

# The Phonology of the Miyako Dialects : Phonological Systems and Comparisons

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# The Phonology of the Miyako Dialects: Phonological Systems and Comparisons

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## 1 Introduction

The Miyako dialects are a group Southern Ryukyuan dialects spoken in Miyakojima City and Tarama Village in Okinawa Prefecture. They are considered to comprise between thirty and forty dialects, differing from hamlet to hamlet, albeit to different degrees. Surveys were conducted in Uechi, Yonaha, Kugai, Irabu, Bora, Kuninaka, Ōura, Shimajiri, Kurima, Ikema, Karimata, Uruka, and Nobaru in September 2011; in this chapter, we will use the data obtained at these thirteen sites to organize and outline the phonology of the Miyako dialects based on historical-linguistic sound correspondences. While it is customary to consider sound correspondences with (Old) Japanese, we will mostly look at correspondences with the Proto-Miyako stage for the purpose of interdialectal comparison, rather than going back all the way to Proto-Japonic (unless noted otherwise, the proto-form marker ‘\*’ indicates a Proto-Miyako form)<sup>1</sup>.

Examples of existing research on the phonology of the Miyako dialects are the works of Hirayama, Oshima & Nakamoto (1967); Nakamoto (1976), Hirayama (ed., 1983), and Nakama (1992), who have described the phonemes and phonological characteristics of each site. More recently, Nakamoto (2000), Nakahara (2001), K. Shimoji (2003), Karimata (2005), M. Shimoji (2008, 2011), Pellard (2009, 2010), and Hayashi (2010), among others, have conducted surveys and research on the phonological systems of individual dialects, as well; the phonologies of each site are thus becoming better understood, but different researchers have interpreted the phonology of the Miyako dialects very differently. In the Miyako dialects, there are a vowel with a free variant involving consonantal noises and syllables in which it is difficult to phonetically and phonologically confirm the existence of a specific vowel, for example; there has been much debate regarding their sound values and phonological interpretation. This debate centers on a phoneme that incorporates consonantal as well as vocal elements, which is called a central or apical vowel by some and analyzed as a syllabic consonant with the sound value [s~z] by others. In addition, sounds such as ‘v’ and ‘r’ ([ɺ]) can become moraic, and in terms of phonetic characteristics, even open vowels can be devoiced; syllable nuclei are thus frequently occupied by (at least phonetically) consonantal elements, which is why the Miyako dialects are considered to be ‘strongly consonantal’ (Sawaki

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<sup>1</sup> Reconstructed Proto-Miyako forms are based on those of Pellard (2009) and reconstructed Proto-Ryukyuan forms on those of Thorpe (1983).

2000). Although this is among the issues regarding phonological interpretation discussed by, for example, Kitamura (1960), Karimata (1986, 1987), Kajiku (1989), and Sawaki (2000), there are still many unresolved questions. Many of these questions can be considered to involve differences in opinion resulting from the use of different frameworks of analysis to deal with the large differences in the respective roles of consonants and vowels between these dialects and Japanese. Although we can discuss only a small subset of these questions, we hope to be able to elucidate part of the phonological characteristics of the Miyako dialects by discussing a number of morphophonological phenomena that have not previously been discussed in much detail.

In this chapter, in addition to discussing the issues mentioned above, we will outline aspects the Miyako dialects all share as well as differences between them by looking at how each of the phonemes posited for Proto-Miyako is realized at each of the sites. We use a simplified phonetic notation, and the data in the tables are presented as they were transcribed by each of the researchers in the survey<sup>2</sup>. As we will only discuss segments in this chapter and not consider pitch accent, we have not included any notation regarding the latter that was present in the data<sup>3</sup>.

## 2 Vowels

### 2.1 Vowel types and properties

In this section, we will give the sound values of each of the vowel phonemes of the Miyako dialects and examples of words containing them, obtained at each of the survey sites. In cases where there has been a local sound change at a single site or where there is an exceptional sound correspondence, we will give additional examples for these.

The six vowel types of the Miyako dialects encountered in the survey data that we will discuss in this chapter are /a, e, i, o, u, ɿ/. A distinction is made between short and long vowels, although, with the exception of their use in loan words, /e, o/ are typically only used as long vowels, as they derive historically from vowel sequences. Although it is not among the dialects considered in this chapter, /ë:, ü:/ are additionally recognized for the Tarama dialect (K. Shimoji 2003)<sup>4</sup>. Among the dialects examined in the survey, there are dialects

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<sup>2</sup> Because they are phonetic transcriptions of utterances mostly obtained from a single speaker in a single survey, the data also include seeming mistranscriptions. As regards their interpretation, we have made corrections where our knowledge allowed us to; we have indicated where this is the case.

<sup>3</sup> There have been recent advances in research on pitch accent, Igarashi et al. (2012) having shown that the Ikema dialect has a three-pattern rather than a two-pattern accent system, for example.

<sup>4</sup> Furthermore, the Ōgami dialect has /ɯ/, which derives from \*ɿ but is not accompanied by a friction sound; its vowel system differs from those of the other dialects, consisting of /a, ε, i, u, ɯ/ (Pellard 2009).

that have the four vowels /a, i, u, ɿ/, dialects that have the five vowels /a, i, o, u, ɿ/, and dialects that have the six vowels /a, e, i, o, u, ɿ/. The phoneme /ɿ/ is a vowel that is accompanied by a friction noise; it can be considered a ‘fricative vowel’ of the kind that is encountered in, for example, Chinese and the Bantu languages (Ladefoged & Maddieson 1996). Although we will treat it as a vowel, there are also researchers who interpret it as a consonant.

### 2.1.1 Open vowel

#### /a/ (unrounded open vowel) [a] ~ [ɑ] < Miyako \*a

This sound corresponds to Proto-Miyako \*a and surfaces as [a] ~ [ɑ] in all of the dialects<sup>5</sup>.

Table 1. The unrounded open vowel.

	A-187 ‘there (distal)’	A-062 ‘mosquito’	A-174 ‘sand’	B-060 ‘feather; wing’	B-002 ‘tooth’
Uechi	kama	gaɕam	ɱnagu		pa:
Yonaha	k <sup>h</sup> ama	gaɕam	nnago:		
Kugai	k <sup>h</sup> ama	gaɕam	m <sup>h</sup> nagu		
Irabu	k <sup>h</sup> ama	gaɕam	mnagu	pani	pa:
Bora	k <sup>h</sup> ama	ga <sup>d</sup> zam	nnago:	p <sup>h</sup> ani	p <sup>h</sup> a:
Kuninaka	kama	kadaɱ	ɱnagu		
Ōura	k <sup>h</sup> ama	ga <sup>d</sup> zaŋ	nnagu	pani	pa:
Shimajiri	kama	gadaŋ	nnagu	p <sup>h</sup> aŋi	p <sup>h</sup> a:
Kurima	kama	gaɕam	m:nagu		
Ikema	kama	kaɕaŋ	nnagu	hani	ha:
Karimata	kama	ga <sup>d</sup> zaŋ	nnagu	pani	pa
Uruka	k <sup>h</sup> a <sub>̣</sub> ma:	gaɕaɱ	ɱnagu		
Nobaru				pani	pa:

<sup>5</sup> As we will discuss later, in some dialects there are cases where /u/ corresponds to this sound, but this is not the result of a systematic sound change.

**2.1.2 Close vowels**

**/i/ (unrounded close front vowel) [i] ~ [ɪ] < Miyako \*i**

This sound corresponds to Proto-Miyako \*i and surfaces as [i] ~ [ɪ] in all of the dialects. In Karimata, there are words in which /ɾ/ corresponds to \*i. In Ikema, \*ɾ has merged with /i/, except after /ts/, /z/, and /s/ (see the section on /ɾ/ for details). In addition, there are words in Irabu in which the sound corresponding to Proto-Miyako \*(C)ja has changed into ‘ii’.

Table 2. The unrounded close front vowel.

	A-170	A-059	A-129	B-093	A-110
	‘sea’	‘woman’	‘wind’	‘spatula’	‘tree’
Uechi	iṃ	midum	kaɖzi		ki:
Yonaha	im	midomu	kʰaɖzi		ki:
Kugai	im	midum	kʰaɖzi		ki·
Irabu	im	midum	kʰaɖzi	pira	kʰi:
Bora	im	midom	kʰa <sup>d</sup> zi	pʰira	kʰi:
Kuninaka	iṃ	miduṃ	kaɖzi		ki·
Ōura	iŋ	miduŋ	kʰaɖzi	pira	kʰi:
Shimajiri	iŋ	miduŋ	kʰaɖzi	pira	ki:
Kurima	im	midumu	kʰaɖzi		ki:
Ikema	iŋ	miduŋ	kʰadi	hira	ki:
Karimata	iŋ	miduŋ	kʰaɖzi	pira	ki:
Uruka		miduṃ	kaɖzi		ki: ~ kɿ:
Nobaru				pira	

Table 3. ‘ɾ’ partly corresponding to ‘i’ in Karimata.

	A-016	A-103
	‘beard; mustache/hair’	‘garlic’
Uechi	p <sup>e</sup> igi	p <sup>h</sup> il
Yonaha	p <sup>z</sup> ɾgi	p <sup>h</sup> i <sup>z</sup> ɾ
Kugai	psgi	p <sup>h</sup> iz
Irabu	p <sup>s</sup> ɾgi / fɯtsɾp <sup>s</sup> ɾgi	p <sup>h</sup> iɾ
Bora	p <sup>s</sup> ɾgi	p <sup>h</sup> i <sup>z</sup> ɾ
Kuninaka	p <sup>h</sup> igi	p <sup>h</sup> il

Ōura	p <sup>s</sup> ŋgi ~ pŋgi	p <sup>h</sup> iŋ
Shimajiri	b <sup>z</sup> ŋgi	p <sup>h</sup> i <sup>z</sup> ŋ
Kurima	psgi	piz
Ikema	higi	hi:
Karimata	bzgu ~ bzgĩ ~ biġĩ	p <sup>s</sup> i:
Uruka	psgi ~ p <sup>s</sup> ŋgi	pi <sup>z</sup> ~ pi <sup>z</sup>
Nobaru		

Table 4. \*(C)ja > ii in Irabu.

	A-165	A-189	B-029
	‘a long time ago’	‘to be absent; to be nonexistent’	‘one (person)’
Uechi	ŋkja:ŋ		
Yonaha	ŋk <sup>j</sup> a:ŋ		tɔuk <sup>j</sup> a:
Kugai	ŋkja:ŋ	n <sup>j</sup> a:ŋ	tɔfke:
Irabu	mki:ŋ	ni:ŋ	tauki:
Bora	ŋk <sup>j</sup> a:ŋ	n <sup>j</sup> a:ŋ	tauk <sup>j</sup> a:
Kuninaka	ŋkja:ŋ		ta <sup>v</sup> k <sup>j</sup> a:
Ōura	ŋk <sup>j</sup> a:ŋ		tavk <sup>j</sup> a:
Shimajiri	ŋkja:ŋ		t <sup>h</sup> afkja:
Kurima	ŋkja:ŋ	n <sup>j</sup> a:ŋ	
Ikema	ŋk <sup>j</sup> a:ŋ	n <sup>j</sup> a:ŋ	tauka:
Karimata	ikja:ŋ	n <sup>j</sup> a:ŋ	ta <sup>ɸ</sup> k <sup>j</sup> a:
Uruka	ŋkja:ŋ		tavk <sup>j</sup> a:
Nobaru			taukja:

**/u/ (rounded close back (lax) vowel) [u] ~ [ʊ] < Miyako \*u**

This sound corresponds to Proto-Miyako \*u and surfaces as [u] ~ [ʊ] in all of the dialects. Words in which ‘a’ corresponds to this sound are also encountered occasionally at all of the sites, but this is not a regular correspondence.

Table 5. The rounded close back vowel.

	A-028 'bone'	A-030 'heart/liver'	A-060 'person; human being'	A-071 'horse'	B-069 'ear (of a cereal plant)'
Uechi	puni	kçimu ~ kimu	p̄isu	nu:ma	
Yonaha	puni	k̄imu	p̄i <sup>h</sup> tu	no:ma	
Kugai	p <sup>h</sup> uni	k <sup>sz</sup> imu	pstu	nu:ma	
Irabu	p <sup>h</sup> uni	ts̄imu	pstu	nu:ma	pu:
Bora	p <sup>h</sup> uni ~ puni	k̄imu	pstu	no:ma	p <sup>h</sup> u:
Kuninaka	puni	tsimu	p̄i <sup>h</sup> tu	nɸ:ma	
Ōura	p <sup>h</sup> uni	k̄imu	pstu	numa	p <sup>h</sup> u:
Shimajiri	p <sup>h</sup> uni	k̄imu	ttu	nu:ma	pu:
Kurima	p <sup>h</sup> uni	tsimu	pstu	nu:ma	
Ikema	huni	tsimu	p̄i <sup>h</sup> tu ~ çtu ~ çto	nu:ma	hu:
Karimata	p <sup>h</sup> uni	k <sup>s</sup> imu	pstu	nu:ma	pu:
Uruka	p̄uni ~ p <sup>h</sup> uni	k̄smu ~ k̄imu	p̄stɸ ~ p̄stɸ	nu:m̄a	
Nobaru					pu:

Table 6. Examples of 'a' corresponding to 'u'.

	A-132 'cloud'	A-032 'knee'	A-079 'egg'	A-115 'common garcinia (tree)'
Uechi	kumu	tsigusi	tunaka	p̄kukugi
Yonaha	fum	ts̄gus̄	t <sup>h</sup> unaka	p <sup>h</sup> ɸkugi:
Kugai	fumu	ts̄gusi	tunak <sup>h</sup> a	p <sup>h</sup> ukadzgi:
Irabu	fumu	ts̄gus̄	(k <sup>h</sup> u:ga)	kuputs̄gi
Bora	fumo	ts̄gus̄	t <sup>h</sup> unaka	f̄gok̄gi:
Kuninaka	fumu	tsigusi	tunuka	p̄kuts̄gi
Ōura	k <sup>h</sup> umu	sugas̄	t <sup>h</sup> unaka	p <sup>h</sup> ukagi
Shimajiri	fuma	tugus̄ ~ tugas̄	t <sup>h</sup> unaka	k <sup>h</sup> ɸpag <sup>z</sup> gi:
Kurima	fumu	ts̄gusi	t <sup>h</sup> unuka	pukuts̄gi:
Ikema	ɸmu	s̄gusi	tunuka	kuts̄gi
Karimata	fumu	ts̄gasi	tunuga	p <sup>h</sup> ɸkagagi:
Uruka	ɸumu	tsgus̄ ~ ts̄gus̄	t̄unaka	p̄k̄kuki: ~ p̄kukugi
Nobaru				

### 2.1.3 Close-mid vowels and diphthongs

The close-mid vowels of the Miyako dialects mostly derive from sequences of vowels that have fused together. /e/ derives from \*ai and \*Cja, while /o/ derives from \*au and \*ua. There are many exceptions, however; apart from \*au > o:, these sound changes are not observed in all instances of these environments in most of the dialects.

#### /e/ (unrounded close-mid front vowel) [e]

/e/ derives from the following two sequences:

- \*ai : this is observed only in some vocabulary items.
- \*Cja : this is observed most often in the topic forms of words ending in ‘-i.’

/e/ deriving from these sequences through fusion is not encountered in most of the dialects. Also, there was an instance of mistranscription as /i/ [ɪ] in the data given below.

Table 7. /e/ deriving from \*ai in some vocabulary items in Yonaha, Kugai, and Kurima (vocabulary items in which the change \*ai > e has not occurred are included for reference.)

	A-131 ‘earthquake’	A-146 ‘the south’	A-157 ‘night’	A-004 ‘forehead’	‘too; also’ (particle)	allative marker
Uechi	nai	p <sup>h</sup> ai				
Yonaha	nai	pai	junai		mai / me:	ŋkai / ŋke:
Kugai	nai	p <sup>h</sup> ai	jun <sup>h</sup> a:ŋ / june:	ftai	mai	ŋkai
Irabu	nai	p <sup>h</sup> ai	ju <sup>z</sup> ŋna <sup>z</sup>	fɯtai	mai	
Bora	nai	p <sup>h</sup> ai	junai	fɯtai	mai	ŋkai
Kuninaka	nai	paɪbara	jɯnai	fɯtai	mai	ŋkai
Ōura	nai	p <sup>h</sup> ai		fɯtai ~ ftai		
Shimajiri	nai	p <sup>h</sup> ai				
Kurima	nai	p <sup>h</sup> ai	june:	fɛ̄	me:	ŋke:
Ikema	nai	haɪbara		ftai	mai	ŋkai
Karimata	nau	p <sup>h</sup> ai		ftai	mai	ŋgai
Uruka	nai	p <sup>h</sup> ai	junai		mai	ŋkai
Nobaru						ŋkai



Table 8. /e/ deriving from \*Cja only in some vocabulary items in Kugai.

	A-165 'a long time ago'	A-189 'to be absent; to be nonexistent'	B-029 'one (person)'	-i + topic marker
Uechi	ɲkja:ɲ			
Yonaha	ɲk <sup>j</sup> a:ɲ		tɔuk <sup>j</sup> a:	ja:
Kugai	ɲkja:ɲ	n <sup>j</sup> a:ɲ	tɔfke:	e:
Irabu	mki:ɲ	ni:ɲ	tauki:	
Bora	ɲk <sup>j</sup> a:ɲ	n <sup>j</sup> a:ɲ	tauk <sup>j</sup> a:	ja:
Kuninaka	ɲkja:ɲ		ta <sup>v</sup> k <sup>j</sup> a:	ja:
Ōura	ɲk <sup>j</sup> a:ɲ		tavk <sup>j</sup> a:	
Shimajiri	ɲkja:ɲ		t <sup>h</sup> afkja:	
Kurima	ɲkja:ɲ	n <sup>j</sup> a:ɲ		ja:
Ikema	ɲk <sup>j</sup> a:ɲ	n <sup>j</sup> a:ɲ	tauka:	(j)a:
Karimata	ikja:ɲ	n <sup>j</sup> a:ɲ	taɸk <sup>j</sup> a:	ja:
Uruka	ɲkja:ɲ		tavk <sup>j</sup> a:	ja:
Nobaru			taukja:	

**/o/ (rounded close-mid back vowel) [o]**

/o/ derives from the following two sequences.

- \*au : this is observed especially often in the accusative forms of words ending in '-a'.
- \*ua : this can apparently only be observed in the topic forms of words ending in '-u'.

In most of the dialects /o/ is consistently used as the sound corresponding to \*au, but there are also dialects in which there is variation among vocabulary items (Bora, Kurima), as was the case with the examples above. Also, there was an instance of mistranscription as /u/ [ɔ] in the data given below.

Table 9. /o/ deriving from \*au in Uechi, Yonaha, Kugai, Bora, Ōura, Kurima, and Karimata; /o/ deriving from \*ua in Kugai, Kuninaka, Kurima, Karimata, and Uruka.

	A-027	A-093	A-130	A-136	A-183		
	‘to be itchy’	‘to eat’	‘whirlwind; tornado’	‘to be blue; to be azure’	‘gate’		
						-a + accusative marker	-u + topic marker
Uechi		fo:	amainoũ	o:	ɕoʻ		
Yonaha		fo:	amaino:	o:ɳʊ	ɕo:	o:	a:
Kugai	k <sup>h</sup> o:munu	fo:	ama.ino:	o:	ɕo:	o:	o:
Irabu	k <sup>h</sup> o:munu	fo:	amaino:	o:	ɕo:vtsɿ		
Bora	k <sup>h</sup> aʊkau	fau	amaino:	aʊaʊ	ɕo: (Bora) / ɕaʊ (Aragusuku)	au	a:
Kuninaka	kaʊmunu	fau	amainau	aũ	daʊ	ao	u: / o:
Ōura		fo:	amaino:	o:o:	ɕo:futsɿ		
Shimajiri		fau	amaino:	aukaŋ	dau		
Kurima	koʔoko:		ama.ino:	au	ɕo:	a: / o: / au	o: / ua
Ikema	kaumunu		amaunau	aumunu	ɕau	au	u:
Karimata	ko:gaŋ		ino:	o:	ɕo:	au / o:	o:
Uruka		fau ~ fau	amainau	au ~ aʊ	ɕau	au	o:
Nobaru							

#### 2.1.4 Special vowel /ɿ/

This sound corresponds to Proto-Miyako \*ɿ, and in addition to its vocal quality as a somewhat fronted close central vowel [i] ~ unrounded close back vowel [ɯ], it is accompanied by an alveolar friction noise; it is a so-called ‘fricative vowel’<sup>6,7</sup>. The friction noise is voiceless [s] when it is preceded by a voiceless onset consonant (e.g. Uechi p<sup>h</sup>iɿgi ‘beard; mustache’) and voiced [z] when it is preceded by a voiced onset consonant or no onset

<sup>6</sup> For many years, there has been debate regarding what kind of vowel the sound corresponding to \*ɿ is on the basis of its articulatory properties (see Karimata 1986 for details). Ever since Nevsky’s survey of Miyako, it had generally been considered a central vowel, but Sakiyama (1963, 1965), Uemura (1997), and Karimata (1996, 2005), among others, have argued that in terms of articulatory phonetics, it is an apical vowel. In recent years, it has been confirmed experimentally through instrumental analysis that in some of the dialects, it has both the characteristics of a central and of an apical vowel: while it has a vocal quality like that of a central vowel (Ono et al. 2000, Aoi 2010), it is articulated in a position close to s ~ z (Aoi 2010). This parallels reports of fricative vowels in other languages having a dual articulatory character consisting of both vocal and consonantal elements.

<sup>7</sup> As was mentioned in Footnote 4, the vowel deriving from \*ɿ in the Ōgami dialect is /ɯ/, which is not devoiced even when preceded by a voiceless onset consonant (e.g. Ōgami [ku:ɯ] ‘character; letter’) (Pellard 2009).

consonant (e.g. Yonaha p<sup>h</sup>ag<sup>z</sup>ɿ ‘leg’). When it is surrounded by voiceless consonants, in particular, the vowel itself is almost always completely devoiced (e.g. Bora pskaɿ ‘light’). Conversely, an allophone with a weakened friction noise, closer to an approximant or vowel, surfaces particularly when it is not preceded by an onset consonant or when it is word-final and preceded by a voiced onset consonant (e.g. Uechi pagɿ ‘leg’). In addition to expected differences in the degree of stricture among the dialects, there is also variation among speakers and fluctuation in the pronunciation of individual words in individual speakers (e.g. Ōura p<sup>h</sup>agɿ ~ p<sup>h</sup>ag<sup>z</sup>ɿ ‘leg’). Depending on the dialect, there are also cases where it sounds like a lateral (e.g. Uechi mak<sup>ʰ</sup>al ‘(wooden) bowl’).

In comparison to other vowels, only a limited number of onset consonants can precede this vowel; which they are depends on the dialect, but the largest set of possible onset consonants consists of /p, b, k, g, ts, s, z, f, m/. They are especially few in number in Ikema, where it has changed into /i/ in all environments except after /ts/, /s/, and /z/. It must also be mentioned that in many of the dialects, it has changed into a diphthong [iɿ] after sounds such as /m/.

As /ɿ/ sometimes surfaces as [z] or [s], there are also researchers who interpret it as a moraic consonant. [pstu] ‘person; human being’ provides an example of the diversity encountered in the phonetic transcriptions of this sound: it is variously transcribed as p̄itu ~ pɿtu ~ p̄ztu<sup>8</sup>. Although there is thus a variety of phonological interpretations, the researchers that consider it a vowel still agree that it is accompanied by a friction noise, and those that consider it a consonant still recognize its vowel-like ability to occupy a syllable nucleus. On either view, it is considered a phoneme that has both a consonantal and a vocal quality<sup>9</sup>.

Table 10. The special vowel.

	A-016	A-025	A-100	A-087	A-081	A-033	B-062
	‘beard; mustache/hair’	‘blood’	‘(wooden) bowl’	‘meat (of sea urchins and the like)’	‘fish’	‘leg’	‘fly (insect)’
Uechi	p <sup>ɛ</sup> igi	aχ <sub>ɔ</sub> tsi ~ ak <sub>ɔ</sub> tsi	mak <sup>ʰ</sup> al	mi:	<sup>i</sup> zzu	pagɿ	
Yonaha	p <sup>z</sup> ɿgi	ak <sup>h</sup> ɔtsɿ	mak <sup>h</sup> a <sup>z</sup> ɿ	m <sup>z</sup> ɿ:	zzu ~ ɿzu	p <sup>h</sup> ag <sup>z</sup> ɿ	
Kugai	psgi	akatsi	mak <sup>h</sup> azi	kadz <sup>a</sup> sanumiz	zzu	p <sup>h</sup> aɰzi	

<sup>8</sup> Karimata (2005) also discusses the possibility of interpreting this sound as an allophone of the onset consonants ‘s’ and ‘z’.

<sup>9</sup> Although we consider this sound a vowel in this chapter, we use the phonetic symbol /ɿ/ rather than /i/ in order to express the fricativity that is an important property of this phoneme.

Irabu	p <sup>s</sup> ɽgi	ax <sup>h</sup> atsɽ ~ ahatsɽ	maxaɽ ~ mahaɽ	miɽ	ɽɽzu	p <sup>h</sup> aɽɽɽ	paɽ
Bora	p <sup>s</sup> ɽgi	ak <sup>h</sup> ɽtsɽ	maka <sup>z</sup> ɽ	m <sup>z</sup> ɽ:	zzu ~ ɽzu	p <sup>h</sup> a <sup>d</sup> zɽ ~ p <sup>h</sup> ag <sup>z</sup> ɽ	paz ~ paiz
Kuninaka	p <sup>h</sup> igi	ak <sup>x</sup> ɽtsi	makaɽ	tsimu (sea urchin)	( <sup>i</sup> )zzu:	pazi	
Ōura	p <sup>s</sup> ɽgi ~ pɽgi	ha:tsɽ	makaɽ	miɽ	ɽzu	p <sup>h</sup> agɽ ~ p <sup>h</sup> ag <sup>z</sup> ɽ	pa <sup>z</sup> ɽ
Shimajiri	b <sup>z</sup> ɽgi	aχatsɽ	maχaɽ ~ maχa <sup>z</sup> ɽ	mi <sup>z</sup> ɽ	zzu	p <sup>h</sup> agɽ ~ p <sup>h</sup> ag <sup>z</sup> ɽ	paz ~ paɽ
Kurima	psgi	A: akatsi / B: a <sup>h</sup> xatsi	A: makaɽ / B: makaz	mi:	zzu	p <sup>h</sup> aɽɽi	
Ikema	higi	akatsi	makai	mi:	zzu ~ ɽu	hadzi	hai
Karimata	bzgu ~ bzgi ~ biḡi	ha:tsi	ma:u	mi:	izu	p <sup>h</sup> agu	pai / pau
Uruka	psgi ~ p <sup>s</sup> ɽgi	ak <sup>h</sup> atsɽ	makaz	m <sup>z</sup> ɽ:	zzu	pagz	
Nobaru						pagɽ	pa <sup>z</sup> ɽ

There has long been debate on (phonetic) issues related to the articulatory properties of this vowel, but we will not discuss these in detail in this chapter (see, however, Footnote 6). We will instead consider some morphophonological issues highly relevant to a discussion of this vowel and discuss a problem of phonological interpretation in regard to the Miyako dialects.

*Is there a vowel or not?*

In the Miyako dialects, syllables in which it is debatable whether there is a vowel are frequently encountered; they are mostly cases of this special vowel preceded by an onset fricative or affricate. For example, some interpret [usi] ‘cattle (i.e. cow or bull)’ as ‘usi’ or ‘usɽ’, in which ‘s’ is followed by a vowel, while others interpret it as ‘uɽ’, in which ‘s’ is a syllabic consonant. Although the second syllable of this word does not always surface phonetically unvoiced<sup>10</sup>, it appears to be interpreted this way due to a number of morphophonological phenomena.

The questions of whether there is a phoneme or not and whether this phoneme is a consonant or a vowel have to be answered by considering the phonological systems of each of the dialects in their entirety. There is not much research, however, that examines the relevant phonological phenomena comprehensively. Although it is not possible to resolve the issue in its entirety for each of the dialects in this chapter, we will introduce one morphophonological phenomenon that is often cited in discussions on the presence of a vowel and discuss some matters that are essential to the resolution of this issue. Furthermore, as this issue is as yet unresolved, we have in this chapter

<sup>10</sup> As there are also cases in which a vowel is inserted phonetically, this in itself does not prove that there is a vowel phonologically.

chosen the interpretations and transcriptions closest to the Proto-Miyako forms and supplemented forms in which it is unclear if a consonant is moraic with vowels.

### *Nominal morphophonology*

The phenomenon that would seem to be most relevant to the interpretation of the syllables in question is the following nominal-morphophonological phenomenon. In the Miyako dialects, the topic and accusative forms of nouns take different shapes depending on the properties of their stem-final sounds, as shown below; Table 11 gives examples from Karimata.

Table 11. Types of stem-final syllables and their topic and accusative forms<sup>11</sup> (‘--’ indicates forms for which no data is available).

Type of stem-final syllable	Topic form	Accusative form	
C	‘sea’ im	imma	immu
	‘dog’ in	inna	innu
	‘snake’ pav	pavva	pavvu
(C)V[ + fricative]	‘cattle (i.e. cow or bull)’ usɲ	ussa	ussu
	‘wife’ tuzɲ <sup>12</sup>	tuttsa	tuttsu
	‘road; path; way’ ntsɲ	nttsa	nttsu
	‘tofu’ toofu	tooffa	tooffu
	-pɲ	--	--
	‘paper’ kabɲ	kabzza	kabzzu
	‘the moon’ tsɲkɲ <sup>13</sup>	tsɲkssa	tsɲkssu
	‘leg’ pagɲ	pagzza	pagzzu
	‘rice’ maɲ	mazza	mazzu
	CV	‘umbrella; parasol’ sana	sanaa
‘sake; alcoholic beverage (in general)’ saki		sakjaa	sakjuu
‘octopus’ taku		takoo	takuu

<sup>11</sup> In Table 11, data from the NINJAL survey has been supplemented with our own data. We have modified the transcriptions.

<sup>12</sup> It appears to have surfaced as an unvoiced sound here due to restrictions on which sounds can be used as geminates.

<sup>13</sup> In the data from the NINJAL survey, this word is transcribed as ‘tskssu’, but this form is also encountered.

(C)VV	‘tree’ kii	kiija	kiiju
	‘voice’ kui	kuija	kuiju
	‘character; letter’ zɿ	zɿja	zɿju
	‘(to break) wind’ pɿ	--	--
CC	‘sweet potato’ mm	mma	mmu

Table 11 shows that consonant doubling occurs when the stem ends in C or (C)V[+fricative] (‘ɿ’ or a fricativized ‘u’). Before considering how to interpret this synchronically, let us first briefly look at how this phenomenon arose historically.

As is also indicated by, among others, Karimata (1996, 2007), there has been a historical sound change in which the semivowels ‘w’ and ‘j’ and the liquid ‘r’ have changed into the fricatives ‘s’ and ‘z’ when they follow the special vowel ‘ɿ’<sup>14</sup>. The examples in (1) are taken from Karimata (2007); we have modified the transcriptions.

- (1) tsɿkssu < \*tsɿkɿju ‘the moon’ (corresponds to Japanese *tsukuyo* ‘moonlit night’)  
 zzu < \*ɿwu ‘fish’ (corresponds to Japanese *iwo*)  
 ssu < \*sɿru ‘white’ (corresponds to Japanese *shiro*)

\*ja and \*ju are thought to have been the forms of the topic and accusative marker, respectively, in Proto-Miyako, and when they were attached to stems ending in \*ɿ, the same change must have occurred.

- (2) kabɿ + ju > kabɿ = zu [kabzzu] ‘head.hair-ACCUSATIVE’ (from Table 11)

In the case of stems ending in consonants, too, the ‘j’ of the attached marker has assimilated to these consonants, as can be seen in Table 11 (the accusative form of im ‘sea’: im = mu). We will not discuss the process through which this change occurred in detail, but it seems that the case of stems ending in ‘ɿ’ can be understood as similarly involving the assimilation of the ‘j’ following it due to the consonantal aspect of this vowel<sup>15</sup>.

<sup>14</sup> Fricative vowels have also been observed to influence the consonants following them in some of the Bantu languages (Ladefoged & Maddieson 1996).

<sup>15</sup> In addition to Karimata (1996, 2007) discussing the causes of this change from the perspective of aerodynamics, Aoi (2012) uses an autosegmental-phonological analysis to explain the process through which this change occurred as the fricativization of semivowels and liquids due to the extension of the apicality of /ɿ/.

Among the stems in Table 11 ending in (C)V[+fricative], however, there are broadly speaking two possible interpretations regarding those ending in ‘sɿ’, ‘zɿ’, ‘tsɿ’, or ‘fu’<sup>16</sup>. One of these assumes ‘ɿ’ (a fricativized ‘u’ in the case of ‘f’) to be a syllable nucleus, similarly to ‘bɿ’, (‘pɿ’), ‘kɿ’, ‘gɿ’, and ‘mɿ’, and posits a rule according to which this vowel has changed ‘j’ into a fricative<sup>17</sup>; the other considers this vowel to have been elided and ‘j’ to have assimilated directly to the resulting moraic consonants ‘s’, ‘z’, ‘ts’, and ‘f’, similarly to what happened in the case of ‘m’, ‘n’, and ‘v’.

The above also applies to the question of how to analyze the data synchronically<sup>18</sup>. The words in Table 11 that have consonant doubling in their topic and accusative forms, with stems ending in C or (C)V[+fricative], can be divided into two groups: a group with consonants, ‘p’, ‘b’, ‘k’, ‘g’, and ‘m’, that are accompanied by an additional syllable nucleus (‘ɿ’), which we will call ‘group A’, and a group with consonants, ‘m’, ‘n’, and ‘v’, that can be considered moraic, which we will call ‘group B’<sup>19</sup>. The biggest interpretational question is then whether to put the words with ‘s’, ‘z’, ‘ts’, and ‘f’ into group A or into group B. This is because it is directly connected to the question of whether ‘s’, ‘z’, ‘ts’, and ‘f’ have to be recognized as syllabic consonants—a question of phonotactics, syllable structure, and phoneme classification, and thus a major issue regarding the phonological system of the language. Putting ‘s’, ‘z’, ‘ts’, and ‘f’ into the group of syllabic consonants means the example of ‘cattle (i.e. cow or bull)’ given earlier will be interpreted as ‘usɿ’, in which the second

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<sup>16</sup> ‘fu’ derives from Proto-Ryukyuan \*pu and \*ku. According to Karimata (2007:44), who interprets this mora as ‘f’, \*u first changed into ‘v’, after which \*p and \*k fused with ‘v’ to become ‘f’ due to a reciprocal assimilation in which ‘v’ changed the place (labiodental) and manner (fricative) of articulation of the preceding consonants \*p and \*k, and, conversely, \*p and \*k caused the devoicing of the following ‘v’. It is also possible, however, to maintain ‘v’ as an allophone of ‘u’, interpreting this mora as /fu/ [fv], and to view this allophone as a fricative vowel like the special vowel ‘ɿ’ whose labiodental friction caused the assimilation of ‘j’.

There are also many other examples of words in which a consonant has assimilated to a preceding ‘fu’ (or ‘f’), resulting in a geminate.

E.g. ffu < furu ‘black’ (corresponds to Japanese *kuro*)

maffa < mafura ‘pillow’ (corresponds to Japanese *makura*)

<sup>17</sup> When \*ju is attached to C\*ɿ (where C is an affricate), a further assimilation occurs; for example, when \*ju is attached to \*tsɿ, this results in tsɿ + ju > tsɿsu > ttsu. (An example of a historical change: Irabu tsɿkɿju > tsɿtsɿju > tsɿttsu ‘the moon’.)

<sup>18</sup> Although we do not take a specific position below, a synchronic analysis need not assume that the accusative marker is ‘ju’, identical to the proto-form; it would seem possible to analyse it as ‘u’, as well, although it is also possible that it differs depending on the dialect.

<sup>19</sup> In, for example, Kuninaka, /r/ [ɿ] is an additional syllable nucleus.

syllable does not have a vowel. Broadly speaking, the phonological phenomena illustrated in Table 11 can be interpreted most economically in the following two ways<sup>20</sup>.

1. Like the consonants in group A, ‘s’, ‘z’, ‘ts’, and ‘f’ are accompanied by an additional syllable nucleus (‘ɿ’ and the like). (They are not recognized as syllabic consonants.)
2. Like the consonants in group B, ‘s’, ‘z’, ‘ts’, and ‘f’ can be used as syllabic consonants and thus do not require an additional syllable nucleus.

Irrespective of whether this morphophonological issue is considered, interpretations like 1. that maintain the \*ɿ (and ‘u’) of the proto-forms have up to now been the standard. On the other hand, Karimata (2005), M. Shimoji (2008, 2011), and Pellard (2009, 2010), for example, adopt interpretation 2. For each dialect, the question of which is the more appropriate explanation cannot be resolved without looking at the entire phonological system (phoneme system, phonotactics, syllable structure, and morphophonology), but in the following, we will describe a benefit of choosing interpretation 2. as well as a problem with the traditional account.

For the Ōgami dialect, which is unusual even among the Miyako dialects<sup>21</sup>, there is further evidence outside of the nominal morphology illustrated in Table 11 that /m, n, f, s, v/ are used as syllabic consonants, unaccompanied by an additional syllable nucleus (vowel). For example, Ōgami has the contrasting pair of ‘sta’, meaning ‘down; below; under; bottom’, and ‘suta’, meaning ‘tongue’, and there is nothing to necessitate the positing of a fricative vowel like those in the other dialects in addition to ‘u’, which is not accompanied by friction in the Ōgami dialect. The ‘s’ in ‘sta’ can therefore be considered a syllable without a vowel. ‘s’ and ‘f’ can thus be used as syllabic consonants in addition to nasals and approximants, but the liquid ‘r’ can only be used as an onset consonant and does not function as a syllable nucleus. This forms an exception to the theory that liquids can typologically more easily be used syllabically than fricatives (Zec 2007), but this can be seen as showing that the main quality supporting the syllable in this dialect is ‘continuance’ rather than ‘sonority’<sup>22</sup>. It is possible

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<sup>20</sup> According to a third interpretation, it is sufficient to view the phenomena illustrated in Table 11 as a strictly historical change and assume a simple nominal paradigm synchronically. In essence, this interpretation does not regard these phenomena as objects of synchronic explanation; depending on one’s perspective on grammar, this can be a perfectly valid interpretation. If this view is taken, consistency in the phoneme system, phonotactics, and syllable structure, as well as the phonetic reality, must be taken into account in interpreting the sound corresponding to /ɿ/, without considering these morphophonological phenomena.

<sup>21</sup> It has no contrast between voiced and voiceless and no affricates, for example.

<sup>22</sup> The difference between the sounds that can and the sounds that cannot be used as syllable nuclei appears to lie in whether they are sustainable sounds or instantaneous sounds; this approximates the feature ‘continuant/interrupted’ of Jakobson, Fant & Halle (1952).



that this applies to all of the Miyako dialects, in which case interpretation 2. can be seen as more accurately reflecting their linguistic character<sup>23</sup>.

Although they do not show that there is no vowel, M. Shimoji (2008) presents data for the Nagahama dialect showing that ‘s’, ‘z’, ‘ts’, and ‘f’ are different from the consonants of group A (‘p’, ‘b’, ‘k’, ‘g’, and ‘m’), which require an additional syllable nucleus.

- (3) a. Nagahama sīi<sup>24</sup> ‘nest’; accusative form sīi=u  
 (corresponds to ‘sɪɪ’ according to the interpretation/transcription of this chapter)
- b. Nagahama pžž ‘the sun; sunlight; day’; topic form pžž=ža  
 (corresponds to ‘pɪɪ’ according to the interpretation/transcription of this chapter)
- (taken from M. Shimoji 2008)

The words in (3ab) have both been interpreted as having a long special vowel, but in their topic forms, a difference arises. Although this suggests that ‘s’, ‘z’, ‘ts’, and ‘f’ cannot be treated in exactly the same way as the consonants of group A, the behavior seen in (3a) also differs from that of the syllabic consonants of group B, which can be lengthened. An example of the lengthening of the syllabic consonants of group B is the consonant doubling that occurs in their topic forms: **mm**=**ma** ‘sweet.potato-TOPIC’. Even if it is possible to treat them identically to either group A or group B depending on to which of these they appears more similar after examining a variety of other phonological phenomena, it also seems possible that rules different both from those of group A and from those group B will have to be posited.

In the above, we have briefly considered the morphophonological reasons for interpreting the word for ‘cattle (i.e. cow or bull)’ as ‘uʃ’, without a vowel in the second syllable, through a discussion of the nominal morphology of the Miyako language. These issues must be investigated for each of the dialects; the situation is very different for a dialect such as that of Ikema, in which the consonants of group A, ‘p’, ‘b’, ‘k’, ‘g’, and ‘m’, are never used as onset consonants in combination with the special vowel.

As we have seen, there has been a historical change in which the semivowels ‘w’ and ‘j’ and the liquid ‘r’ of Proto-Miyako have assimilated to preceding consonants and fricativized close vowels;

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<sup>23</sup> It is possible that there is a connection between the fact that ‘syllable nuclei are (...) frequently occupied by (at least phonetically) consonantal elements’, stated in Section 1, and this quality, as well.

<sup>24</sup> M. Shimoji (2008) also treats the sounds corresponding to ‘s’, ‘z’, ‘ts’, and ‘f’ as syllabic consonants underlyingly; he analyzes this ‘i’ as an inserted vowel.

not only have many consonant sequences resulted from this, it has also given rise to synchronic stem-final consonant doubling in the verbal morphology.

- (4) *ssam* < *sɿram* ‘louse’ (< Proto-Japonic \**sirami*)  
*tsɿf-* ‘to make (stem)’; *tsɿf-fan* ‘to.make-NEGATIVE’ (< Proto-Japonic \**tsukur-*)

Also taking phenomena like these into account, the question of whether or not a vowel is present must be answered for each of the dialects within a system in which the morphology of that dialect can most adequately be explained in its entirety.

In the above, we have briefly discussed the question of whether or not a vowel is present in certain syllables by considering how to explain the nominal morphology of the Miyako dialects. We have not been able to consider all relevant factors in this section; we hope to be able to discuss these in more detail in the future.

## 2.2 Vowel systems

In the above, we have looked at each of the vowel phonemes of the Miyako dialects; the different vowel systems can be summarized as follows.

- Four-vowel system: /a, i, u, ɿ/  
Ikema
- Five-vowel system: /a, i, u, o, ɿ/  
Shimajiri, Irabu, Uruka, Bora, Nobaru
- Six-vowel system: /a, i, e, u, o, ɿ/  
Kurima, Kugai, Karimata, Ōura, Yonaha

### 3 Consonants

#### 3.1 Consonant types and properties

In this section, we will give the sound values of each of the consonant phonemes of the Miyako dialects and examples of words containing them, obtained at each of the survey sites. In cases where there has been a local sound change at a single site or where there is an exceptional sound correspondence, we will give additional examples for these.

The consonant types of the Miyako dialects encountered in the survey data that we will discuss in this chapter are /p, b, t, d, k, g, ts, s, z, f, v, χ, ʁ, h, ʎ, m, n, ŋ, r, j, w/. Among these, /v, m, n, r/ can be used as syllable nuclei; there are also cases in which they form a word by themselves, as long consonants<sup>25</sup>. Generally speaking, there is a contrast between voiced and voiceless consonants<sup>26</sup>.

##### 3.1.1 Plosives

In phonetic terms, a property of the voiceless consonants is that they are aspirated word-initially.

##### /p/ (voiceless bilabial plosive)

This sound corresponds to Proto-Miyako \*p; in some of the dialects, it has undergone the following changes.

- Ikema: p > h/[h~ç~ϕ]
- Karimata, Shimajiri, and Ōura: p > b / #\_1C[+voiced] (only in some vocabulary items)

Table 12. The voiceless bilabial plosive.

	A-146	A-139	A-016	A-148	A-033	B-002	B-007
	‘the south’	‘light’	‘beard; mustache/hair’	‘(the) left (side)’	‘leg’	‘tooth’	‘face’
Uechi	p <sup>h</sup> ai	pçkal	p <sup>ç</sup> igi	p <sup>h</sup> idal ~ p <sup>h</sup> ida	pagi	pa:	
Yonaha	pai	p <sup>ç</sup> ka <sup>z</sup> ɿ	p <sup>z</sup> ɿgi	p <sup>ç</sup> da <sup>z</sup> ɿ	p <sup>h</sup> ag <sup>z</sup> ɿ		

<sup>25</sup> Some researchers additionally analyze the voiceless fricatives /s, f/ and affricates /ts, z/ as syllabic consonants. See Section 2.1.4 for details.

<sup>26</sup> As was also indicated in Footnote 21, Ōgami is the only dialect without a contrast between voiced and voiceless consonants.

Kugai	p <sup>h</sup> ai	pskaz	psgi	pzdaz	p <sup>h</sup> aɕi		
Irabu	p <sup>h</sup> ai	p <sup>s</sup> kaɭ	p <sup>s</sup> ɭgi	p <sup>h</sup> idiɭ	p <sup>h</sup> aɕɭ	pa:	mipana ~ miɸana
Bora	p <sup>h</sup> ai	pskaɭ	p <sup>s</sup> ɭgi	p <sup>s</sup> ɭdaɭ ~ p <sup>s</sup> ɭdaʒɭ	p <sup>h</sup> a <sup>d</sup> zɭ ~ p <sup>h</sup> ag <sup>z</sup> ɭ	p <sup>h</sup> a:	mip <sup>h</sup> ana
Kuninaka	paɪbara	pɪkaɭ	p <sup>h</sup> iɭgi	p <sup>s</sup> idaɭ	pazi		
Ōura	p <sup>h</sup> ai	pskaɭ	p <sup>s</sup> ɭgi ~ pɭgi	b <sup>z</sup> ɭdaɭ	p <sup>h</sup> agɭ ~ p <sup>h</sup> ag <sup>z</sup> ɭ	pa:	nipana
Shimajiri	p <sup>h</sup> ai	pskaʒɭ	b <sup>z</sup> ɭgi	b <sup>z</sup> ɭdaʒɭ	p <sup>h</sup> agɭ ~ p <sup>h</sup> ag <sup>z</sup> ɭ	p <sup>h</sup> a:	mipana
Kurima	p <sup>h</sup> ai	pskaɭ	psgi	A: p <sup>h</sup> iɕdaɭ / B: psdaz	p <sup>h</sup> aɕi		
Ikema	haibara	ɕɪkai	higi	ɕidai	haɕi	ha:	mihana
Karimata	p <sup>h</sup> ai	pskauw	bzɣw ~ bzɣi ~ biɣi	bɪdaw ~ bzdaw	p <sup>h</sup> agw	pa	mipana
Uruka	p <sup>h</sup> ai	pʂkazɕ	psgi ~ p <sup>s</sup> ɭgi	pʂdaz ~ pʂdaɭ	pagz		
Nobaru					pagɭ	pa:	mipana

**/b/ (voiced bilabial plosive)**

This sound corresponds to Proto-Miyako \*b; it is consistently encountered as /b/ at all of the sites.

Table 13. The voiced bilabial plosive.

	A-007 'lip'	A-051 'husband'	A-055 'child; minor'	A-091 'sugar cane'	A-156 'evening'	A-029 'belly'
Uechi	siba	bikidum ~ bikiɕum	jarabi	bu:ɣi	jusarabi	
Yonaha	s <sup>z</sup> ɭba	but <sup>h</sup> u		bu:ɣɭ		
Kugai	sɪba	but <sup>h</sup> u	jarabi [new]	bu:ɣi	jusarabi	bat <sup>h</sup> a
Irabu	sɭba	butu	jarabi	bu:ɕɭ	jusarabi	bata
Bora	sɭba	ɸut <sup>h</sup> u	jarabi	bu:ɣɭ ~ bu:ɕɭ	jusarabi	ɸata
Kuninaka	sibaya	bɸtu	jarabi	bɸ:ɕi		bata
Ōura	NR	butu	jarabi	bu:ɣɭ ~ bu:ɣɭ		
Shimajiri	zɭba	butu		bu:ɣɭ ~ bu:ɣɭ		
Kurima	sɪba	bikidumu	jarabi	bu:ɕi	jusarabi	bata
Ikema	fɸtsi	butu	jarabi	bu:ɕi	jusarabi	bata
Karimata	sɪba	budu	jarabi	bu:ɣi	jusarabi	bada
Uruka	sɸa ~ spa	but <sup>h</sup> u	jarabi	bu:ɣz		
Nobaru						

**/t/ (voiceless alveolar plosive)**

This sound corresponds to Proto-Miyako \*t; in some of the dialects, it has undergone the following changes.

- Shimajiri and Kuninaka: t > tɕ / \_\_i
- Karimata: t > d / C[+voiced]V\_\_

Table 14. The voiceless alveolar plosive.

	A-077	A-154	A-177	A-018	B-029
	‘bird’	‘morning’	‘earth’	‘strength’	‘one (person)’
Uechi	tou	situmuti	mta ~ mtə	taja	
Yonaha	tʊʒ	sɪtʰomoti	mt <sup>h</sup> a	t <sup>h</sup> aja	tʊkʲa:
Kugai	t <sup>h</sup> uz	ʃtumuti	mta	t <sup>h</sup> aja	təʃke:
Irabu	t <sup>h</sup> uʒ ~ t <sup>h</sup> uɪ	stumuti	mta	t <sup>h</sup> aja	tavki:
Bora	t <sup>h</sup> uɪ	sʰtomoti	mta	t <sup>h</sup> aja	tavkʲa:
Kuninaka	tɯɭ	sɪtʰumutɕi	nta	taja	ta <sup>v</sup> kʲa:
Ōura	t <sup>h</sup> uɪ	stumuti	nta	t <sup>h</sup> aja	tavkʲa:
Shimajiri	t <sup>h</sup> uʒ	stumatɕi	nta	t <sup>h</sup> aja	t <sup>h</sup> afkja:
Kurima	t <sup>h</sup> uz	stumuti	mta	taja	
Ikema	tui	ɕitumuti	nta ~ mta	taja	tauka:
Karimata	tuw	stumuti	nta	taja	taɸkʲa:
Uruka	tuz	stumutɕ ~ stumuti	mta	taja	tavkʲa:
Nobaru					tavkja:

Table 15. Examples of t > d / C[+voiced]V\_\_ in Karimata.

	A-029	A-051
	‘belly’	‘husband’
Uechi		bikidum ~ bikidzum
Yonaha		but <sup>h</sup> u
Kugai	bat <sup>h</sup> a	but <sup>h</sup> u / bikirʲa [old]
Irabu	bata	butu
Bora	ɸata	ɸut <sup>h</sup> u
Kuninaka	bata	bɯtu
Ōura		butu

Shimajiri		butu
Kurima	bata	bikidumu
Ikema	bata	butu
Karimata	bada	budu
Uruka		but <sup>h</sup> u
Nobaru		

**/d/ (voiced alveolar plosive)**

This sound corresponds to Proto-Miyako \*d. In Shimajiri, the change d > dz / \_\_i has occurred.

Table 16. The voiced alveolar plosive.

	A-005	A-037	A-059	A-111	A-182	A-017
	‘tear(drop)’	‘body’	‘woman; female’	‘branch’	‘door’	‘arm’
Uechi			midum ~ mi <sup>d</sup> um	juda		udi
Yonaha			midomu	joda		k <sup>h</sup> aina
Kugai	nada / mi:nada	du:	midum	juda	jadu	udi / k <sup>h</sup> aina (‘shoulder ache’)
Irabu	nada	up <sup>h</sup> udu:	midum	ida	jadu	k <sup>h</sup> aina
Bora	nada	du:	midom	joda	jadu	odi
Kuninaka	nada	du:	midum	juda		udi
Ōura	nada		miduŋ	ida		udi
Shimajiri			miduŋ	juda		uɕi
Kurima	nada	du:	midumu	ida	jadu	ude
Ikema	nada	du:	miduŋ	juda	jadu	ti: / kaina ‘wrist’
Karimata	nada	du:	miduŋ	ida	jadu	kaina
Uruka			midum	juda		kaina
Nobaru						

**/k/ (voiceless velar plosive)**

This sound corresponds to Proto-Miyako \*k; it has undergone a variety of changes at the different sites.

- Karimata: k > g / C[+voiced]V\_\_<sup>27</sup>
- Irabu, Kuninaka, Kurima, and Ikema: k > ts / \_\_ɺ
- ‘k’-lenition:  
 Irabu: k > h ~ x / a\_\_a  
 Shimajiri: k > χ / a\_\_a  
 Ōura: #aka > #ha:  
 Karimata: #aka > #ha:, Caka > Ca:

Table 17. The voiceless velar plosive.

	A-126 ‘ash’	A-129 ‘wind’	A-139 ‘light’	A-164 ‘last year’	A-110 ‘tree’
Uechi	karap <sup>h</sup> aɺ ~ karap <sup>h</sup> a <sup>z</sup>	kaɸi	pɸkal	kuɸu	ki:
Yonaha	k <sup>h</sup> arapa <sup>z</sup> ɺ	k <sup>h</sup> adzi	p <sup>s</sup> ɺka <sup>z</sup> ɺ	k <sup>h</sup> uɸu	ki:
Kugai	k <sup>h</sup> arap <sup>h</sup> az	k <sup>h</sup> aɸi	pskaz	kuɸu	ki·
Irabu	k <sup>h</sup> ara paɺ	k <sup>h</sup> aɸi	p <sup>s</sup> kaɺ	k <sup>h</sup> udu	k <sup>h</sup> i:
Bora	k <sup>h</sup> arapaɺ ~ k <sup>h</sup> arapa <sup>z</sup> ɺ	k <sup>h</sup> a <sup>d</sup> zi	pskaɺ	k <sup>h</sup> uɸu	k <sup>h</sup> i:
Kuninaka	karapaɺ	kaɸi	pɺkaɺ	kuɸu	ki·
Ōura	k <sup>h</sup> arapaɺ	k <sup>h</sup> adzi	pskaɺ	k <sup>h</sup> u <sup>d</sup> zu	k <sup>h</sup> i:
Shimajiri	karapa <sup>z</sup> ɺ	k <sup>h</sup> aɸi	pska <sup>z</sup> ɺ	k <sup>h</sup> udu	ki:
Kurima	A: karabaɺ / B: karabaz	k <sup>h</sup> aɸi	pskaɺ	k <sup>h</sup> uɸu	ki:
Ikema	karahai	k <sup>h</sup> adi	ɸikai	kuɸu	ki:
Karimata	karapaw	k <sup>h</sup> aɸi	pskaw	kuɸu	ki:
Uruka	karapaz	kaɸi	pɸkaz	ku <sup>d</sup> ɸu	ki: ~ ki:
Nobaru					

Table 18. Examples of k > g / C[+voiced]V\_\_ in Karimata.

	A-072 ‘buck’	A-079 ‘egg’
Uechi		tunaka
Yonaha		t <sup>h</sup> unaka
Kugai	bikip <sup>h</sup> indza	tunaɸ <sup>h</sup> a
Irabu	bikipindza	k <sup>h</sup> u:ga

<sup>27</sup> Shimajiri t<sup>h</sup>unaɸa ‘egg’, given in Table 18, seems to have undergone this change, as well, before the occurrence of the change k > χ / a\_\_a in Shimajiri.

Bora	ɸikipindza	t <sup>h</sup> onaka
Kuninaka	bikipinda	tunuka
Ōura		t <sup>h</sup> unaka
Shimajiri		t <sup>h</sup> unaka
Kurima	bikip <sup>h</sup> indza	t <sup>h</sup> unuka
Ikema	bikihindza	tunuka
Karimata	bigipindza	tunuga
Uruka		tunaka
Nobaru		

Table 19. Examples of k > ts / \_\_ ɲ in Irabu, Kuninaka, Kurima, and Ikema.

	A-121	A-163	A-030	A-142
	‘clothing; kimono’	‘yesterday’	‘heart/liver’	‘the moon/month’
Uechi	kij̥	k <sup>s</sup> inu	kçimu ~ kimu	ts̥ikiju
Yonaha	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu	k <sup>s</sup> ɲmu	ts̥k <sup>s</sup> ɲ / ts̥k <sup>s</sup> ɲuɟo:
Kugai	k <sup>s</sup> ij̥	ks̥inu	k <sup>sz</sup> imu	tskssu
Irabu	t <sup>s</sup> ɲ	ts̥ɲu:	ts̥ɲmu	ttsu ~ ts̥tsu (?)
Bora	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu:	k <sup>s</sup> ɲmu	tskɲ
Kuninaka	tsij̥	ts̥inɸ	ts̥imu	ts̥ittɸ
Ōura	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu	k <sup>s</sup> ɲmu	tskɲ
Shimajiri	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu	k <sup>s</sup> ɲmu	tskɲ ~ ts̥k <sup>s</sup> ɲ
Kurima	tsij̥	ts̥ino	ts̥imu	A: ts̥its̥i / B: ts̥its̥inuɟo:
Ikema	tsij̥	nnu	ts̥imu	ts̥its̥i
Karimata	k <sup>s</sup> ij̥	ks̥ɸu	k <sup>s</sup> imu	tskssu
Uruka	kɸn	kɸnu:	ks̥mu ~ k <sup>s</sup> ɲmu	tskɸ
Nobaru				



Table 20. Examples of ‘k’-lenition.

Irabu: k > h ~ x / a\_\_a

Shimajiri: k > χ / a\_\_a

Ōura: #aka > #ha:

Karimata: #aka > #ha:, Caka > Ca:

	A-100 '(wooden) bowl'	A-025 'blood'	A-186 'grave; tomb'	A-066 'ant'	A-178 'yard; garden'
Uechi	mak <sup>χ</sup> al	aχ <sup>ə</sup> tsi ~ ak <sup>ə</sup> tsi	p <sup>ə</sup> ka	ak <sup>χ</sup> ɑ:l	
Yonaha	mak <sup>h</sup> a <sup>z</sup> ɿ	ak <sup>h</sup> ətsɿ	p <sup>h</sup> aka	aka: <sup>z</sup> ɿ	
Kugai	mak <sup>h</sup> azi	akatsi	p <sup>h</sup> əka	akaz <sup>z</sup>	minaka
Irabu	maxaɿ ~ mahaɿ	ax <sup>ə</sup> tsɿ ~ ahatsɿ	p <sup>h</sup> a: ~ p <sup>h</sup> ə:	aha:	minaha
Bora	maka <sup>z</sup> ɿ	ak <sup>h</sup> ətsɿ	p <sup>h</sup> əka	a <sup>z</sup> ɿgara (Bora) / ak <sup>h</sup> a: (Aragusuku)	minaka
Kuninaka	makaɿ	ak <sup>χ</sup> ətsi	p <sup>ə</sup> ka	aka:	
Ōura	makaɿ	ha:tsɿ	p <sup>h</sup> aka	ha:ɿ ~ xa:ɿ	
Shimajiri	maχaɿ ~ maχa <sup>z</sup> ɿ	aχatsɿ	p <sup>ə</sup> χa	aχa <sup>z</sup> ɿ	
Kurima	A: makaɿ / B: makaz	A: akatsi / B: a <sup>h</sup> xatsi	p <sup>ə</sup> ka	A: akaɿ / B: akaz	minaka
Ikema	makai	akatsi	haka	akai	minaka
Karimata	ma:w	ha:tsi	p <sup>ə</sup> ka	ha:w	a:ra / mina:
Uruka	makaz	ak <sup>ə</sup> tsɿ	p <sup>ə</sup> ka	azgara	
Nobaru					

**/g/ (voiced velar plosive)**

This sound corresponds to Proto-Miyako \*g; it has undergone a variety of changes at the different sites.

- Irabu, Kuninaka, Kurima, and Ikema: g > dz / \_\_ɿ
- Shimajiri: g > ɸ / a\_\_a
- Irabu: g > ʃ / a\_\_a

Table 21. The voiced velar plosive.

	A-016 'beard; mustache/hair'	A-140 'shade'	A-174 'sand'	A-032 'knee'	A-062 'mosquito'
Uechi	p <sup>6</sup> igi	kagi	ɱnagu	tsigusi	gaɟam
Yonaha	p <sup>7</sup> igi	k <sup>h</sup> agi	nnagɔ:	tsɿgɔsɿ	gaɟam
Kugai	psgi	k <sup>h</sup> agi	m <sup>ˈ</sup> nagu	tsi <sup>ˈ</sup> gusi	gaɟam
Irabu	p <sup>s</sup> igi / fɯtsɿp <sup>s</sup> igi	k <sup>h</sup> a:gi	mnagu	tsɿgɔsɿ	gaɟam
Bora	p <sup>s</sup> igi	k <sup>h</sup> ag	nnagɔ:	tsɿgɔsɿ	ga <sup>d</sup> zam
Kuninaka	p <sup>h</sup> igi	ka:gi	ɱnagu	tsigusi	kadam
Ōura	p <sup>s</sup> igi ~ pɿgi	k <sup>h</sup> ag	nnagu	sugasɿ	ga <sup>d</sup> zan
Shimajiri	b <sup>7</sup> igi	k <sup>h</sup> agi	nnagu	tugusɿ ~ tugasɿ	gadan
Kurima	psg	kagi	m:nagu	tsi <sup>ˈ</sup> gusi	gaɟam
Ikema	higi	kagi	nnagu	sɿgusi	kaɟan
Karimata	bzɣw ~ bzgi ~ bi <sup>ˈ</sup> gi	kag	nnagu	tsi <sup>ˈ</sup> gasi	ga <sup>d</sup> zan
Uruka	psg ~ p <sup>s</sup> igi	k <sup>6</sup> agi ~ kag	ɱnagu	tsɣusɿ ~ tsɿgɔsɿ	gaɟam
Nobaru					

Table 22. Examples of other changes of \*g.

Irabu, Kuninaka, Kurima, and Ikema: g > dz / \_\_ ɿ

Shimajiri: g > ɰ / a\_\_a

Irabu: g > ʃ / a\_\_a

	A-033 'leg'	A-091 'sugar cane'	A-124 'mirror'	A-143 'the east'
Uechi	pagi	bu:gi	kagam	aɣal
Yonaha	p <sup>h</sup> ag <sup>7</sup> ɿ	bu:g <sup>7</sup> ɿ	k <sup>h</sup> agam	aga <sup>7</sup> ɿ
Kugai	p <sup>h</sup> aɟi	bu:g <sup>7</sup> i	k <sup>h</sup> agam	aḡaz
Irabu	p <sup>h</sup> aɟɿ	bu:ɟɿ	k <sup>h</sup> aɣam	aɣaɿ
Bora	p <sup>h</sup> a <sup>d</sup> zɿ ~ p <sup>h</sup> ag <sup>7</sup> ɿ	bɔ:g <sup>7</sup> ɿ ~ bɔ:ɟɿ	k <sup>h</sup> agam	agaɿ
Kuninaka	pazi	bɯ:ɟi	kagam	agaɿ
Ōura	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>7</sup> ɿ	bu:gɿ ~ bu:g <sup>7</sup> ɿ	k <sup>h</sup> agan	(agaɿ ~) aɿ
Shimajiri	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>7</sup> ɿ	bu:gɿ ~ bu:g <sup>7</sup> ɿ	k <sup>h</sup> aɰan	aɰaɿ
Kurima	p <sup>h</sup> aɟi	bu:ɟi	kagam	A: agaɿ / B: agaz
Ikema	hadzi	bu:ɟi	kagan	agai
Karimata	p <sup>h</sup> agw	bu:gi	k <sup>h</sup> agan	a:w
Uruka	pagz	bu:gz	kagam	agaz
Nobaru	pagɿ			

### 3.1.2 Affricate

#### /ts/ (voiceless alveolar affricate)

This sound corresponds to Proto-Miyako \*ts; it is almost always followed by /ɺ/. Depending on the dialect, there are words where /t/ is encountered instead before other vowels (e.g. Shimajiri ata ‘tomorrow’).

In addition, Proto-Miyako \*kɺ has changed into /tsɺ/ in Irabu, Kuninaka, Bora, and Ikema.

Table 23. The unvoiced alveolar affricate.

	A-031 ‘mother’s milk; breast’	A-025 ‘blood’	A-142 ‘the moon/month’	A-160 ‘tomorrow’	A-101 ‘tea bowl; rice bowl’
Uechi	tsi	aχ̣atsi ~ aḳatsi	tṣikiju	aça / aṭ	
Yonaha	tsɺ	ak <sup>h</sup> ̣atsɺ	tsɺk <sup>s</sup> ɺ / tsɺk <sup>s</sup> ɺnuju:	atsa	
Kugai	tsī	akatsī	tskssu	attsa	ṭ <sup>h</sup> abaŋ
Irabu	tsɺ	ax̣atsɺ ~ ahatsɺ	ttsu ~ ṭttsu (?)	atsa	ṭabaŋ
Bora	tssɺ	ak <sup>h</sup> ̣atsɺ	tskɺ	atsa	ṭabaŋ
Kuninaka	tsi	ak <sup>χ</sup> ̣atsi	tṣittu	ata	
Ōura	tsɺ	ha:tsɺ	tskɺ	atsa	
Shimajiri	tssɺ	aχ̣atsɺ	tskɺ ~ ts <sup>s</sup> ɺ	ata	
Kurima	A: tṣī / B: tsṣī	A: akatsī / B: a <sup>k</sup> χ̣atsī	A: tṣītṣī / B: tṣītṣinuju:	aṭa	ṭabaŋ
Ikema	tsī:	akatsī	tṣītṣī	aṭa	ṭabaŋ
Karimata	tzī:	ha:tsī	tskssu	atsa	ṭabaŋ
Uruka	tsɺ	aḳatsɺ	tsḳ	atṣ̣	
Nobaru					

Table 24. tsɺ < \*kɺ in Irabu, Kuninaka, Bora, and Ikema.

	A-030 ‘heart/liver’	A-121 ‘clothing; kimono’	A-009 ‘breath’
Uechi	ḳimu ~ kimu	kiŋ	
Yonaha	k <sup>s</sup> ɺmu	k <sup>s</sup> ɺŋ	
Kugai	k <sup>sz</sup> īmu	k <sup>s</sup> īŋ	ik <sup>s</sup> ī
Irabu	tsɺmu ‘liver’	t <sup>s</sup> ɺŋ	itsɺ
Bora	k <sup>s</sup> ɺmu	k <sup>s</sup> ɺŋ	ik <sup>s</sup> ɺ
Kuninaka	tsimu	tsiŋ	itsi
Ōura	k <sup>s</sup> ɺmu	k <sup>s</sup> ɺŋ	ikɺ

Shimajiri	k <sup>s</sup> ɿmu	k <sup>s</sup> ɿŋ	
Kurima	tsimu	tsiŋ	A: i <sup>t</sup> si / B: itsi
Ikema	tsimu	tsiŋ	iki
Karimata	k <sup>s</sup> i <sup>h</sup> mu	k <sup>s</sup> i <sup>h</sup> ŋ	ikuu
Uruka	ksmu ~ k <sup>s</sup> ɿmu	kʂn	
Nobaru			

### 3.1.3 Fricatives

/s/

[s] (voiceless alveolar fricative)

[ç] (voiceless alveopalatal fricative) / \_\_ i

This sound corresponds to Proto-Miyako \*s; when followed by ‘i’, its place of articulation moves closer to the palate.

In Ōura and at other sites, the following changes have occurred.

- Ōura and Shimajiri: \*sɿ > ɿ / \_\_ C[+voiced]
- Yonaha, Bora, and Ōura: \*s > ts / N \_\_

Additionally, in Ōura and Shimajiri, for example, ‘ssV’ deriving from \*fusV is encountered.

Table 25. The voiceless alveolar/alveopalatal fricative.

	A-156	A-173	A-032	A-113	A-098	A-007	A-008
	‘evening’	‘coral reef’	‘knee’	‘grass’	‘miso; fermented soybean paste’	‘lip’	‘tongue’
Uechi	jusarabi	pçɿ ~ pçi	tsigusi	fɯsa	ɱsu	sɪba	sɪda
Yonaha		çi: / p <sup>h</sup> içi	tsɿgusɿ	fsa	mtsɯ	sʒba	sʒda
Kugai	jusarabi	pççi	tsigusi	fsa	msu	sɪba	sɪda
Irabu	jusarabi	pççi	tsɿgusɿ	fɯsa	msu	sɿba	sta
Bora	jusarabi	pççi ~ piçi	tsɿgusɿ	fɯsa	mtsɯ	sɿba	sɿda
Kuninaka		piçi	tsigusi	fɰsa	ɳsɯ	sɪbaya	sɪta / sta
Ōura		pççi	sugasɿ	ssa	ntsɯ	NR	ɿda ~ ʒda
Shimajiri		piçi	tugusɿ ~ tugasɿ	ssa	nsu	ʒba	ʒda
Kurima	jusarabi	pçi	tsigusi	fsa	A: m:su / B: m:so	sɪba	sɪda
Ikema	jusarabi	piçi	sigusɿ	fɯsa (= [f <sup>w</sup> sa])	nsu	fɯtsi	çta
Karimata	jusarabi	pççi	tsigasi	fɯsa	nsu	sɪba	sta

Uruka	pi̯çi	tsgusɿ ~ tsɿgusɿ	f̥sa	msu ~ msu̯	s̥pa ~ spa	sɿda ~ sɿda / s̥da
Nobaru						

/z/

[z] ~ [dz] (voiced alveolar fricative/affricate)

[ʐ] ~ [dʐ] (voiced alveopalatal fricative/affricate) / \_\_ i

This sound corresponds to Proto-Miyako \*z; when preceded by ‘i’, its place of articulation moves closer to the palate. There is free variation between the fricatives and the affricates.

In addition, it has the following properties in the different dialects.

- Uechi and Kurima: except when followed by ‘ɿ’, it surfaces as [ʐ] ~ [dʐ].
- Ikema: dʐa<sup>28</sup>, di, dʐu, dʐɿ
- Shimajiri and Kuninaka: except when followed by ‘i’ or ‘ɿ’, /d/ is used instead.
- In Irabu, Kuninaka, Kurima, and Ikema, \*gɿ has changed into /dʐɿ/.

Table 26. The voiced alveolar/alveopalatal fricative/affricate.

	A-023	A-164	A-062	A-183	A-129
	‘elbow’	‘last year’	‘mosquito’	‘gate’	‘wind’
Uechi	pi̯dʐi	ku̯dʐu	ga̯dʐam	dʐo̯	ka̯dʐi
Yonaha	p <sup>h</sup> i̯dʐɿ	k <sup>h</sup> u̯dʐu	ga̯dʐam	dʐo:	k <sup>h</sup> a̯dʐi
Kugai	p <sup>h</sup> i̯dʐi	ku̯dʐu	ga̯dʐam	dʐo:	k <sup>h</sup> a̯dʐi
Irabu	p <sup>h</sup> i̯dʐɿ	k <sup>h</sup> udu	ga̯dʐam	dʐo:vtɿ	k <sup>h</sup> a̯dʐi
Bora	p <sup>h</sup> i̯d <sup>h</sup> zɿ	k <sup>h</sup> u̯dʐu	ga <sup>d</sup> zam	dʐo: (Bora) / dʐau (Aragusuku)	k <sup>h</sup> a <sup>d</sup> zi
Kuninaka	p <sup>h</sup> i̯dʐi	ku̯dʐu	ka̯dam	da̯u	ka̯dʐi
Ōura	p <sup>h</sup> i̯dʐɿ	k <sup>h</sup> u <sup>d</sup> zu	ga <sup>d</sup> zaɿ	dʐo:futsɿ ‘entrance’	k <sup>h</sup> a̯dʐi
Shimajiri	pi̯dʐɿ	k <sup>h</sup> udu	ga̯daɿ	da̯u	k <sup>h</sup> a̯dʐi
Kurima	pi̯dʐi	k <sup>h</sup> u̯dʐu	ga̯dʐam	dʐo:	k <sup>h</sup> a̯dʐi
Ikema	hi̯dʐi	ku̯dʐu	ka̯dʐaɿ	dʐau	k <sup>h</sup> adi
Karimata	pi̯dʐi	ku̯dʐu	ga <sup>d</sup> zaɿ	dʐo:	k <sup>h</sup> a̯dʐi
Uruka	pi̯dʐɿ ~ pi̯dʐɿ	ku̯d <sup>h</sup> z̥u	ga̯dʐam	dʐau	ka̯dʐi
Nobaru					

<sup>28</sup> According to the data in Table 26, the Ikema form for ‘gate’ is ‘dʐau’, but in a survey of our own we have recorded ‘dʐa̯u’.

Table 27. *g > dz / \_\_ ɲ* in Irabu, Kuninaka, Kurima, and Ikema.

	A-033 'leg'	A-091 'sugar cane'	A-118 'nail; spike; peg'
Uechi	paɣi	bu:ɣi	fugɨ
Yonaha	p <sup>h</sup> agʒɲ	bu:gʒɲ	fugʒɲ
Kugai	p <sup>h</sup> aɖi	bu:gʒi	k <sup>h</sup> anifugz / fugz
Irabu	p <sup>h</sup> aɖɲ	bu:ɖɲ	fudɲ
Bora	p <sup>h</sup> a <sup>d</sup> zɲ ~ p <sup>h</sup> agʒɲ	bu:gʒɲ ~ bu:ɖɲ	fugʒɲ
Kuninaka	pazi	bɯ:ɖzi	kanifudzi
Ōura	p <sup>h</sup> agɲ ~ p <sup>h</sup> agʒɲ	bu:gɲ ~ bu:gʒɲ	k <sup>h</sup> anifugɲ
Shimajiri	p <sup>h</sup> agɲ ~ p <sup>h</sup> agʒɲ	bu:gɲ ~ bu:gʒɲ	fugʒɲ
Kurima	p <sup>h</sup> aɖi	bu:ɖi	fudzi / k <sup>h</sup> anfudzi
Ikema	hadzi	bu:ɖi	kanifudzi
Karimata	p <sup>h</sup> agw	bu:gi	fugɨ ~ fugw
Uruka	pagz	bu:gz	fgz
Nobaru	paɲ		

**/f/ (voiceless labiodental fricative)**

This sound corresponds to Proto-Miyako \*f; it generally has the sound value [f], but in rare cases it can also surface as a voiceless bilabial fricative [ɸ]. The 'k' in the word for 'cloud' in the data given below seems to have been used under the influence of Standard Japanese.

In Ōura, for example, \*fusV has changed into 'ssV'.

Table 28. The voiceless labiodental fricative.

	A-094 'food'	A-172 'boat; ship'	A-132 'cloud'	A-004 'forehead'	A-006 'mouth'
Uechi	fa <sup>h</sup> munu	fun <sup>h</sup> i	kumu		fɯtsi
Yonaha	fo:mɔnɔ	fɔni	fɔm		fɯtsɲ
Kugai	fo:munu	fɔni	fumu	ftai	ftsɨ
Irabu	faɲmunu	fɔni	fumu	fɯtai	fɯtsɲ
Bora	faɔmɔnɔ	fɔni	fɔmɔ	fɯtai	fɯtsɲ
Kuninaka	faɯmunu	fɔni	fumu	fɯtai	fɯtsi
Ōura	fo:munu	fɔni	k <sup>h</sup> umu	fɯtai ~ ftai	fɯtsɲ
Shimajiri	faɯmunu	fɔni	fuma		ftsɲ

Kurima	fɔ:munu	funi	fumu	ftɛ̄	fts̄i
Ikema	faimunu	funi	m̩mu	ftai	futs̄i
Karimata	faumunu	funi	fumu	ftai	futs̄i
Uruka	faumunu	ɸun̩'i	ɸumu		f̄ts ~ f̄tsɿ
Nobaru					

Table 29. \*fusV &gt; ssV in Ōura and Shimajiri.

	A-113	A-003
	'grass'	'comb'
Uechi	f̄usa	fu
Yonaha	fsa	f̄ɿɸ
Kugai	fsa	fs̄i
Irabu	f̄usa	f̄usɿ
Bora	f̄usa	f̄usɿ
Kuninaka	f̄sa	fsu
Ōura	ssa	s: ~ sɿ:
Shimajiri	ssa	ssɿ
Kurima	fsa	f̄us̄i
Ikema	f̄usa (= [f <sup>w</sup> sa])	f̄uçi
Karimata	f̄usa	f̄us̄i = f <sup>w</sup> s̄i
Uruka	f̄sa	f̄s̄ ~ f̄sɿ ~ f̄usɿ
Nobaru		

/v/

**[v] (voiced labiodental fricative)****[v̥] (voiced labiodental approximant)**

This sound corresponds to Proto-Miyako \*v; it is used not only as an onset consonant, but also as a syllable nucleus (with the exception of Ikema). In either environment, there is variation between the fricative and the approximant; its degree of stricture is high in some dialects and low in others. There are also dialects in which it assimilates to 'u' when preceded by 'u' (see 'rice porridge' in the table below). Furthermore, variation between /f/ ~ /v/ is observed among dialects for some vocabulary items.

Table 30. The voiced labiodental fricative/approximant.

	A-035 'calf (of the leg)'	A-043 'you'	A-095 'oil'	A-096 'rice porridge'
Uechi		vva		juv
Yonaha	k <sup>h</sup> ʊ:va	ʊva		jʊ:
Kugai	kuvva	vva	avva	juv
Irabu	k <sup>h</sup> uvva	ja:	avva	ɕu:ɕa
Bora	kʊvva	vva ~ ʊva	avva ~ aʊva	jʊv ~ jʊʊ
Kuninaka	kʊʊva	ʊva	aʊva	jʊʊ
Ōura	NR	ʊva		jʊʊ
Shimajiri	kuvva ~ kuʊva	vva		juv
Kurima	kuvva	vva	avva	juv
Ikema	kuvva	vva	avva	ju:
Karimata	kuʊva	ʊva	aʊva	N/R
Uruka	kʊʋva ~ kʊʊva	vva		juʋ
Nobaru				

Table 31. Variation among dialects between /f/ ~ /v/ (examples in which /f/ in Uechi, Kugai, and Shimajiri corresponds to /v/ in the other dialects).

	B-029 'one (person)'	A-184/A-149 'front'
Uechi		maf <sup>h</sup> kja:
Yonaha	tʊv <sup>h</sup> kja:	mauv <sup>h</sup> kja:
Kugai	tɕfke:	maf <sup>h</sup> kja ~ maf <sup>h</sup> ɕkja
Irabu	tavki:	mauv <sup>h</sup> kja:
Bora	tav <sup>h</sup> kja:	mauv <sup>h</sup> kja:
Kuninaka	ta <sup>v</sup> kja:	mauv <sup>h</sup> kja:
Ōura	tav <sup>h</sup> kja:	
Shimajiri	t <sup>h</sup> afkja:	maf <sup>h</sup> kja:
Kurima		mo:t <sup>h</sup> u <sup>29</sup>
Ikema	tauka:	mauv <sup>h</sup> kja:
Karimata	taɸkja:	mauv <sup>h</sup> kja: / maf <sup>h</sup> kja
Uruka	tav <sup>h</sup> kja:	mauv <sup>h</sup> kja: ~ maf <sup>h</sup> kja:
Nobaru	tav <sup>h</sup> kja:	

<sup>29</sup> This word has a derivation different from those given for the other dialects.



**/h/**

**[h]** (voiceless glottal fricative) /\_\_a

**[ç]** (voiceless palatal fricative) /\_\_i

**[ϕ]** (voiceless bilabial fricative) /\_\_u

This sound has the following two derivations.

- From \*p: only in Ikema, /p/ has changed into /h/.
- From \*k: only when adjacent to ‘a’; in Irabu and Karimata, for example.

See Table 12 for examples.

**/χ/ (voiceless uvular fricative) [χ]**

This sound is only encountered in Shimajiri; it is the result of \*k in \*aka undergoing a sound change. See Table 20 for examples. This sound occurs nowhere else in the Japanese archipelago.

**/ɣ/ (voiced uvular fricative) [ɣ]**

This sound is only encountered in Shimajiri; it is the result of \*g in \*aga undergoing a sound change. See Table 22 for examples. This sound occurs nowhere else in the Japanese archipelago.

**/ʕ/ (voiced pharyngeal fricative) [ʕ]**

This sound is only encountered in Irabu; it is the result of \*g in \*aga undergoing a sound change<sup>30</sup>. See Table 22 for examples. This sound occurs nowhere else in the Japanese archipelago.

### 3.1.4 Nasals

**/m/ (voiced bilabial nasal)**

This sound corresponds to Proto-Miyako \*m. It is a bilabial nasal when used as a syllable onset, but there are also dialects (Ōura, Shimajiri, Ikema, and Karimata) in which it loses its place of articulation and merges with /n/, becoming the equivalent of the Japanese moraic nasal, when used moraically (as a syllable nucleus or as a coda consonant).

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<sup>30</sup> This sound has previously been described as a glottal stop.

Table 32. The voiced bilabial nasal.

	A-030	A-071	A-127	A-130	A-187
	‘heart/liver’	‘horse’	‘water’	‘whirlwind; tornado’	‘there (distal)’
Uechi	kçimu ~ kimu	nu:ma	midzi	amainoũ	kama
Yonaha	k <sup>s</sup> ɰmu	nu:ma	mi <sup>d</sup> zɰ	amaino:	k <sup>h</sup> ama
Kugai	k <sup>sz</sup> iimu	nu:ma	midzi	ama.ino:	k <sup>h</sup> ama
Irabu	tsɰmu	nu:ma	mi <sup>d</sup> zɰ	amaino:	k <sup>h</sup> ama ~ k <sup>h</sup> ama:
Bora	k <sup>s</sup> ɰmu	nu:ma	mi <sup>d</sup> zɰ	amaino:	k <sup>h</sup> ama
Kuninaka	tsimu	nu:ma	midzi	amainau	kama
Ōura	k <sup>s</sup> ɰmu	numa	midzɰ	amaino:	k <sup>h</sup> ama
Shimajiri	k <sup>s</sup> ɰmu	nu:ma	midzɰ	amaino:	kama
Kurima	tsimu	nu:ma	midzi	ama.ino:	kama
Ikema	tsimu	nu:ma	midzi	amaunau	kama
Karimata	k <sup>si</sup> imu	nu:ma	mi <sup>(d)</sup> zi	ino:	kama
Uruka	k <sup>s</sup> mu ~ k <sup>s</sup> ɰmu	nu:ma <sub>ɔ</sub>	midzɰ	amainau	k <sup>h</sup> ama:
Nobaru					

Table 33. When it is used moraically (as a syllable nucleus or as a coda consonant).

	A-170	A-062	A-059	A-098	A-177
	‘sea’	‘mosquito’	‘woman; female’	‘miso; fermented soybean paste’	‘earth’
Uechi	im̩	gaɖzam	midum ~ mi <sup>d</sup> ðum	msu	ɱta ~ ɱta <sub>ɔ</sub>
Yonaha	im	gaɖzam	midumu	mtsu	mt <sup>h</sup> a
Kugai	im	gaɖzam	midum	msu	ɱta
Irabu	im	gaɖzam	midum	msu	mta
Bora	im	ga <sup>d</sup> zam	midom	mtsu	mta
Kuninaka	im̩	kadam̩	midum̩	ɱsu	ɱta
Ōura	iŋ	ga <sup>d</sup> zaŋ	miduŋ	ntsu	nta
Shimajiri	iŋ	gadaŋ	miduŋ	nsu	nta
Kurima	im	gaɖzam	midumu	A: m:su / B: m:so	mta
Ikema	iŋ	kaɖzaŋ	miduŋ	nsu	nta ~ mta
Karimata	iŋ	ga <sup>d</sup> zaŋ	miduŋ	nsu	nta
Uruka	im̩	gaɖzam̩	midum̩	msu ~ msu	ɱta
Nobaru					

/n/

[n] (voiced alveolar nasal)

[ŋ] (voiced velar nasal) /\_\_#

This sound corresponds to Proto-Miyako \*n. It is an alveolar nasal when used as a syllable onset; when used moraically (as a syllable nucleus or as a coda consonant), its place of articulation assimilates to that of the following phoneme, it becoming the equivalent of the Japanese moraic nasal.

Table 34. The voiced alveolar nasal.

	A-172 'boat; ship'	B-054 'flower'	A-131 'earthquake'	A-079 'egg'	A-028 'bone'
Uechi	funʲi		nai	tunaka	puni
Yonaha	fʊni		nai	t <sup>h</sup> ʊnaka	puni
Kugai	funi		nai	tunak <sup>h</sup> a	p <sup>h</sup> uni
Irabu	funi	pana	nai	k <sup>h</sup> u:ga	p <sup>h</sup> uni
Bora	fʊni	p <sup>h</sup> ana	nai	t <sup>h</sup> ʊnaka	p <sup>h</sup> uni ~ puni
Kuninaka	funi		nai	tunuka	puni
Ōura	funi	pana	nai	t <sup>h</sup> unaka	p <sup>h</sup> uni
Shimajiri	funi	p <sup>h</sup> ana	nai	t <sup>h</sup> unaxa	p <sup>h</sup> uni
Kurima	funi		nai	t <sup>h</sup> unuka	p <sup>h</sup> uni
Ikema	funi	hana	nai	tunuka	huni
Karimata	funi	pana	naw	tunuga	p <sup>h</sup> uni
Uruka	ɸʊnʲi		nai	tʊnaka	pʊni ~ p <sup>h</sup> uni
Nobaru		pana			

Table 35. The voiced velar nasal (word-final).

	A-101 'tea bowl; rice bowl'	A-121 'clothing; kimono'
Uechi		kiŋ
Yonaha		k <sup>s</sup> ɲ / k <sup>s</sup> ɲmunu
Kugai	tɕ <sup>h</sup> abaŋ	k <sup>s</sup> iŋ
Irabu	tɕabaŋ	t <sup>s</sup> ɲ
Bora	tɕabaŋ	k <sup>s</sup> ɲ
Kuninaka		tsiŋ

Ōura		k <sup>s</sup> ɲ
Shimajiri		k <sup>s</sup> ɲ
Kurima	tɕabaŋ	tsiŋ
Ikema	tɕabaŋ	tsiŋ
Karimata	tɕabaŋ	k <sup>s</sup> iŋ
Uruka		kʂn
Nobaru		

/ŋ̥/

[ŋ̥] (voiceless alveolar nasal)

[m̥] (voiceless bilabial nasal) / \_\_C [+labial]

This sound is only encountered in Ikema. The two allophones have arisen through the sound changes \*tsɲNV > ŋ̥NV and \*fumV > m̥mV, respectively. This sound occurs nowhere else in the Japanese archipelago. (‘nnu’ given below as the Ikema form for ‘horn (of an animal)’ and ‘yesterday’ appears to be a mistranscription for ‘ŋ̥nu’ in both cases.)

Table 36. The voiceless alveolar/bilabial nasal.

	A-132 ‘cloud’	A-073 ‘horn (of an animal)’	A-163 ‘yesterday’
Uechi	kumu	tsinu	k <sup>s</sup> inu
Yonaha	fum	tsɲno	k <sup>s</sup> ɲno
Kugai	fumu	tsinu	ksinu
Irabu	fumu	tsɲnu ~ tsɲno	tsɲnu:
Bora	fumo	tsɲno	k <sup>s</sup> ɲno:
Kuninaka	fumu	tsinu	tsinu
Ōura	k <sup>h</sup> umu	tsɲnu	k <sup>s</sup> ɲnu
Shimajiri	fuma	tsɲnu	k <sup>s</sup> ɲnu
Kurima	fumu	tsinu	tsino
Ikema	m̥mu	nnu	nnu
Karimata	fumu	tsɲu	ksɲu
Uruka	ɸ̥umu	tsnu ~ tsɲnu	kʂnu:
Nobaru			

### 3.1.5 Liquid

#### /r/ (voiced alveolar tap)

This sound corresponds to Proto-Miyako \*r. It is consistently encountered as [r] at all of the sites when used as a syllable onset. In one dialect, that of Kuninaka, it can be used moraically, in which case it surfaces as an alveolar lateral approximant [l̥]<sup>31</sup>.

Table 37. The voiced alveolar tap.

	A-055 'child; minor'	A-092 'sickle; scythe'	A-156 'evening'
Uechi	jarabi	<sup>i</sup> zzara	jusarabi
Yonaha		zzara	
Kugai	jarabi [new]	zzara	jusarabi
Irabu	jarabi	ɾzara	jusarabi
Bora	jarabi	zzara	jusarabi
Kuninaka	jarabi	<sup>i</sup> zzara	
Ōura	jarabi	<sup>z</sup> ɾzara	
Shimajiri		zzara	
Kurima	jarabi	zzara	jusarabi
Ikema	jarabi	zzara ~ <sup>d</sup> zara	jusarabi
Karimata	jarabi	izara	jusarabi
Uruka	jarabi	zzara	
Nobaru			

Table 38. Moraic /r/ in Kuninaka.

	A-077 'bird'	A-155 'daytime'	A-126 'ash'	A-139 'light'	A-143 'the east'
Uechi	tou	p <sup>s</sup> ima	karap <sup>h</sup> aɺ ~ karap <sup>h</sup> a <sup>z</sup>	pçkal	aɣal
Yonaha	tʊ <sup>z</sup> ɾ	p <sup>s</sup> ɿma	k <sup>h</sup> arapa <sup>z</sup> ɾ	p <sup>s</sup> ɿka <sup>z</sup> ɾ	aga <sup>z</sup> ɾ
Kugai	t <sup>h</sup> uz	psima	k <sup>h</sup> arap <sup>h</sup> az / p <sup>h</sup> az(i)	pskaz	aḡaz
Irabu	t <sup>h</sup> u <sup>z</sup> ɾ ~ t <sup>h</sup> uɿ	p <sup>s</sup> ɿ:ma	k <sup>h</sup> ara paɿ	p <sup>s</sup> kaɿ	aɸaɿ
Bora	t <sup>h</sup> uɿ	p <sup>s</sup> ɿ:ma	k <sup>h</sup> arapaɿ ~ k <sup>h</sup> arapa <sup>z</sup> ɾ	pskaɿ	agaɿ
Kuninaka	tʊɿ	p <sup>h</sup> ɿ:ma	karapaɿ	pɿkaɿ	agaɿ

<sup>31</sup> Moraic /r/ derives from \*rɿ. The Uechi and Kurima forms in Table 10 also contain laterals, but these correspond phonologically to /ɾ/.

Ōura	t <sup>h</sup> uɿ	p <sup>s</sup> ɿma	k <sup>h</sup> arapaɿ	pskaɿ	(agaɿ ~) a:ɿ
Shimajiri	t <sup>h</sup> u <sup>z</sup> ɿ	p <sup>s</sup> ɿnaɣa / p <sup>s</sup> ɿma	karapa <sup>z</sup> ɿ	pska <sup>z</sup> ɿ	aɣaɿ
Kurima	t <sup>h</sup> uz	pssima	A: karabaɿ / B: karabaz	pskaɿ	A: agaɿ / B: agaz
Ikema	tui	hi:ma	karahai	çikai	agai
Karimata	tuw	psm̥a	karapaw	pskaw	a:w
Uruka	tuɟ	p <sup>s</sup> ɿ:ma	karapaz	pškazɟ	agazɟ
Nobaru					

### 3.1.6 Approximants

#### /j/ (voiced palatal approximant)

This sound corresponds to Proto-Miyako \*j.

Table 39. The voiced palatal approximant.

	A-055	A-111	A-165	A-179	A-182
	‘child; minor’	‘branch’	‘a long time ago’	‘house’	‘door’
Uechi	jarabi	juda	ɲkja:ɲ		
Yonaha		juda	ɲk <sup>j</sup> a:ɲ		
Kugai	jarabi [new]	juda	ɲkja:ɲ	ja:	jadu
Irabu	jarabi	ida	mki:ɲ	ja:	jadu
Bora	jarabi	juda	ɲk <sup>j</sup> a:ɲ	ja:	jadu
Kuninaka	jarabi	juda	ɲkja:ɲ		
Ōura	jarabi	ida	ɲk <sup>j</sup> a:ɲ	ja:	
Shimajiri		juda	ɲkja:ɲ		
Kurima	jarabi	ida	ɲkja:ɲ	ja:	jadu
Ikema	jarabi	juda	ɲk <sup>j</sup> a:ɲ	ja:	jadu
Karimata	jarabi	ida	ikja:ɲ	ja:	jadu
Uruka	jarabi	juda	ɲkja:ɲ		
Nobaru					

#### /w/ (voiced labiovelar approximant)

As Proto-Japonic \*w changed into Proto-Miyako \*b, there are only a few examples of this sound; it is only used before the vowel /a/. As it appears in only a limited number of words, such as that for ‘pig’, and is in a complementary distribution with ‘v’, it may be an allophone of ‘v’. In fact, in many dialects (Yonaha, Kugai, Bora, Shimajiri, and Uruka) it surfaces

as the approximant [ʋ], close to [v], rather than as [w]. In the other dialects, it appears to have become ‘v’ when used as a geminate, coda consonant, or syllable nucleus, and ‘w’ when used as a single onset consonant<sup>32</sup>.

Table 40. The voiced labiovelar approximant.

	A-075 ‘pig’
Uechi	wa:
Yonaha	ʋa:
Kugai	va:
Irabu	wa:
Bora	ʋa: ~ wa:
Kuninaka	wa:
Ōura	wa:
Shimajiri	ʋa:
Kurima	wa:
Ikema	wa:
Karimata	wa:
Uruka	ʋa:
Nobaru	

### 3.1.7 On whether there are glottalized sounds

According to, for example, Hirayama (ed., 1983), some of the dialects have the glottalized sounds /tʔ, tsʔ, kʔ/. Sounds that are phonetically close to the glottalized sounds widely encountered in the Northern Ryukyus are indeed observed, but they only appear word-initially, and together with the accompanying vowel, they have a length of two morae (e.g. Shimajiri *ttu* ‘person; human being’)<sup>33</sup>. Their distinctive feature is therefore their length; it seems they should be interpreted phonologically as geminates, laryngeal tension occurring phonetically because they are stops<sup>34</sup>. Furthermore, they differ from the glottalized sounds

<sup>32</sup> For this reason, Pellard (2009:336) reconstructs the proto-form as \*v.

<sup>33</sup> In the Miyako dialects, the minimum word length is two morae.

<sup>34</sup> Nakama (1984) takes his view, as well. Furthermore, differently from the glottalized sounds of Yonaguni and the like, they are the result of lexical rather than regular changes and therefore few in number; they are encountered only in some words in some of the dialects.

of the Northern Ryukyus in that they have all arisen through vowel elision (e.g. Shimajiri ttu < Proto-Miyako \*pɿtu ‘person; human being’). The following sounds are observed.

- [tʰ] ~ [tt]: Ikema ‘(tobacco) pipe’, Shimajiri ‘person; human being’  
 [kʰ] ~ [kk]: Ikema ‘nine (things)’ (although it appears as ‘kukunutsi’ in the reported data, the variant ‘kkunutsi’ is also encountered)  
 [tsʰ] ~ [tts]: Ikema ‘sago palm’, Irabu ‘(tobacco) pipe’

Table 41. Words containing sounds phonetically close to glottalized sounds.

	A-060 ‘person; human being’	B-113 ‘(tobacco) pipe’	B-027 ‘nine (things)’	B-076 ‘sago palm’
Uechi	p̚su			
Yonaha	p̚t̚ʰu			
Kugai	pstu			
Irabu	pstu	tt̚(ɿ)z	kukunutsɿ	sɔ̚ditsɿ
Bora	pstu	k̚h̚i̚ɕi̚:l̚z	kukunutsi	ɕuk̚h̚ats̚i̚
Kuninaka	p̚h̚i̚tu		k̚ɔ̚k̚ɔ̚n̚ɔ̚tsi	s̚ɔ̚tetsi
Ōura	pstu	k̚i̚ɕi̚z̚ɿ	kukunutsɿ	
Shimajiri	ttu	k̚i̚ɕi̚ɿ	k̚u̚k̚unutsɿ	
Kurima	pstu			
Ikema	p̚h̚i̚tu ~ ɕtu ~ ɕto	t̚ʰi̚: tti:ʔ	k̚u̚k̚unutsɿ	tt̚ɕu:tsɿ
Karimata	pstu	k̚s̚i̚s̚i̚u	k̚u̚k̚unutsu	st̚ɿtsu / s̚ɿs̚uɕu / ssuɕu
Uruka	p̚st̚u ~ p̚st̚u			
Nobaru		k̚i̚ɕi̚z̚ɿ	k̚u̚k̚unutsɿ	s̚ɔ̚tetsɿ

### 3.2 Consonant systems

In the above, we have looked at each of the consonant phonemes of the Miyako dialects; the different consonant systems can be summarized as follows.



- The phonemes common to all the dialects:  
/p, b, t, d, k, g, ts, s, z, f, v, h, m, n, r, j, w/
- Phonemes that are encountered only in some of the dialects:
  - /χ/: Shimajiri
  - /ɸ/: Shimajiri
  - /ŋ/: Irabu
  - /ŋ̥/: Ikema

#### 4 Syllables

At present, there has not yet been any research in which the syllable is discussed as a principal unit of articulatory rules in the Miyako dialects. We use the term ‘syllable’ to refer to a descriptive unit of, mainly, morphophonology and phonotactics<sup>35</sup>.

There are many possible interpretations of the syllable structure of the Miyako dialects, depending on to what degree the syllabic consonants discussed in section 2.1.4 are recognized and on whether the glottalized sounds discussed in the previous section are recognized. We take the view that only /v, m, n, r/ can be syllabic consonants, recognizing geminates for other consonants, as was discussed in section 3.1. The syllable structure is then as in (5).

- (5) (i) (C<sub>1</sub>)(C<sub>2</sub>)(j)V(V)(C<sub>3</sub>)  
 (ii) (C<sub>4</sub>)C<sub>5</sub>(C<sub>6</sub>)

Of these, (i) applies to syllables with a vowel as the nucleus, while (ii) applies to those with a consonant as the nucleus.

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<sup>35</sup> As a result, it also has properties that are not wholly compatible with general syllable theory, such as the fact that the first ‘C’ in ‘CCV’ has a length of one mora.

- Cases in which both  $C_1$  and  $C_2$  are occupied involve either a geminate<sup>36</sup>, of a fricative or a resonant /s, z, f, v, m, n, r/, or a partial geminate with /v, m/ as  $C_1$ . Furthermore, in Ikema, Shimajiri, and Irabu, for example, geminates of plosives and affricates such as ‘t’, ‘k’, and ‘ts’ can also occupy  $C_1$  and  $C_2$ .

E.g. ssan ‘louse’, ffa ‘child’, nta ‘earth’, ttu ‘person; human being’

- $C_3$  can be occupied by /v, m, n, r/ (‘r’ only in Kuninaka; also, ‘v’ cannot occupy this position in Ikema).
- VV can be occupied by either a long vowel or a sequence of two different vowels. We have not, however, been able to discuss questions such as what kinds of vowel sequences are (or are not) possible in each of the dialects in this chapter.
- $C_6$  can be occupied by a consonant identical to  $C_5$  (resulting in a long consonant).  $C_5$  can be occupied by /v, m, n, r/ (‘v’ cannot occupy this position in Ikema). Also,  $C_4$  can only be filled before /r/ (in Kuninaka); it can only be occupied by labials (‘p’, ‘b’, and ‘m’).

E.g. vv ‘to sell’, mm ‘sweet potato’, mrrna ([m]:na~mi[:na]) ‘garlic chive’

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<sup>36</sup> We have discussed in section 2.1.4 how the geminates in ‘ssam’ (‘louse’) and ‘ffa’ (‘child’) have arisen as the result of the fricativization of a close vowel and the assimilation of a following liquid or semivowel. Although this fricativized vowel is maintained in the nominal-morphological interpretation that posits the same sound change, we view words like these as containing a geminate without a vowel. This is because they are the result of a sound change that has already been completed and therefore do not require the kind of synchronic analysis that is required in nominal morphology, and because the CCV syllable type that we assume for words such as ‘ssam’ (‘louse’) is independently needed for word-initial stop geminates such as that in Shimajiri ‘ttu’ (‘person; human being’).

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