	'she gives birth'	'you hear'	'tall weeds'
Underlying Form	*dawan+roak*	*na+rali*	*mu+renar*	*ŋrova*
C-insertion	[dawan droak]	[ndrali]	[mbrenar]	[ŋgrova]

Figure 10: Transitional epenthetic consonant

The following rule accounts for the consonant insertion:

$$\varnothing \rightarrow \begin{matrix} C \\ [+voice] \\ [-cont] \\ [-son] \\ [\alpha ant] \\ [\beta cor] \end{matrix} \quad / \quad \begin{matrix} C \\ [+nas] \\ [\alpha ant] \\ [\beta cor] \end{matrix} \quad \_\_ \; r$$

6.3 [a] Epenthesis

Consonant collocational restrictions described in §3.1 prevent a phonemic three consonant (CCC) sequence or geminate consonants from occurring, either within the morpheme or inter-morphemic or between separate words. The insertion phonetically of an epenthetic [a] provides a transition between these restricted CV shapes, for example:

(84) *u-viiŋ slavat ini* → [uvi: ŋa slavat ini]
1s-pull.in fish.trap this
'I'm pulling in this fish trap'

(85) *vulan na-yeba* → [vuləna nyebə]
moon 3s-shine
'the moon is shining'

(86) *ia na-siʔik kabal* → [iən siʔika kabal]
3s 3s-see ship
'he sees a ship'

6.4 Infixing

A distributional restriction on the complex consonant onsets involves a nominalising infix /-Vn-/ which occurs only following the phonemes /t/, /s/, and /v/. This infix always derives a trisyllabic word, such as *soba* → *sanoba* (87). The antepenultimate vowel loss (§4.2, §6.7.1.1) accounts for the forms in the examples below.

	Verb	**Noun**
(87)	*soba* 'honor'	*snoba* 'ceremony'
	surak 'advise'	*snurak* 'advice'
	sibi 'plug up'	*snibi* 'plug, cork'
(88)	*vuat* 'load'	*vnuat* 'load, cargo'
	vilu 'envelop'	*vnilun* 'presence of death'
(89)	*tebar* 'sink'	*tnebar* 'Tanimbar'
	tabar 'stomp'	*tnabar* 'dance' (lit. 'the stomping')

6.5 Root-final /n/ becoming [+back]

Root-final apical /n/ in Fordata becomes dorsal when the root is prefixed with the causative marker *fa-*.[27]

(90)

Root		With causitive prefix	
dawan	'big'	*fa-dawaŋ*	'glorify one's self'
lolin	'good'	*fa-loliŋ*	'correct s.t.'
maraan	'light'	*fa-maraaŋ*	'lighten s.t.'
teman	'try'	*fa-temaŋ*	'taste s.t.'
tinemun	'whole'	*fa-tnemuŋ*	'make whole'

6.6 The phoneme /t/ becoming [+nas]

In a limited number of examples, verb root-initial /t/ becomes [+nas] when certain derivational prefixes are applied. The phoneme /t/ has been observed to take on nasal qualities, changing from a voiceless apical stop to an apical nasal, when prefixed with the causative *fa-*, with the detransitiviser *f-* and with the stative *s-*.

Root		**With derivational prefixes**	
na-tuba	'he sleeps'	*nfanuba*	'he puts s.o. to sleep'
na-tuful	'he removes s.t.'	*nafnufil*	'it is removed'
na-tobur	'he jumps'	*nasnobur*	'he jumps into s.t.'
na-tabar	'he stomps s.t.'	*nasnabar*	'he tramples s.t.'

Figure 11: /t/ → /n/

Other *t*-initial verb roots are also prefixed as above, but with no change to the /t/.[28]

(91)

Stem		**With derivational prefix**	
na-teman	'he tries s.t.'	*nfatemaŋ*	'he tastes s.t.'
na-tofi	'he washes s.t.'	*naftofi*	'he washes'

6.7 Resyllabification

The repackaging of the shape of a word is directly influenced by the deletion of syllable peaks (vowels). Vowels are deleted in the antepenultimate syllable of a word and in medial and final positions. This vowel loss brings about a resyllabification of the word(s). Cliticisation is also discussed.

---

[27] The prefix *fa-* is from PAn *pa- 'causative'.

[28] One plausible explanation for this is that the nasal *n* results from the coalescence of the object prefix *na-* '3s' with the root initial *t*. This hypothesis, however, has a weakness in that it proposes that agents with these verbs can only be third person singular (*na*). In the following sentence, *Ira rfanuba kasikoʔu ra.* 'They put the children to sleep.' the agent is obviously plural, but *n* still occurs.

6.7.1 Deletion of syllable peaks

6.7.1.1 Antepenultimate vowel deletion

Phonetically, many examples of consonant clusters are found root-initially in the same syllable (§5.2.1). There is a possibility that in Fordata this probably results from a historical loss of antepenultimate vowels. This loss of antepenultimate vowels is prevalent in eastern Indonesia (Blust 1990; C. Grimes 1991). Thus historical CVCVCV(C) is reduced to CCVCV(C).

(92)	**PAn/PMP**	**Fordata**	**Gloss**
	*kuRita <	*krita*	'octopus'
	*baRanay <	*brana*	'male, courageous'
	*tabuRi <	*tfuri*	'conch, triton shell'
	*SabaRat <	*varat*	'west'
	*qasawa <	*awa-n*	'spouse-3sGEN'
	*qaniCu <	*nitu*	'ghost, ancestral spirit'

Where consonants are normally retained, *S and *q are lost.

A second environment that could produce initial CC clusters is with a trace of a historical prefix:[29]

***CV-CVCV(C) > CCVCV(C)**

Words such as those in the following examples could have been reduced in this manner.

(93)		
	mŋaʔun	'true'
	kmia	'urine'
	fraa	'iron wood'
	kmaat	'white (hair)'
	ŋraa	'dirty'
	slaru	'corn'
	blawat	'long'
	tmaʔan	'metal'

It is interesting to note that the apical consonants *d*, *l*, *n* and *r* and the semivowels *w* and *y* do not occur at the beginning of a root in a CC cluster. This leaves only *v* as the exception to the above examples, in that each word in (92) could have been reduced from one of the historical prefixes.

(94)		
	vluri	'group of ten (fish or pigs)'
	vreki	'large iguana lizard'

Subject-marking prefixes (§6.1) and derivational prefixes clearly show the antepenultimate vowel deletion.[30]

---

[29] The current set of prefixes include: *fa-* 'CAUS, NOM, experiencer'; *ba-* 'STATE'; *ka-* 'STATE (in process)'; *-an-* 'NOM'; *si-* 'RCP, INTRANS'; *sa-* 'INTRANS (active)'; *ta-* 'STATE (accidental or unspecified causer); *ma-* 'STATE (progressed or finished)'; *ŋa-* 'STATE (progressive, on going)'.

[30] One notable exception to this antepenultimate vowel deletion is with the causative prefix *fa-*. Probably in order to distinguish the causative from the intransitive experiencer *f-*, the full form of *fa-* is retained even in antepenultimate positions.

(95)	na-etal	*netal*	'3s-cross s.t.'
	na-surak	*nsurak*	'3s-advise'
	ta-watil	*twatil*	'1pi-jump'
(96)	ama-ba-lafar	*amablafar*	'1pe-STATE-hunger'
	na-ka-idat	*nakidat*	'3s-STATE-crack'
	na-ta-vadil	*natvadil*	'3s-STATE-open'

A secondary pre-antepenultimate vowel deletion can also occur when several prefixes are used.

(97)	ama-si-fa-bobar	*amsifabobar*	'1pe-RCP-CAUS-fear'
	na-ka-ma-saat[31]	*nkamsaat*	'3s-PROCESS-STATE-tear'

6.7.1.2 Word-medial and final vowel deletion

Vowel or syllable peak deletion occurs preceding the syllable that takes word, phrase or clause stress. Vowel deletion takes place after any consonant except *ʔ*, *h*, *w*, and *y* in rapid speech. The following word may begin with a vowel or consonant.

(98)	x			x	
	x x			x x x	
	waa-n	'place-3sGEN	*w a n l o l i n*		'heaven'
	lo lin	'good'			
(99)	x				
	x x			x	
	vavu	'pig'	x x x		
	naŋan	'jungle'	*vav naŋan*		'wild pig'
(100)	*tamata*	'person'			
	isaa	'one'			
	tamat isaa	'one person'			
(101)	*na-tuba*	'3s-lie.down'			
	lufa	'forget'			
	ntub lufa	'he sleeps (deeply)'			

Words ending with two vowel segments may also drop the final vowel.

(102)	*U-rea yaha.*	→	[ure yaha]
	1s-see dog		
	'I see the dog.'		

The following example illustrates the exceptional instances where word-final vowel elision does not occur:

---

na-fa-dawan [*nfadawaŋ*] '3s-CAUS-big'
na-f-renar [*nafrenar*] '3s-INTRANS-hear'

[31] When *ka* 'STATE (in process)' and *ma* 'STATE (progressed)' are joined, they derive verb meaning something done purposely.

(103) *U- tunu yaha isaa.* → [utun yaha isaa]
1s-shoot dog one/a
'I shot a dog.'

6.7.1.3 Compounding

Compounding in Fordata is a very productive way of combining lexical roots. Compounds are characterised by tight semantic and grammatical cohesion. Compounds are also semantically recognisable as the sum of its parts and the members of the compound can be productively replaced by other forms.

Closely related to compounding is what Grimes (1991:72) calls lexicalisation. When a combination of lexical roots are frozen in form and semantics, the resulting form is often only vaguely related to the roots by cultural association. The parts also will not normally be productively replaced by other forms. Several of the morphemes in the lexicalised compounds are no longer used.

Both compounding and lexicalisation involve the deletion of antepenultimate syllable peaks where permissable.

(104) **Nominal compounding**

a.duan	(aa duan)	'wood.master = tree worm'
a.etal	(aa etal)	'wood.piece = branch'
afa.m.tahan	(afa ma taha-n)	'thing.to.carry-n = food'
af.vunun	(afa vunun)	'thing.reef = shellfish'
surat.ralan	(surat rala-n)	'letter.inside = Bible'

(105) **Verbal compounding**

ban.yaha	(bana yaha)	'go.dog = go pig hunting'
ban.oraŋ	(bana oraŋ)	'go.follow = go following'
tub.lufa	(tuba lufa)	'lay.forget = sleep'
keak.teri	(keak.teri)	'tie.hold = tie s.t. up'

(106) **Lexicalised forms**

sera.waʔ	'sago.? = marlin species'
daŋ.walu	'?.eight = eel species'
sakramat	'pumice stone'
sul.kaan [32]	'?.stem = praying mantis'

6.7.2 Resyllabification

In sections §6.7.1.1 and §6.7.1.2 above, the various processes that cause the loss of syllable peaks or vowels are illustrated. The following are examples of resyllabification.

---

[32] Several compounds begin with *sul-* and have the idea of flying, e.g. *sulaar* 'sailfish', *sulfaan* 'manta ray', and *sulbaar* 'small bird species'.

(107) Antepenultimate vowel loss within a word.
CV.CV.CVC# → CCV.CVC

(108) Loss of syllable peak (word-medially) before a stressed syllable across word boundaries.
CVC.CV.VC#CV.CV# → CVC.CVC.CV.CV

(109) Loss of syllable peak (word-finally) before a stressed syllable across word boundaries.
CV.CV#CV.CVC# → CVC#CV.CVC

(110) Loss of syllable peak (word-finally) before a stressed syllable across word boundaries and in the antepenultimate position within the word.
CV.CV.CV#CV.CV → CCVC#CV.CV

The restructuring of syllables, as illustrated above, can be explained using traditional notions of discrete boundaries between syllables. This, however, would require complicated rules and much discussion. By defining the three rules of association and syllabification (§6.2), the loss of syllable peaks and the resulting association of the remaining consonants with other peaks is clearly and concisely explained. Simplicity and economy are maintained by defining certain segments as being ambisyllabic. Thus, following the loss of a syllable peak, remaining lines of association will determine the resulting syllabification.

(111) No ambisyllabic segments

*σ σ	*σ	
/ | | \	/ | \	
(C) V V (C)	(C) V (C)	
| | | |	| | |	
a a	a. d a w a n	'large tree'
v a i	v a. d i d a	'our language'
f a a	f a. k u k u	'young mango'
d i i	d i. m a t a n	'anus'
r u u n	r u n. d a w a n	'big sea cow'

(112) Ambisyllabic segments

*σ σ	*σ	
/ | V |	/ | \	
(C) V (C) V	(C) V C	
| | | |	| | |	
a f a	a f. v u n u n	'shellfish'
n i t u	n i t. r a t a n	'type of spirit'
v u t u	v u t. r u a	'twenty'
v a v u	v a v. y a n a t	'piglet'

In prefixed roots, syllables are resyllabified in the following manner:

(113)

σ *σ σ	*σ σ	
/ | V | V | \	/ / | V | \	
C V-C V C V (C)	C C V C V (C)	
| | | | | | |	| | | | | |	
m u- k a n a k	m- k a n a k	'2s-joke with s.o.'
n a- l a b i r	n- l a b i r	'3s-deceive s.o.'
t a- l e t a	t- l e t a	'1pi-cross over water'
r a- m e l a	r- m e l a	'3p-grow'

With the loss of the antepenultimate syllable peak in a word and word-final vowel, the skeletal tier is rearranged as follows:

(114)

σ *σ σ *σ σ	*σ *σ σ	
/ | V | V | / | V | \	/ / | \ / | V | \	
C V-C V C V #C V C V (C)	C C V C #C V C V (C)	
| | | | | | | | | | |	| | | | | | | | |	
n a- t u n u #f e d a n	n- t u n #f e d a n	
'3s-shoot kill'	'He shot and killed s.t.'	

Repackaging of the skeletal tier also occurs on the grammatical phrase and clause level. In the three examples (115–117) below, the subject-person markers *mu-* '2s', *ra-* '3p', and *na-* '3s' are seen in the underlying forms as prefixed on the verb root, and phonetically as resyllabifying with the preceding word.

(115)

V.V CV	V.VC
O a mu-doku na?a ini.	[?o amdoku na?a ?ini]
2s 2s-sit at here	
'You sit here.'	

(116)

V. CV CV	VC VC
I ra ra-tabar.	[?ɪ r artabar]
3p 3p-stomp	
'They are dancing (lit. stomping).'	

(117)

	CV	CV CVCVC	CVC
Rala -n lalau	*ma*	*na-f a l a k...*	[ralan lalau man falak..]
inside-3sGEN sad	and	3s-say	
'His heart (lit. insides) was sad and he said...'			

In example (118) below, the *m* in *mnelat* is phonemically syllabified as the third syllable when the word is in isolation, for example *m.ne.lat*, but phonetically it resyllabifies with the preceding noun head, such as *vata* 'woman, female'.

(118)

CVCV CCVCVC	CVCVC CVCVC
v a t a m n e l a t	[va t a m n e l a t]
girl adolescent	
'adolescent girl'	

6.7.3 Cliticisation

In this final discussion of this section, I will look into the process of cliticisation. This process may be a factor in vowel deletion. I need time with a native Fordata speaker to gather more data to substantiate cliticisation in Fordata. In his description of Buru stress, Grimes (1991:52) states:

> Cliticisation of lexical roots causes loss of stress from lexical roots that become cliticised to other lexical roots. By this I mean the normally stressed syllable no longer carries greater force, higher pitch or slight lengthening of the vowel.

Along with the loss of stress from lexical roots, cliticisation is further defined (for the Buru language) as the loss of the final vowel of a root as well as signalling tighter semantic cohesion with the root(s) to which it cliticises in the phrase (Grimes 1991:69). Another way of describing this cliticisation process is to say that cliticised roots are restrictive, i.e. descriptive or independent. Uncliticised roots are non-restrictive, i.e. semantically bleached or compounds.

The following examples illustrate the loss of stress of a lexical root and the loss of a syllable peak when it becomes restrictive:

(119) UNRESTRICTED

```
      x
      x     x
(C) V (C) V (C)
 |  |  |  |  |
 w  a     a  n        'place-3sGen'
 l  o  l  i  n        'good'
```

(120) RESTRICTED

```
            x
 x          x     x
 w  a  n    l  o  l  i  n     'heaven, good place'
```

(121) UNRESTRICTED

```
         x
 x       x
 k  a  l  b  u     u  r      'fly'
       n  i  t  u            'corpse, demon'
```

RESTRICTED

```
                  x
 x       x        x
 k  a  l  b  u  r  n  i  t  u     'small fly species'
```

(122) UNRESTRICTED

```
 x
 x     x
 v  a  v  u              'pig'
 n  a  ŋ  a  n           'forest'
```

[RESTRICTED]

```
          x
  x       x    x
  v a v n a ŋ a n          'feral pig'
```

The aspect of cliticisation that needs to be further researched is the semantic side. I have found only a few examples of vowel loss resulting in a semantically bleached word or phrase. This needs more research to determine it's significance, if any, in Fordata.

(123) [UNRESTRICTED]

```
  x           x
  x   x       x   x
  v a t u   r a l a n      'inside of a rock'
```

[RESTRICTED]

```
          x
  x       x    x
  v a t r a l a n          'rocky soil'
```

(124) [UNRESTRICTED]

```
        x           x
  x     x    x      x   x
  k a r e d a   r a l a n  'inside of a church'
```

[RESTRICTED]

```
          x
  x       x    x
  k a r e d r a l a n      'week'
```

7 Reduplication

7.1 Phonological forms

The Fordata reduplication process is mainly a simple syllabic reduplication, where the stressed syllable and the onset of the unstressed syllable are reduplicated, with the exception of full reduplication, where the stem is copied intact. I have found that only disyllabic stems undergo the reduplication process. Furthermore, the stressed syllable in these disyllabic stems can have only V or CV shapes. Only disyllabic stems are involved in reduplication. The reduplication patterns have been observed to follow the same patterns in both the Fordata and Sera dialects. I will analyse reduplication in Fordata using an autosegmental approach. Marantz (1982) proposes that stem may be affixed (in Fordata, prefixed) with the appropriate C–V skeletal template, the entire phonemic melody is copied over the C–V skeleton, and then associated to the eligible C and V slots available in the template. Marantz describes this kind of association as "phoneme-driven", meaning that the phonemes of the stem take priority over the C–V template. Thus, it may be the case that not all of the C–V template is manifested in a given instance. The alternative to a phoneme-driven process can be characterised as "template driven", according to which priority is given to the C–V template so that not all of the phonemes of even the first part of the stem

are necessarily manifested.[33] The following example could be either phoneme driven or template driven.

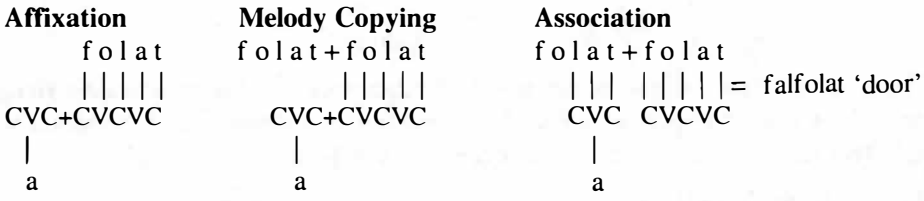


Figure 12: Affixation, copying and association

The direction of matching phonemes to segmental slots in the above diagram proceeds from left to right. The initial affixation process of the syllabic reduplication identifies CVC as the reduplicative template, with V being pre-associated (specified) with the vowel *a*. Then the melody copying step positions the template *CaC* to select features from a copy of the root. In the final step, the *f* associates with the initial C of the reduplicative CVC template. The *o* associates with the V, but by convention is overridden by the pre-associated *a*. The *l*, finally, associates with the second C in the reduplicative CVC template and the reduplicative prefix *fal* is derived.

As shown above in §6.7.2, the medial C in multisyllabic words is ambisyllabic. This furthers the notion of reduplication in Fordata as being syllable reduplication.

The following Figure of a vowel-initial root being reduplicated clearly shows a phoneme-driven copying process:

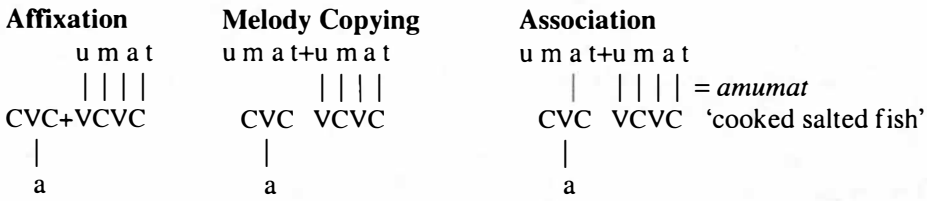


Figure 13: Phoneme–driven process

Marantz (1982:447) states:

> The association of phonemic melodies and C–V reduplicating affixes is "phoneme-driven" in the sense that, for each phoneme encountered linking from left to right or from right to left, the association procedure scans along the skeleton to find a C–V slot eligible for association with the phoneme.

As shown in Figure 12, the affixation process identifies CVC as the reduplicative template. The melody-copying step then positions the template *CaC* to select features from the copied root. In the final step, the association scans the CV template for eligible slots. The first eligible position for the word-initial *u* is the V in the CV template (the pre-associated *a* takes priority over whatever vowel from the phoneme melody that was associated, in this case *u*). Since the medial C is ambisyllabic, it associates with the final C position of the reduplicative template. Any unassociated phonemes or CV positions are then discarded.

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[33] For examples of template-driven reduplication in Tagalog, see French (1988).

If the process associating the CV skeleton to the phonemes were a template-driven process, the following example would occur:

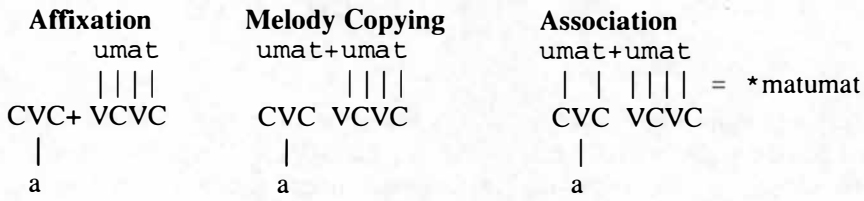


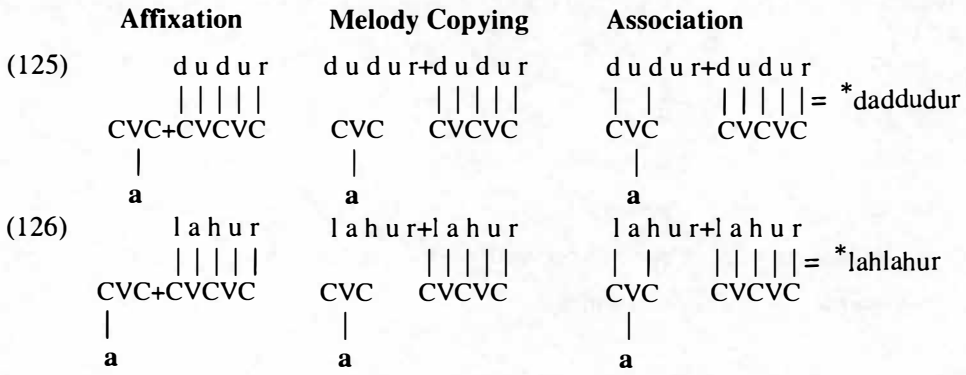
Figure 14: Template-driven process

The template drives the association, therefore the surface form would be **matumat*, because the initial C of the template would select the *m* of the reduplicated stem as the starting point of the association.

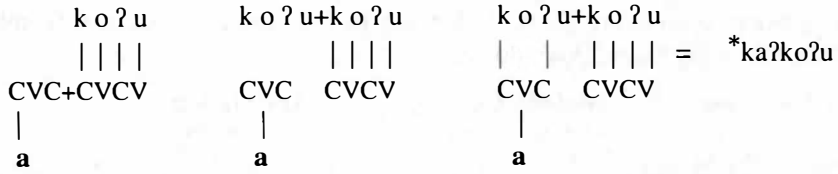
Since it is the stressed syllable that is reduplicated, the onset of the reduplicated *CaC* morpheme in Fordata will always match the onset of the stressed syllable, as seen in Figure 12, the example of *fal-folat* 'door'. If the stressed syllable has no prenuclear margin, the reduplicative prefix will be an open syllable with the pre-associated *a* as its nucleus, for example *am-umat* 'cooked salted fish' from Figure 13 above. The coda of the reduplicative morpheme is always the same as the reduplicated syllable, e.g., the *l* in *folat* becomes the coda of the reduplicated morpheme. There are surface constraints which apply after the reduplication process. As mentioned previously in §3.1, the consonants *h*, *w* and *ʔ* cannot occur in the first slot of a cluster, and geminate clusters are not allowed.

Consider the following basic forms with their reduplicative counterparts:

dudur	'go down hill'
lahur	'to be wild mannered'
lawan	'to roll s.t.'
koʔu	'small'



(128)



The four examples above all go through the same three-step derivational process as explained for the reduplicated forms in Figures 12 and 13. The reduplicated forms then would be subject to the following two general rules, which are reiterations of the collocational restrictions stated in §3.1:

Rule 1:

Geminate reduction $C \rightarrow \varnothing / \_\_\_ \begin{matrix} C \\ [\alpha\ pl] \end{matrix}$ $[\alpha\ pl]$

Rule 2:

Cluster restriction $\begin{Bmatrix} h \\ ʔ \\ w \end{Bmatrix} \rightarrow \varnothing / \_\_\_ C$

Below, the four incorrect forms in examples (122) and (123) undergo **Rules 1** and **2** to arrive at the correct surface forms:

	Reduplication form		**Rule 1**	
(129)	**daddudur*	_	*da-dudur*	'downslope'
			Rule 2	
(130)	*lahlahur	_	*la-lahur*	'crazy'
	*lawlawan	_	*la-lawan*	'weaving tool'
	*kaʔkoʔu	_	*ka-koʔu*	'small, less'

Roots with the structures CVCVC and CVCV satisfy the C–V template by reduplicating the first CVC:

CVCVC:

(131)	*fal-folat*	'door'
(132)	*kat-katan*	'scorpion'
(133)	*lalolak* [34]	'glasses'
(134)	*ma-mumak*	's.t. steamed with coconut milk'
(135)	*mar-merat*	'cleanliness'

CVCV:

(136)	*lab-leba*	'stick to carry s.t. on one's shoulder'

[34] The ruduplicated forms are **lallolak* and **mam-mumak* become *lalolak* and *ma-mumak* after application of geminate reduction. Forms such as *lalolak*, which do not have a hyphen between the reduplicated morpheme and the stem are frozen forms.

(137) *dar-diri* 'pig hunt'

(138) *wal-walu-n* 'in eights'

(139) *larlora* 'watermelon'

(140) *tavteva* 'top shell'

Bases with the patterns CVVC and CVV reduplicate only the CV of the template, which was predicted by McCarthy and Prince (1986:94), who stated that the template will not skip the second V in a CVVC stem to complete the entire CVC skeletal structure by using the second C. This is illustrated below in Figure 15:

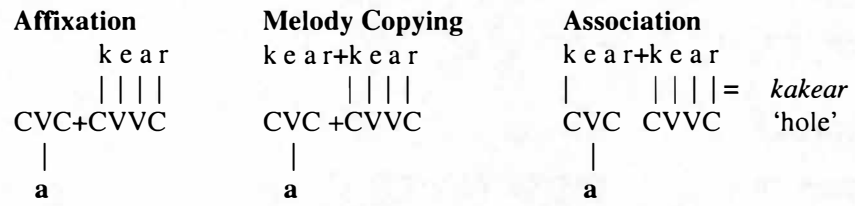


Figure 15: Reduplicating CVVC stems

The phoneme driving the association must be fully satisfied. There is no V for the *a* in *kear* to associate with, so the association stops and the unused phonemes and CV slot are discarded.

CVVC:

(141) *ka-kear* 'well, hole' *karkear

(142) *lalaar* 'peninsula' *larlaar

(143) *ba-buuk* 's.t. to smoke' *bakbuuk

(144) *ŋa-ŋiar* 'white' *ŋarŋiar

CVV:

(145) *sa-saa-n* 'in ones'

(146) *ra-roa* 'far'

(147) *lalau* 'sad'

(148) *ŋa-ŋai* 'rubbish after clearing a garden'

Stems having the pattern VCVC associate only with the VC segments of the template:

VCVC:

(149) *am-umat* 'cooked salted fish'

(150) *al-aliŋ* 'different'

Full reduplication is found in Fordata, but with limited use. To date, few examples have been found. In full reduplication, the stem is copied as normal and the template will be the C–V pattern of the stem. There are no pre-associated phonemes. Stress also seems to be evenly distributed on both morphemes. Below is an example of the full reduplication process:

Affixation	**Melody Copying**	**Association**
l e b a	l e b a+l e b a	l e b a+l e b a
| | | |	| | | |	| | | | | | | | = *lebaleba*
CVCV+CVCV	CVCV CVCV	CVCV CVCV 'canoe'

Figure 16: Full reduplication

Forms fully reduplicated with the patterns CVCV, CVVC and VCVC have been recorded: [35]

CVCV:

(151) *teva-teva* 'top shell'

(152) *leba-leba* 'canoe'

VCVC:

(153) *amar-amar* 'every day'

(154) *ovan-ovan* 'every night'

7.2 Syntactic functions

One of the main syntactic functions of reduplication in Fordata is the nominalization of verbs. The following are derived from transitive and intransitive verbs:

(155) *fal-folat dawan* — *na-folat*
DUP-close big — 'he closes (a door)'
'big door'

(156) *Tan-tunu-n ra r- si- karas.* — *u-tunu*
DUP-roast PL 3p RCP bite — 'I roast (s.t.)'
'The fire ants bite.'

(157) *Ia ni dak-doku-n na?a ini.* — *ta-doku*
3s 3sGEN DUP-sit-n at here — 'we sit'
'Its position is here.'

(158) *Var-vara aleman.* — *ra-vara*
DUP-carry heavy — 'they carry (s.t.)'
'heavy responsibility'

Another function of reduplication is attributive use of verbs (usually non-active) to function as modifiers in a NP, rather than as the predicate of a verbal clause. The obligatorily marked Predicative verb forms are shown on the right:

---

[35] The usage of some of these forms varies from village to village, for example, *tevateva* 'topshell' is rendered *tavteva* in several villages. *Lebaleba* is an old word meaning 'canoe' and has been for the most part replaced by another term.

	Attributive	**Predicative**
(159)	*wanat val-vuli-n* rice DUP-red 'red rice'	*na-vuli* 'he/it is red'
(160)	*ŋuur ŋa- ŋiar* sand DUP-white 'white sand'	*na-ŋiar* 'he is white'
(161)	*Mata-n ra was-wosu.* eye-3sGEN PL DUP-tired 'His eyes are tired.'	*na-wosu* 'he is sleepy'
(162)	*Afa ovi mak-mukur.* thing these DUP-round 'These things are round.'	*na-mukur* 'he/it is round'
(163)	*afa fan-fonak* thing DUP-hide 'secret thing'	*na-fonak* '3s-hide (s.t.)'

Nouns can also be reduplicated to modify other nouns:

(164)	*ian sar-sira-n* fish DUP-salt 'salted fish'	*sira* 'salt'
(165)	*Mataŋ lav-lova.* eye-1sGEN DUP-fog 'My eye is cloudy.	*lova* 'fog'

When following a verb it functions as a modifier:

(166)	*ia na-kaʔa kad-kedan* 3S 3S-know DUP-little 'He knows a little bit.'	*kedan* 'little, a little'

Cardinal and ordinal numbers are not reduplicated except for special purposes. The function of a reduplicated number to derive a quantity 'by x number' or 'in x numbers':

(167)	*tamata tal-telu-n* people DUP-three 'people in threes (or three by three)'	*i-telu* 'QNT-three'

A distributive function, 'each Noun', which is little used, is signified by full reduplication:

(168)	*vai amar-amar* language DUP-day 'every day language'	*amar* 'day'
(169)	*Ovan-ovan u- dava oa.* DUP- night 1s-look.for 2s 'Every night I looked for you.'	*ovan* 'night'

On a fair amount of reduplicated forms with no post-nucleus coda, a word-final *n* is added. In Indonesian, the prefix and suffix combination *ber-* + *-an* means 'in X numbers'. With numbers in Fordata, there is a very possible correlation, however both nouns and adjectives are also found with this added *n*. To the right are the cardinal numbers and the verb forms.

Numbers:

(170) *sa-saa-n* — *isaa*
DUP-one — 'one'
'by ones'

(171) *vat-vutu-n* — *vutu*
DUP-ten — 'ten'
'by tens'

Nouns:

(172) *ban-bana-n* — *u-bana*
DUP-go — 'I go'
'journey, path'

(173) *mat-mata-n* — *ta-mata*
DUP-dead — 'we're dead'
'death'

(174) *lak-leka-n* — *na-leka*
DUP-fall — 'he fall'
'the falling'

Adjectives:

(175) *val-vuli-n* — *na-vuli*
DUP-red — 'he is red'
'red or reddish'

(176) *sar-sira-n* — *na-sira*
DUP-salt — 'he salts something'
'salty'

8 Loan words

Many loan words from Malay and Ambonese Malay have been 'Fordatanised' to conform with the phonological patterns of Fordata. With some words, points of articulation will remain the same or close, but the voicing will change. Others will see the articulation point move and voicing remain the same.

Dorsals lose voicing. The examples below also show the apical affricate [j] becoming a stop.

(177) *gereja* — Malay — 'church'
kareda — Fordata — 'church'

gaji — Malay — 'salary'
kadi — Fordata — 'salary, payment'

Voiced labial stops become fricative and voiceless labial stops become voiced or become voiceless labial fricatives.

(178)	*Balanda*	Ambonese Malay	'Holland, Dutch person'
	Valada	Fordata	'Holland, Dutch person'
(179)	*pasiar*	Malay	'stroll'
	basiar	Fordata	'stroll'
	pendeta	Malay	'pastor (Protestant)'
	bandita	Fordata	'pastor (Protestant)'
	perintah	Malay	'order, command'
	fareta	Fordata	'authority, command'

Other loans are reanalysed as follows:

(180)	*baca*	Malay	'read'
	basa	Fordata	'read'
(181)	*marinyo*	Ambonese Malay	'village crier'
	mariŋun	Fordata	'village crier'
(182)	*fikaris*[36]	Ambonese Malay	'female pastor candidate'
	vikaris	Fordata	'female pastor candidate'

36 In standard Indonesian, it is written *vikaris*, but pronounced [fikaris].

Appendix A

	Consonant Contrasts	
	b/f/v/w	
	b/f	
[nabat]	/nabat/	'seed, seedling'
[nafat]	/na-afat/	'he cuts'
[bana][37]	/bana/	'go'
[fana]	/fana/	'shoot (an arrow)'
	b/v	
[bara]	/na-bara/	'it is swollen'
[vara]	/na-vara/	'he carries'
[votu]	/votu/	's.o. returns'
[botun]	/botu-n/	'his nape'
[yabar]	/yabar/	'large bat'
[yavar]	/yavar/	'type of tree'
	b/w	
[baba]	/baba/	'younger male'
[waba]	/waba/	'season closed for harvest or hunting'
[belat]	/na-belat/	'he fences s.t.'
[welat]	/na-welat/	'he stops off'
	f/v	
[fa:n]	/faan/	'fish bait'
[va:n]	/vaan/	'cave'
[vra:]	/vraa/	'hermit crab'
[fra:]	/fraa/	'iron wood'
[fahi]	/na-fahi/	'he passes gas'
[vahi]	/na-vahi/	'he paddles'
[tfuri]	/tfuri/	'parrot fish'
[tvuri]	/tvuri/	'helmet shell'
	f/w	
[fa:n]	/faan/	'bait'
[wa:n]	/waa-n/	'its place'

[37] Both *bana* and *fana* are historically from *p (**panaw* 'go, leap', **panaq* 'arrow, shoot arrow').

[faha]	/faha/	'buy'
[wahan]	/waha-n/	'his face'
	v/w	
[ʔavan]	/ava-n/	'his aunt'
[ʔawan]	/awa-n/	'his spouse'
[vərin]	/verin/	'for'
[wərin]	/weri-n/	'his wing, fin'
[va:n]	/vaan/	'cave'
[wa:n]	/waa-n/	'its place'
[vaʔar]	/vaʔar/	'clay'
[waʔar]	/waʔar/	'mangrove, root'
	h/ʔ	
[yaha]	/yaha/	'dog'
[yaʔa]	/yaʔa/	'I'
[vahi]	/vahi/	'paddle'
[vaʔi]	/vaʔi/	'garden'
[waʔa]	/waʔa/	'tidal crab'
[wahan]	/waha-n/	'his face'
[vaʔan]	/vaʔa-n/	'his kidney'
[vahan]	/vaha-n/	'it's liquid'
	k/ʔ	
[taku]	/taku/	'hit'
[taʔu]	/taʔu/	'lunar-tail cod'
[boku]	/boku/	'some, part'
[boʔu]	/boʔu/	'female genitals'
	t/d/r	
	t/d	
[datar]	/datar/	'bark skirt'
[dadar]	/dadar/	'dizzy'
[tokə]	/toka/	'iguana'
[dokə]	/doka/	'buttock'

	t/r	
[nditi]	/na-diti/	'it drips'
[ndiri]	/na-diri/	'he stands'
[fafaʔat]	/fa-faʔat/	'in fours'
[fafaʔar]	/fa-faʔar/	'walking'
[nata]	/nata/	'following, next'
[nara]	/nara/	'star'
[tenən]	/tena-n/	'his body'
[renən]	/rena-n/	'his mother'
	d/r	
[nadan]	/nadan/	'catfish'
[naran]	/naran/	'enough'
[daʔut]	/daʔut/	'rain'
[raʔut]	/raʔut/	'bamboo cage'
	m/n	
[yamam]	/yama-m/	'your (sg.) father'
[yanam]	/yana-m/	'your (sg.) child'
[mahin]	/mahin/	'giant clam'
[nahin]	/nahin/	'knife'
[melə]	/mela/	'nobility'
[nelən]	/nela-n/	'his neck'
[mata]	/mata/	'dead'
[nata]	/nata/	'next'
	l/r	
[vɛlin]	/veli-n/	'it's property'
[vɛrin]	/verin/	'for'
[lolak]	/na-lolak/	'he visits'
[lorak]	/na-lorak/	'he cuts'
[nail]	/na-ail/	'he dives'
[nair]	/na-air/	'he teaches'
[ŋu:l]	/ŋuul/	'coconut oil'
[ŋu:r]	/ŋuur/	'sand, beach'

b/m

[binan]	/binan/	'plate'
[minan]	/mina-n/	'it's body grease'
[balit]	/balit/	'on the left'
[malit]	/malit/	'laugh'
[bomə]	/boma/	'to, for'
[momə]	/moma/	'tidal crab'
[nabat]	/nabat/	'seed, seedling'
[namat]	/namat/	'type of sea cucumber'

n/ŋ

[nu:r]	/nuur/	'coconut'
[ŋu:r]	/ŋuur/	'sand, beach'
[dedən]	/dedan/	'dark'
[dedəŋ]	/dedaŋ/	'sing'
[ʔanar]	/anar/	'white cockatoo'
[ʔaŋar]	/aŋar/	'coral'
[ʔini]	/ini/	'this'
[ʔiŋi]	/iŋi/	'lingua wood'

w/y

[wadu]	/wadu/	'a catch of fish'
[yadu]	/yadu/	'shiver'
[wahan]	/waha-n/	'his face'
[yaha]	/yaha/	'dog'
[watan]	/watan/	'only'
[yatan]	/yata-n/	'his liver'
[waʔa]	/waʔa/	'tidal crab'
[yaʔa]	/yaʔa/	'I'

Vowel Contrasts

i/e

[ʔɪrə]	/ira/	'they'
[ʔɛrə]	/era/	'call'

[riə]	/ria/	'grass'
[reə]	/rea/	'find'
[livur]	/livur/	'village'
[levur]	/levur/	'burning'
[sɪrə]	/sira/	'salt'
[sɛrə]	/sera/	'tapioca'
[ʔiməŋ]	/iman/	'thorn'
[ʔeməŋ]	/eman/	'loin cloth'
[ni]	/ni/	'his'
[ne]	/ne/	'that'

u/o

[lurak]	/na-lurak/	'he cuts'
[lorak]	/na-lorak/	'he lets out'
[sukə]	/na-suka/	'he lifts'
[sokə]	/na-soka/	'he rubs'
[vulən]	/vulan/	'moon'
[volən]	/volan/	'appointed time'
[vutuk]	/na-vutuk/	'he pulls (hair)'
[votuk]	/na-votuk/	'it appears'

Appendix B

Syllable Patterns

S			
	V	*a*	'PART, singular'
	VC	*al*	'to, for'
	CV	*ma*	'so that'
SS			
	V.V	*oa*	'2s'
	V.CV	*ahu*	'village'
	V.CVC	*ahir*	'basket'
	VC.CV	*aksa*	'alone'
	CV.V	*tea*	'faeces'
	CV.VC	*wear*	'water'
	CV.CV	*kesi*	'food'
	CV.CVC	*kikur*	'tail'
	CCV.CV	*fteni*	'parrotfish'
	CCV.CVC	*blaŋar*	'coral trout'
S.SS			
	V.CV.CV	*itelu*	'three'
	V.CCV.CVC	*ablawat*	'emperor fish'
	V.CV.CVC	*u-wahak*	'he deceives'
	VC.CV.CVC	*u-ŋmanaŋ*	'I remember'
	VC.CVC.CV	*alnuran*	'horse-eye jack'
	CV.CV.CV	*na-kaʔa*	'he knows'
	CV.CV.VC	*sulaar*	'sailfish'
	CV.CCV.CVC	*na-blafar*	'he is hungry'
	CVC.CV.CVC	*ŋatŋatul*	'gecko lizard'
SS.SS			
	V.CVC.CV.CVC	*u-fa-ŋmanaŋ*	'I remind s.o.'
	CV.CV.CV.CV	*na-fa-leka*	'he drops s.t.'
	CV.CV.CV.CV	*serawaʔi*	'marlin'
	CV.CV.CV.CVC	*Nalalahan*	'slow'
SSS.SS			
	V.CV.CV.CV.CV	*u-fa-malola*	'I straighten'
	V.CV.CV.CCV.CVC	*u-fa-makrakat*	'I tickle s.o.'
	CV.CV.CV.CV.CV	*mi-si-ŋarahi*	'you all fight'
	CV.CV.CV.CV.CVC	*ta-si-fa-bobar*	'we scare each other'

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