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## 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’ ([ɹ]) 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, ɛ, 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	kadam	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>ɕ</sub> ma:	gaɕam	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 /ɿ/ corresponds to \*i. In Ikema, \*ɿ has merged with /i/, except after /ts/, /z/, and /s/ (see the section on /ɿ/ 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	im̩	midum	kaɖi		ki:
Yonaha	im	midomu	kʰaɖi		ki:
Kugai	im	midum	kʰaɖi		ki·
Irabu	im	midum	kʰaɖi	pira	kʰi:
Bora	im	midom	kʰa <sup>d</sup> ɖi	pʰira	kʰi:
Kuninaka	im̩	midum̩	kaɖi		ki·
Ōura	iŋ	miduŋ	kʰaɖi	pira	kʰi:
Shimajiri	iŋ	miduŋ	kʰaɖi	pira	ki:
Kurima	im	midumu	kʰaɖi		ki:
Ikema	iŋ	miduŋ	kʰadi	hira	ki:
Karimata	iŋ	miduŋ	kʰaɖi	pira	ki:
Uruka		midum̩	kaɖi		ki: ~ ki̥:
Nobaru				pira	

Table 3. ‘ɿ’ 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> ɿgi	p <sup>h</sup> i <sup>z</sup> ɿ
Kugai	psgi	p <sup>h</sup> iz
Irabu	p <sup>s</sup> ɿgi / fɯtsɿp <sup>s</sup> ɿgi	p <sup>h</sup> iɿ
Bora	p <sup>s</sup> ɿgi	p <sup>h</sup> i <sup>z</sup> ɿ
Kuninaka	p <sup>h</sup> igi	p <sup>h</sup> il

Ōura	p <sup>s</sup> ɿgi ~ pɿgi	p <sup>h</sup> iɿ
Shimajiri	b <sup>z</sup> ɿgi	p <sup>h</sup> i <sup>z</sup> ɿ
Kurima	psgi	piz
Ikema	higi	hi:
Karimata	bzgu ~ bzgĩ ~ bīgĩ	p <sup>s</sup> i:
Uruka	psgi ~ p <sup>s</sup> ɿgi	piz ~ pi <sub>ɿ</sub> z
Nobaru		

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

	A-165 'a long time ago'	A-189 'to be absent; to be nonexistent'	B-029 'one (person)'
Uechi	ɲkja:ɲ		
Yonaha	ɲk <sup>j</sup> a:ɲ		tɔuk <sup>j</sup> a:
Kugai	ɲkja:ɲ	n <sup>j</sup> a:ɲ	tɔfke:
Irabu	mki:ɲ	ni:ɲ	tauki:
Bora	ɲk <sup>j</sup> a:ɲ	n <sup>j</sup> a:ɲ	tauk <sup>j</sup> a:
Kuninaka	ɲkja:ɲ		ta <sup>v</sup> k <sup>j</sup> a:
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	
Ikema	ɲk <sup>j</sup> a:ɲ	n <sup>j</sup> a:ɲ	tauka:
Karimata	ikja:ɲ	n <sup>j</sup> a:ɲ	taɸk <sup>j</sup> a:
Uruka	ɲkja:ɲ		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	p̥isu	nu:ma	
Yonaha	puni	k̥imu	p̥i <sup>h</sup> u	no:ma	
Kugai	p <sup>h</sup> uni	k <sup>sz</sup> imu	pstu	nu:ma	
Irabu	p <sup>h</sup> uni	tsimu	pstu	nu:ma	pu:
Bora	p <sup>h</sup> uni ~ poni	k̥imu	pstu	no:ma	p <sup>h</sup> u:
Kuninaka	puni	tsimu	p̥i <sup>h</sup> tu	ny:ma	
Ōura	p <sup>h</sup> uni	k̥imu	pstu	numa	p <sup>h</sup> u:
Shimajiri	p <sup>h</sup> uni	k̥imu	ttu	nu:ma	pu:
Kurima	p <sup>h</sup> uni	tsimu	pstu	nu:ma	
Ikema	huni	tsimu	p̥i <sup>h</sup> tu ~ çtu ~ çto	nu:ma	hu:
Karimata	p <sup>h</sup> uni	k̥imu	pstu	nu:ma	pu:
Uruka	p̥uni ~ p <sup>h</sup> uni	k̥imu ~ k̥imu	p̥st̥u ~ p̥st̥u	nu:m̥a	
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	p̥ukukugi
Yonaha	fom	tsɽgusɽ	t <sup>h</sup> unaka	p̥ <sup>h</sup> ukugi:
Kugai	fumu	tsigusi	tunak <sup>h</sup> a	p̥ <sup>h</sup> ukaɖgi:
Irabu	fumu	tsɽgusɽ	(k <sup>h</sup> u:ga)	kuputsɽgi
Bora	fomu	tsɽgusɽ	t <sup>h</sup> unaka	f̥ukukɽgi:
Kuninaka	fumu	tsigusi	tunuka	p̥ukutsigi
Ōura	k <sup>h</sup> umu	sugasɽ	t <sup>h</sup> unaka	p̥ <sup>h</sup> ukagi
Shimajiri	fuma	tugusɽ ~ tugasɽ	t <sup>h</sup> unaka	k̥ <sup>h</sup> upag <sup>z</sup> ɽgi:
Kurima	fumu	tsigusi	t <sup>h</sup> unuka	pukutsigi:
Ikema	m̥mu	s̥igusi	tunuka	kutsigi
Karimata	fumu	tsigasi	tunuga	p̥ <sup>h</sup> ukagagi:
Uruka	ɸumu	tsɽgusɽ ~ tsɽgusɽ	t̥unaka	p̥ <sup>h</sup> ukukuki: ~ p̥ <sup>h</sup> ukukugi
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	A-146	A-157	A-004		
	‘earthquake’	‘the south’	‘night’	‘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>h</sup> ŋna <sup>h</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:	fte <sup>h</sup>	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		tɔvk <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/ [ʊ] 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	-a + accusative marker	-u + topic marker
	‘to be itchy’	‘to eat’	‘whirlwind; tornado’	‘to be blue; to be azure’	‘gate’		
Uechi		fo:	amainoũ	o:	ɕoʔ		
Yonaha		fo:	amaino:	o:nu	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:	auau	ɕo: (Bora) / ɕau (Aragusuku)	au	a:
Kuninaka	kaũmunu	fau	amainau	aũ	daũ	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 ~ au	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 [ɨ] ~ 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>ɿgi ‘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 [kɯ:] ‘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 pagi ‘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 pītu ~ pɿtu ~ pžtu<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>ɕ</sup> igi	aχ <sup>ʰ</sup> atsi ~ ak <sup>ʰ</sup> atsi	mak <sup>ʰ</sup> al	mi:	<sup>i</sup> zzu	pagi	
Yonaha	p <sup>z</sup> ɿgi	ak <sup>h</sup> atsɿ	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	kaɖa <sup>ʰ</sup> sanumiz	zzu	p <sup>h</sup> aɖi	

<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> ɿgi	axətsɿ ~ ahatsɿ	maxaɿ ~ mahaɿ	miɿ	ɿzu	p <sup>h</sup> aɬɿ	paɰ
Bora	p <sup>s</sup> ɿgi	ak <sup>h</sup> ətsɿ	makaɰ	m <sup>ɰ</sup> ɿ:	zzu ~ ɿzu	p <sup>h</sup> a <sup>d</sup> zɿ ~ p <sup>h</sup> ag <sup>ɰ</sup> ɿ	paz ~ paiz
Kuninaka	p <sup>h</sup> igi	ak <sup>x</sup> ətsi	makaɿ	tsimu (sea urchin)	( <sup>i</sup> )zzu:	pazi	
Ōura	p <sup>s</sup> ɿgi ~ pɿgi	ha:tsɿ	makaɿ	miɿ	ɿzu	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>ɰ</sup> ɿ	paɰ
Shimajiri	b <sup>ɰ</sup> ɿgi	aχatsɿ	maχaɿ ~ maχa <sup>ɰ</sup> ɿ	mi <sup>ɰ</sup> ɿ	zzu	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>ɰ</sup> ɿ	paz ~ paɿ
Kurima	psgi	A: akatsi / B: a <sup>k</sup> xatsi	A: makaɿ / B: makaz	mī:	zzu	p <sup>h</sup> aɬi	
Ikema	higi	akatsi	makai	mi:	zzu ~ ɬu	haɬi	hai
Karimata	bzgu ~ bzgi ~ biḡi	ha:tsi	ma:u	mī:	izu	p <sup>h</sup> agu	pai / pau
Uruka	psgi ~ p <sup>s</sup> ɿgi	akətsɿ	makaz	mɰ:	zzu	pagɰ	
Nobaru						pagɿ	pa <sup>ɰ</sup> ɿ

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 ‘usɿ’, in which ‘s’ is followed by a vowel, while others interpret it as ‘uɰ’, 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)’ usɿ	ussa	ussu
	‘wife’ tuzɿ <sup>12</sup>	tuttsa	tuttsu
	‘road; path; way’ ntsɿ	nttsa	nttsu
	‘tofu’ toofu	tooffa	tooffu
	-pɿ	--	--
	‘paper’ kabɿ	kabzza	kabzzu
	‘the moon’ tsɿkɿ <sup>13</sup>	tsɿkssa	tsɿkssu
	‘leg’ pagɿ	pagzza	pagzzu
	‘rice’ maɿ	mazza	mazzu
CV	‘umbrella; parasol’ sana	sanaa	sanau
	‘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)V	‘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/ [ɽ] 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 sīī<sup>24</sup> ‘nest’; accusative form sīī=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;

<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 ‘ī’ 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 ‘the south’	A-139 ‘light’	A-016 ‘beard; mustache/ hair’	A-148 ‘(the) left (side)’	A-033 ‘leg’	B-002 ‘tooth’	B-007 ‘face’
Uechi	p <sup>h</sup> ai	pçkal	p <sup>ç</sup> igi	pidal ~ pida	pagi	pa:	
Yonaha	pai	p <sup>s</sup> ŋka <sup>z</sup> ɿ	p <sup>z</sup> ɿgi	p <sup>s</sup> ŋda <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> adzi		
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> adɭ	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> agʒɭ	p <sup>h</sup> a:	mip <sup>h</sup> ana
Kuninaka	paɪbara	pɪkaɭ	p <sup>h</sup> iɣi	p <sup>s</sup> idaɭ	pazi		
Ōura	p <sup>h</sup> ai	pskaɭ	p <sup>s</sup> ɭgi ~ pɭgi	bʒɭdaɭ	p <sup>h</sup> agɭ ~ p <sup>h</sup> agʒɭ	pa:	nipana
Shimajiri	p <sup>h</sup> ai	pskaʒɭ	bʒɭgi	bʒɭdaʒɭ	p <sup>h</sup> agɭ ~ p <sup>h</sup> agʒɭ	p <sup>h</sup> a:	mipana
Kurima	p <sup>h</sup> ai	pskaɭ	psgi	A: p <sup>h</sup> iɰdaɭ / B: psdaz	p <sup>h</sup> adzi		
Ikema	haɪbara	ɕikɑi	higi	ɕidai	haɰzi	ha:	mihana
Karimata	p <sup>h</sup> ai	pskaw	bzɣw ~ bzɣi ~ biɣi	bɰdaw ~ bzɰdaw	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 ~ bikiɰum	jarabi	bu:gi	jusarabi	
Yonaha	sʒba	but <sup>h</sup> u		bu:gʒɭ		
Kugai	sɪba	but <sup>h</sup> u	jarabi [new]	bu:gʒi	jusarabi	bat <sup>h</sup> a
Irabu	sɭba	butu	jarabi	bu:ɰɭ	jusarabi	bata
Bora	sɭba	bʊt <sup>h</sup> u	jarabi	bu:gʒɭ ~ bu:ɰɭ	jusarabi	bʊata
Kuninaka	sibaya	bʊtu	jarabi	bʊ:ɰi		bata
Ōura	NR	butu	jarabi	bu:gɭ ~ bu:gʒɭ		
Shimajiri	ʒɭba	butu		bu:gɭ ~ bu:gʒɭ		
Kurima	sɪba	bikidumu	jarabi	bu:ɰi	jusarabi	bata
Ikema	fʊtsi	butu	jarabi	bu:ɰi	jusarabi	bata
Karimata	sɪba	budu	jarabi	bu:gɪ	jusarabi	bada
Uruka	sɸa ~ spa	but <sup>h</sup> u	jarabi	bu:gʒ		
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 ‘bird’	A-154 ‘morning’	A-177 ‘earth’	A-018 ‘strength’	B-029 ‘one (person)’
Uechi	tou	situmuti	ṁta ~ ṁtə	taja	
Yonaha	tʊʒɿ	sɿtʰomoti	mtʰa	tʰaja	tʊkʲa:
Kugai	tʰuz	ʃtumuti	ṁta	tʰaja	təʃke:
Irabu	tʰuʒɿ ~ tʰuɿ	stumuti	mta	tʰaja	tavki:
Bora	tʰuɿ	sʰtomoti	mta	tʰaja	tavkʲa:
Kuninaka	tɯɿ	sɿtʰumutɕi	ṁta	taja	taʷkʲa:
Ōura	tʰuɿ	stumuti	nta	tʰaja	tavkʲa:
Shimajiri	tʰuʒɿ	stumatɕi	nta	tʰaja	tʰafkja:
Kurima	tʰuz	stumuti	mta	taja	
Ikema	tui	ɕitumuti	nta ~ mta	taja	tauka:
Karimata	tuw	stumuti	nta	taja	taɸkʲa:
Uruka	tuzɕ	stumutɕ ~ stumuti	ṁta	taja	tavkʲa:
Nobaru					tavkja:

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

	A-029 ‘belly’	A-051 ‘husband’
Uechi		bikidum ~ bikiɖum
Yonaha		butʰu
Kugai	batʰa	butʰu / bikiʳʲa [old]
Irabu	bata	butu
Bora	ɸata	ɸotʰu
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 > dʒ / \_\_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> ðum	juda		udi
Yonaha			midumu	juda		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	juda	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:  $k > g / C[+voiced]V\_^{27}$
- Irabu, Kuninaka, Kurima, and Ikema:  $k > ts / \_ \_ \_$
- ‘k’-lenition:  
 Irabu:  $k > h \sim x / a\_ \_ a$   
 Shimajiri:  $k > \chi / a\_ \_ a$   
 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	$karap^ha\lambda \sim karap^ha^z$	$kad\zeta i$	$p\zeta kal$	$ku\zeta u$	$ki:$
Yonaha	$k^harapa^z\lambda$	$k^had\zeta i$	$p^s\lambda ka^z\lambda$	$k^hu\zeta u$	$ki:$
Kugai	$k^harap^haz$	$k^had\zeta i$	$pskaz$	$ku\zeta u$	$ki^{\cdot}$
Irabu	$k^hara pa\lambda$	$k^had\zeta i$	$p^ska\lambda$	$k^hudu$	$k^hi:$
Bora	$k^harapa\lambda \sim k^harapa^z\lambda$	$k^ha^d\zeta i$	$pska\lambda$	$k^hu\zeta u$	$k^hi:$
Kuninaka	$karapa\lambda$	$kad\zeta i$	$p\lambda ka\lambda$	$ku\zeta u$	$ki^{\cdot}$
Ōura	$k^harapa\lambda$	$k^had\zeta i$	$pska\lambda$	$k^hu^d\zeta u$	$k^hi:$
Shimajiri	$karapa^z\lambda$	$k^had\zeta i$	$pska^z\lambda$	$k^hudu$	$ki:$
Kurima	A: $karaba\lambda$ / B: $karabaz$	$k^had\zeta i$	$pska\lambda$	$k^hu\zeta u$	$ki:$
Ikema	$karahai$	$k^hadi$	$\zeta\lambda kai$	$ku\zeta u$	$ki:$
Karimata	$karapaw$	$k^had\zeta i$	$pskaw$	$ku\zeta u$	$ki:$
Uruka	$karapaz$	$kad\zeta i$	$p\zeta kaz$	$ku^d\zeta u$	$ki: \sim ki:$
Nobaru					

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

	A-072 ‘buck’	A-079 ‘egg’
Uechi		$tunaka$
Yonaha		$t^hunaka$
Kugai	$bikip^hind\zeta a$	$tunak^ha$
Irabu	$bikipind\zeta a$	$k^hu:ga$

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

Bora	ḃikipindza	t <sup>h</sup> onaka
Kuninaka	bikipinda	tunuka
Ōura		t <sup>h</sup> unaka
Shimajiri		t <sup>h</sup> unaxa
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	kiŋ	k <sup>s</sup> inu	kçimu ~ kimu	tsᵚikiju
Yonaha	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu	k <sup>s</sup> ɲmu	tsɲk <sup>s</sup> ɲ / tsɲk <sup>s</sup> ɲuɔ:
Kugai	k <sup>s</sup> iŋ	ksinu	k <sup>sz</sup> imu	tskssu
Irabu	t <sup>s</sup> ɲ	tsɲu:	tsɲmu	ttsu ~ tsstsu (?)
Bora	k <sup>s</sup> ɲ	k <sup>s</sup> ɲu:	k <sup>s</sup> ɲmu	tskɲ
Kuninaka	tsiŋ	tsinu	tsimu	tsᵚittu
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 ~ tsk <sup>s</sup> ɲ
Kurima	tsiŋ	tsino	tsimu	A: tsitsi / B: tsitsinuɔ:
Ikema	tsiŋ	nnu	tsimu	tsitsi
Karimata	k <sup>s</sup> iŋ	ksnu	k <sup>s</sup> imu	tskssu
Uruka	kɕn	kɕnu:	ksmu ~ k <sup>s</sup> ɲmu	tskɕ
Nobaru				

Table 20. Examples of ‘k’-lenition.

Irabu: k &gt; h ~ x / a\_\_a

Shimajiri: k &gt; χ / a\_\_a

Ōura: #aka &gt; #ha:

Karimata: #aka &gt; #ha:, Caka &gt; 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> atsi ~ ak <sup>ə</sup> atsi	p <sup>ə</sup> aka	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> aka	aka: <sup>z</sup>	minaka
Irabu	maxaɿ ~ mahaɿ	ax <sup>ə</sup> atsɿ ~ ahatsɿ	p <sup>h</sup> a: ~ p <sup>h</sup> ɑ:	aha:	minaha
Bora	maka <sup>z</sup> ɿ	ak <sup>h</sup> ətsɿ	p <sup>h</sup> aka	a <sup>z</sup> ɿgara (Bora) / ak <sup>h</sup> a: (Aragusuku)	minaka
Kuninaka	makaɿ	ak <sup>χ</sup> atsi	p <sup>ə</sup> aka	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>k</sup> xatsi	p <sup>ə</sup> aka	A: akaɿ / B: akaz	minaka
Ikema	makai	akatsi	haka	akai	minaka
Karimata	ma:u	ha:tsi	p <sup>ə</sup> aka	ha:u	a:ra / mina:
Uruka	makaz	ak <sup>ə</sup> atsɿ	p <sup>ə</sup> aka	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 > ɸ / 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>h</sup> igi	kagi	m <sup>h</sup> nagu	tsigusi	gaɖam
Yonaha	p <sup>h</sup> igi	k <sup>h</sup> agi	nnagu:	tsɿgusɿ	gaɖam
Kugai	psgi	k <sup>h</sup> agi	m <sup>h</sup> nagu	ts'igusi	gaɖam
Irabu	p <sup>h</sup> igi / fɯtsɿp <sup>h</sup> igi	k <sup>h</sup> a:gi	mnagu	tsɿgusɿ	gaɖam
Bora	p <sup>h</sup> igi	k <sup>h</sup> ag	nnagu:	tsɿgusɿ	ga <sup>d</sup> zam
Kuninaka	p <sup>h</sup> igi	ka:gi	m <sup>h</sup> nagu	tsigusi	kadam
Ōura	p <sup>h</sup> igi ~ pɿgi	k <sup>h</sup> ag	nnagu	sugasɿ	ga <sup>d</sup> zan
Shimajiri	b <sup>h</sup> igi	k <sup>h</sup> agi	nnagu	tugusɿ ~ tugasɿ	gadan
Kurima	psg	kagi	m:nagu	ts'igusi	gaɖam
Ikema	higi	kagi	nnagu	s'igusi	kaɖan
Karimata	bzgu ~ bzgi ~ biği	kag	nnagu	ts'igası	ga <sup>d</sup> zan
Uruka	psg ~ p <sup>h</sup> igi	kagi ~ kag	n <sup>h</sup> nagu	ts <sup>h</sup> gusɿ ~ tsɿgusɿ	gaɖam
Nobaru					

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

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

Shimajiri: g > ɸ / 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>h</sup> ɿ	bu:g <sup>h</sup> ɿ	k <sup>h</sup> agam	aga <sup>h</sup> ɿ
Kugai	p <sup>h</sup> aɖi	bu:g <sup>h</sup> i	k <sup>h</sup> agam	aɣaz
Irabu	p <sup>h</sup> aɖɿ	bu:ɖɿ	k <sup>h</sup> aɸam	aɸaɿ
Bora	p <sup>h</sup> a <sup>d</sup> zɿ ~ p <sup>h</sup> ag <sup>h</sup> ɿ	b <sup>h</sup> u:g <sup>h</sup> ɿ ~ b <sup>h</sup> u:ɖɿ	k <sup>h</sup> agam	agaɿ
Kuninaka	pazi	b <sup>h</sup> u:ɖi	kagam	agaɿ
Ōura	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>h</sup> ɿ	bu:ɣɿ ~ bu:g <sup>h</sup> ɿ	k <sup>h</sup> agan	(agaɿ ~) aɿ
Shimajiri	p <sup>h</sup> agɿ ~ p <sup>h</sup> ag <sup>h</sup> ɿ	bu:ɣɿ ~ bu:g <sup>h</sup> ɿ	k <sup>h</sup> aɸan	aɸaɿ
Kurima	p <sup>h</sup> aɖi	bu:ɖi	kagam	A: agaɿ / B: agaz
Ikema	haɖi	bu:ɖi	kagan	agai
Karimata	p <sup>h</sup> agu	bu:gi	k <sup>h</sup> agan	a:u
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 /ɿ/. Depending on the dialect, there are words where /t/ is encountered instead before other vowels (e.g. Shimajiri ata ‘tomorrow’).

In addition, Proto-Miyako \*kɿ has changed into /tsɿ/ 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	aχ̥atsi ~ ak̥atsi	ts̥ikiju	aça / at̥	
Yonaha	tsɿ:	ak <sup>h</sup> ̥atsɿ	tsɿk <sup>s</sup> ɿ / tsɿk <sup>s</sup> ɿnuju:	atsa	
Kugai	tsī	akatsī	tskssu	attsa	t̥ <sup>h</sup> aban̄
Irabu	tsɿ:	ax̥atsɿ ~ ahatsɿ	ttsu ~ t̥ttsu (?)	atsa	t̥aban̄
Bora	tssɿ	ak <sup>h</sup> ̥atsɿ	tskɿ	atsa	t̥aban̄
Kuninaka	tsi	ak <sup>ʰ</sup> ̥atsi	ts̥ittu	ata	
Ōura	tsɿ	ha:tsɿ	tskɿ	atsa	
Shimajiri	tssɿ	aχ̥atsɿ	tskɿ ~ ts̥k <sup>s</sup> ɿ	ata	
Kurima	A: ts̥ī / B: tss̥ī	A: akatsī / B: a <sup>k</sup> ̥xatsī	A: ts̥its̥ī / B: ts̥its̥inuju:	at̥ça	t̥aban̄
Ikema	ts̥ī:	akatsī	ts̥its̥ī	at̥ça	t̥aban̄
Karimata	tzī:	ha:ts̥ī	tskssu	atsa	t̥aban̄
Uruka	tsɿ:	ak̥atsɿ	tsk̥	ats̥̥	
Nobaru					

Table 24. tsɿ < \*kɿ in Irabu, Kuninaka, Bora, and Ikema.

	A-030 ‘heart/liver’	A-121 ‘clothing; kimono’	A-009 ‘breath’
Uechi	k̥imu ~ kimu	kiŋ	
Yonaha	k <sup>s</sup> ɿ̥mu	k <sup>s</sup> ɿ̥ŋ	
Kugai	k <sup>sz</sup> ̥imu	k <sup>s</sup> ̥iŋ	ik <sup>s</sup> ̥i
Irabu	tsɿ̥mu ‘liver’	t̥ɿ̥ŋ	itsɿ̥
Bora	k <sup>s</sup> ɿ̥mu	k <sup>s</sup> ɿ̥ŋ	ik <sup>s</sup> ̥ɿ̥
Kuninaka	tsimu	tsiŋ	itsi
Ōura	k <sup>s</sup> ɿ̥mu	k <sup>s</sup> ̥ɿ̥ŋ	ikɿ̥

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	iku
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	sida
Yonaha		çi: / p <sup>h</sup> içi	tsɿgusɿ	fsa	mtsu	sʒba	sʒda
Kugai	jusarabi	pççi	tsigusi	fsa	msu	sɪba	sida
Irabu	jusarabi	pççi	tsɿgusɿ	fɯsa	msu	sɿba	sta
Bora	jusarabi	pççi ~ piçi	tsɿgusɿ	fɯsa	mtsu	sɿba	sɿda
Kuninaka		piçi	tsigusi	fɰsa	ɳsu	sɪbaɣa	sɪta / sta
Ōura		pççi	sugasɿ	ssa	ntsu	NR	ɿda ~ ʒda
Shimajiri		piçi	tugusɿ ~ tugasɿ	ssa	nsu	ʒba	ʒda
Kurima	jusarabi	pçi	tsigusi	fsa	A: m:su / B: m:so	sɪba	sida
Ikema	jusarabi	piçi	sigusɿ	fɯsa (= [f <sup>w</sup> sa])	nsu	futsi	çta
Karimata	jusarabi	pççi	tsigasɿ	fɯsa	nsu	sɪba	sta

Uruka	pi̯çi	tsɯɯɟɟ ~ tsɟɟɯɟɟ	fɟsa	ɱsu ~ ɱsɯ	sɟa ~ sɟa	sɟda ~ sɟda / ɟda
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 ‘ɟ’, it surfaces as [ʐ] ~ [dʐ].
- Ikema: dʒa<sup>28</sup>, di, dʒu, dʒɟ
- Shimajiri and Kuninaka: except when followed by ‘i’ or ‘ɟ’, /d/ is used instead.
- In Irabu, Kuninaka, Kurima, and Ikema, \*ɟɟ has changed into /dʒɟ/.

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

	A-023 ‘elbow’	A-164 ‘last year’	A-062 ‘mosquito’	A-183 ‘gate’	A-129 ‘wind’
Uechi	pi̯ɟi	kuɟu	gaɟam	ɟo	kaɟi
Yonaha	p <sup>h</sup> i̯ɟɟ	k <sup>h</sup> uɟu	gaɟam	ɟo:	k <sup>h</sup> adʒi
Kugai	p <sup>h</sup> i̯ɟi	kuɟu	gaɟam	ɟo:	k <sup>h</sup> adʒi
Irabu	p <sup>h</sup> i̯ɟɟ	k <sup>h</sup> udu	gaɟam	ɟo:vtsɟ	k <sup>h</sup> adʒi
Bora	p <sup>h</sup> i̯dʒɟ	k <sup>h</sup> uɟu	ga <sup>d</sup> zam	ɟo: (Bora) / ɟau (Aragusuku)	k <sup>h</sup> a <sup>d</sup> ʒi
Kuninaka	p <sup>h</sup> i̯ɟi	kuɟu	kadam	dau	kaɟi
Ōura	p <sup>h</sup> i̯ɟɟ	k <sup>h</sup> u <sup>d</sup> zu	ga <sup>d</sup> zaɟ	ɟo:futsɟ ‘entrance’	k <sup>h</sup> adʒi
Shimajiri	pi̯ɟɟ	k <sup>h</sup> udu	gaɟaɟ	dau	k <sup>h</sup> adʒi
Kurima	pi̯ɟi	k <sup>h</sup> uɟu	gaɟam	ɟo:	k <sup>h</sup> adʒi
Ikema	hi̯dʒi	kuɟu	kaɟaɟ	ɟau	k <sup>h</sup> adi
Karimata	pi̯ɟi	kuɟu	ga <sup>d</sup> zaɟ	ɟo:	k <sup>h</sup> adʒi
Uruka	pi̯ɟɟ ~ pi̯ɟɟ	ku <sup>d</sup> ɟu	gaɟam	ɟau	kaɟi
Nobaru					

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

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

	A-033 'leg'	A-091 'sugar cane'	A-118 'nail; spike; peg'
Uechi	pagi	bu:gi	fugi
Yonaha	p <sup>h</sup> agʷ	bu:gʷ	fugʷ
Kugai	p <sup>h</sup> adʷi	bu:gʷi	k <sup>h</sup> anifugz / fugz
Irabu	p <sup>h</sup> adʷ	bu:ɕ	fudʷ
Bora	p <sup>h</sup> a <sup>d</sup> ʷ ~ p <sup>h</sup> agʷ	bu:gʷ ~ bu:ɕ	fugʷ
Kuninaka	pazi	bu:ɕi	kanifudʷi
Ōura	p <sup>h</sup> ag ~ p <sup>h</sup> agʷ	bu:g ~ bu:gʷ	k <sup>h</sup> anifug
Shimajiri	p <sup>h</sup> ag ~ p <sup>h</sup> agʷ	bu:g ~ bu:gʷ	fugʷ
Kurima	p <sup>h</sup> adʷi	bu:ɕi	fudʷi / k <sup>h</sup> anfudʷi
Ikema	hadʷi	bu:ɕi	kanifudʷi
Karimata	p <sup>h</sup> agw	bu:gi	fugi ~ fugw
Uruka	pagz	bu:gz	fgz
Nobaru	pag		

**/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'munu	fun'i	kumu		futsi
Yonaha	fo:munu	funi	fom		futs
Kugai	fo:munu	funi	fumu	ftai	fts
Irabu	faɸmunu	funi	fumu	fɸtai	futs
Bora	faumunu	funi	fomu	fɸtai	futs
Kuninaka	faɸmunu	funi	fumu	fɸtai	futsi
Ōura	fo:munu	funi	k <sup>h</sup> umu	fɸtai ~ ftai	futs
Shimajiri	faumunu	funi	fuma		fts

Kurima	fɔːmunu	funi	fumu	fteː	ftsī
Ikema	faimunu	funi	ṁmu	ftai	futsī
Karimata	faumunu	funi	fumu	ftai	futsī
Uruka	faumunu	ḥunʲi	ḥumu		f̥ts ~ f̥tsɿ
Nobaru					

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

	A-113	A-003
	‘grass’	‘comb’
Uechi	fusa	fu
Yonaha	fsa	fʷɿ
Kugai	fsa	fsī
Irabu	fusa	fʷsɿ
Bora	fusa	fʷsɿ
Kuninaka	fsa	fsu
Ōura	ssa	sː ~ sɿː
Shimajiri	ssa	ssɿ
Kurima	fsa	futsī
Ikema	fusa (= [fʷsa])	fʷçi
Karimata	fusa	fʷsī = fʷsī
Uruka	fsa	f̥s ~ f̥sɿ ~ fʷsɿ
Nobaru		

/v/

**[v] (voiced labiodental fricative)****[ʋ] (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	jʊʊʊ
Ōura	NR	ʊva		juv
Shimajiri	kuvva ~ kuʊva	vva		juv
Kurima	kuvva	vva	avva	juv
Ikema	kuvva	vva	avva	ju:
Karimata	kuʊva	ʊva	aʊva	N/R
Uruka	kʊʋʋva ~ kʊʊʋva	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	tʌf <sup>h</sup> ke:	maf <sup>h</sup> kja ~ maf <sup>h</sup> ŋkja
Irabu	tavki:	mauvkja:
Bora	tav <sup>h</sup> kja:	mauvkja:
Kuninaka	ta <sup>v</sup> kja:	mauvkja:
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:	maukja:
Karimata	taɸkja:	maukja: / maf <sup>h</sup> kja
Uruka	tav <sup>h</sup> kja:	mauvkja: ~ 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

**[ɸ]** (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.

**/ʁ/ (voiced uvular fricative) [ʁ]**

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> ɿmu	nu:ma	mi <sup>d</sup> zɿ	amaino:	k <sup>h</sup> ama
Kugai	k <sup>sz</sup> i mu	nu:ma	midzi	ama.ino:	k <sup>h</sup> ama
Irabu	tsɿmu	nu:ma	mi <sup>d</sup> zɿ	amaino:	k <sup>h</sup> ama ~ k <sup>h</sup> ama:
Bora	k <sup>s</sup> ɿmu	nu:ma	mi <sup>d</sup> zɿ	amaino:	k <sup>h</sup> ama
Kuninaka	tsimu	nɯ:ma	midzi	amainau	kama
Ōura	k <sup>s</sup> ɿmu	numa	midzɿ	amaino:	k <sup>h</sup> ama
Shimajiri	k <sup>s</sup> ɿmu	nu:ma	midzɿ	amaino:	kama
Kurima	tsimu	nu:ma	midzi	ama.ino:	kama
Ikema	tsimu	nu:ma	midzi	amaunau	kama
Karimata	k <sup>sz</sup> i mu	nu:ma	mi <sup>(d)</sup> zi	ino:	kama
Uruka	ksmu ~ k <sup>s</sup> ɿmu	nu:m̥a	midzɿ	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	im̥	gaɟam	midum ~ mi <sup>d</sup> ðum	msu	mta ~ m̥ta
Yonaha	im	gaɟam	midumu	mtsu	mt <sup>h</sup> a
Kugai	im	gaɟam	midum	msu	m̥ta
Irabu	im	gaɟam	midum	msu	mta
Bora	im	ga <sup>d</sup> zam	midum	mtsu	mta
Kuninaka	im̥	kadam̥	midum̥	nsu	n̥ta
Ōura	iŋ	ga <sup>d</sup> zaŋ	miduŋ	ntsu	nta
Shimajiri	iŋ	gadaŋ	miduŋ	nsu	nta
Kurima	im	gaɟam	midumu	A: m: su / B: m: so	mta
Ikema	iŋ	kaɟaŋ	miduŋ	nsu	nta ~ mta
Karimata	iŋ	ga <sup>d</sup> zaŋ	miduŋ	nsu	nta
Uruka	im̥	gaɟam̥	midum̥	m̥su ~ m̥sɯ	m̥ta
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	tʰʊnaka	puni
Kugai	fʊni		nai	tunakʰa	pʰuni
Irabu	fʊni	pana	nai	kʰu:ga	pʰuni
Bora	fʊni	pʰana	nai	tʰʊnaka	pʰuni ~ puni
Kuninaka	fʊni		nai	tunuka	puni
Ōura	fʊni	pana	nai	tʰʊnaka	pʰuni
Shimajiri	fʊni	pʰana	nai	tʰʊnaka	pʰuni
Kurima	fʊni		nai	tʰʊnuka	pʰuni
Ikema	fʊni	hana	nai	tunuka	huni
Karimata	fʊni	pana	naw	tunuga	pʰuni
Uruka	ɸʊnʲi		nai	tʊnaka	pʊni ~ pʰuni
Nobaru		pana			

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

	A-101 ‘tea bowl; rice bowl’	A-121 ‘clothing; kimono’
Uechi		kiŋ
Yonaha		kʰŋ / kʰŋmonu
Kugai	tʰabaŋ	kʰiŋ
Irabu	tʰabaŋ	tʰŋ
Bora	tʰabaŋ	kʰŋ
Kuninaka		tsiŋ

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

/ŋ/

[ŋ] (voiceless alveolar nasal)

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

This sound is only encountered in Ikema. The two allophones have arisen through the sound changes \*tsɿNV > ŋNV and \*fumV > ɱmV, 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 ‘ŋnu’ 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	tsɿno	k <sup>s</sup> ɿno
Kugai	fumu	tsinu	ksinu
Irabu	fumu	tsɿnu ~ tsɿno	tsɿnu:
Bora	fumo	tsɿno	k <sup>s</sup> ɿno:
Kuninaka	fumu	tsinu	tsinu
Ōura	k <sup>h</sup> umu	tsɿnu	k <sup>s</sup> ɿnu
Shimajiri	fuma	tsɿnu	k <sup>s</sup> ɿnu
Kurima	fumu	tsinu	tsino
Ikema	ɱmu	nnu	nnu
Karimata	fumu	tsɱu	ksɱu
Uruka	ɸumu	tsnu ~ tsɿnu	kɕnu:
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 [ɭ]<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	ɭzara	jusarabi
Bora	jarabi	zzara	jusarabi
Kuninaka	jarabi	<sup>i</sup> zzara	
Ōura	jarabi	<sup>ɰ</sup> zara	
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> aɭ ~ karap <sup>h</sup> az	pçkal	aɣal
Yonaha	tu <sup>ɰ</sup> ɭ	p <sup>s</sup> ɭma	k <sup>h</sup> arapa <sup>ɰ</sup> ɭ	p <sup>s</sup> ɭka <sup>ɰ</sup> ɭ	aga <sup>ɰ</sup> ɭ
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>ɰ</sup> ɭ ~ t <sup>h</sup> uɭ	p <sup>s</sup> ɭ:ma	k <sup>h</sup> ara paɭ	p <sup>s</sup> kaɭ	aɬaɭ
Bora	t <sup>h</sup> uɭ	p <sup>s</sup> ɭ:ma	k <sup>h</sup> arapaɭ ~ k <sup>h</sup> arapa <sup>ɰ</sup> ɭ	pskaɭ	agaɭ
Kuninaka	tɭɭ	p <sup>h</sup> ɭ:ma	karapaɭ	pɭkaɭ	agaɭ

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

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	ɕikai	agai
Karimata	tuw	psm̥a	karapaw	pskaw	a:w
Uruka	tuz̥	p <sup>s</sup> ɿ:ma	karapaz̥	pɕkaz̥	agaz̥
Nobaru					

### 3.1.6 Approximants

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

This sound corresponds to Proto-Miyako \*j.

Table 39. The voiced palatal approximant.

	A-055 'child; minor'	A-111 'branch'	A-165 'a long time ago'	A-179 'house'	A-182 '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	va:
Kugai	va:
Irabu	wa:
Bora	va: ~ wa:
Kuninaka	wa:
Ōura	wa:
Shimajiri	va:
Kurima	wa:
Ikema	wa:
Karimata	wa:
Uruka	va:
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.

[tʔ] ~ [tt]: Ikema ‘(tobacco) pipe’, Shimajiri ‘person; human being’

[kʔ] ~ [kk]: Ikema ‘nine (things)’ (although it appears as ‘kukunutsi’ in the reported data, the variant ‘kkunutsi’ is also encountered)

[tsʔ] ~ [tts]: Ikema ‘sago palm’, Irabu ‘(tobacco) pipe’

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

	A-060	B-113	B-027	B-076
	‘person; human being’	‘(tobacco) pipe’	‘nine (things)’	‘sago palm’
Uechi	pɿsu			
Yonaha	pʰɿtʰu			
Kugai	pstu			
Irabu	pstu	ttɕ(ɿ)z	kukunutsɿ	sɕitsɿ
Bora	pstu	kʰiɕi:lʔ	kukunutsi	ɕukʰatsɿ
Kuninaka	pʰɿtu		kɕkɕonɕtsi	sɕɕetsi
Ōura	pstu	kiɕiʔɿ	kukunutsɿ	
Shimajiri	ttu	kiɕiɿ	kɕkukunutsɿ	
Kurima	pstu			
Ikema	pʰɿtu ~ ɕtu ~ ɕto	tʰi: tti:ʔ	kɕkukunutsɿ	ttɕu:tsɿ
Karimata	pstu	kʰisiu	kɕkukunutsu	stɿtsu / sɿsɕɕu / ssɕɕu
Uruka	pstɕ ~ pstɕ			
Nobaru		kiɕiʔɿ	kɕkukunutsɿ	sɕɕetsɿ

### 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, ɾ, 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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