

# A Description of the Sound System of Fijian

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## 1 Introduction

There are two main languages spoken in Fijian Islands, each of them with different dialects. Considering Viti Levu Island, one language is spoken in the west side and the other one in the east side of Viti Levu (Dixon, 1988). Standard Fijian is based on Bauan (the eastern language) and is used as a lingua franca. This squib reports the sound system of a Fijian native speaker from Korovou, located in the eastern side of Viti Levu. The data set is compared with Standard Fijian reports (Milner, 1972; Schütz, 2014) and Bauma Fijian (Dixon, 1988).

According to Milner (1972) the phonological system of Fijian is comprised of 21 phonemes: 5 vowels, 14 consonants and 2 semivowels. To represent these sounds, the author uses one segment to each phoneme. The only exception is in the sound [dr] which is represented by 2 segments. In addition, there are three sounds which are not part of the phonological system of Fijian and that can occur in borrowing words. Schütz (2014) describe 5 vowels and divide the consonants as *indigenous*, *traditional* and *from other Fijian languages*. 16 consonants belong to the category *indigenous*, 3 consonants are part of the *traditional* category and 8 belong to *other Fijian languages*. Regarding Boumaa Fijian, its phonological system is comprised of 20 consonants and 5 vowels.

The principal differences found in this study are related with the voiceless alveolar and velar plosive consonants /t/ and /k/, the voiced alveolar tap (or trill) /r/, and the voiced prenasalized alveolar tap /dr/ (or trill) (Schütz, 2014).

The next section reports how the data set was obtained and the methods used to analyze them. The third section contains the analysis, which is based mostly in the consonant sounds, and in a comparison with previous reports. The discussion takes place in the fourth section.

## 2 Data collection

Data was collected in two sessions. The consultant was a male Fijian native speaker from Korovou born in 1979. Recordings were conducted using a Marantz solid state recorder PMD 661, set at a 44100 Hz frequency rate and a 16 bit depth, mono. A headworn unidirectional microphone SHURE WH30 with an XLR connector was used. This microphone was placed at around 10 centimeters from the mouth of participant. The subject was requested to translate English words contained in the Swadesh wordlist (Bower, 2015) into Fijian, and to repeat the Fijian word three times. A phonetic transcription of each word was written. In addition, the recordings were visualized in Praat (Boersma and Weenink, 2018) in order to verify the nature of some uncertain sounds. Some figures were built to illustrate the differences found in this study. All figures have the spectrogram image with a textgrid composed for two tiers, in the first one each segmented sound, and in the second one the Fijian word.

## 3 Analysis

The analysis is based on the phonetic material obtained in the recording sessions and it is compared with Milner (1972), Dixon (1988) and Schütz (2014). This section is divided in two groups: vowel and consonants.

**3.1 Vowels** According to all the authors considered in this squib, the phonological system of Fiji is comprised of 5 vowels. In the data set analyzed in this report, also 5 vowels have been found. The vowel /a/ is low central unrounded, /e/ is mid front unrounded, /i/ is high front unrounded, /o/ is mid back rounded, and /u/ is high back rounded as is shown in Table 1:

Table 1: Vowels.

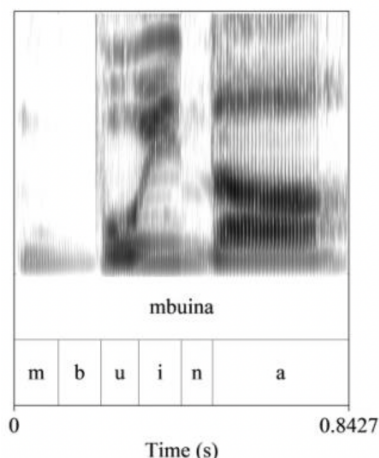
	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

Some diphthongs reported in other sources have been found: [ai], [au], [ei] and [eu] (Dixon, 1988; Schütz, 2014). Nevertheless, [oi] and [ou] have been reported, but they were not elicited. It was possible to hear [ui] in [mbuina] ‘tail’ (see Figure 1), [ua] in [lua] ‘vomit’, and [oa] in [loaloe] ‘black’. The latter diphthongs have not been found in other sources.

**3.2 Consonants** In this section, each consonant has been described following the IPA. The sounds [p] ‘p’, [f] ‘f’ and [tʃ] ‘j’ were not considered in this description, because they are not part of the phonological system of Standard Fijian. It is important to note that [p] and [f] are phonemes in Bauma Fijian (Dixon, 1988). In the data set analyzed in this report these sounds are not phonemes neither allophones.

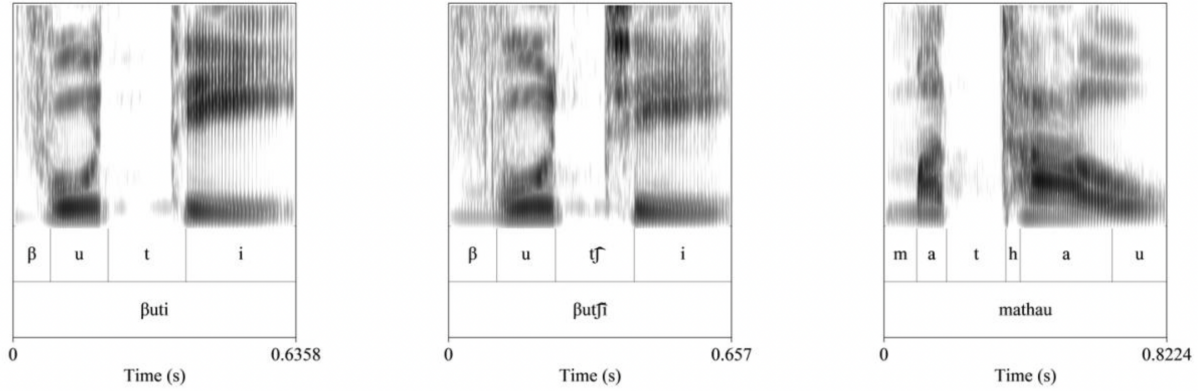
**3.2.1 b/ [mb]** According to Milner (1972), the prenasalized labial stop is difficult heard at the beginning of the word, also Schütz (2014) states that its duration is shorter than between vowels. This sound is also part of sounds of Bauma Fijian (Dixon, 1988). In our data set, it is clear the nasal part of the sound at the beginning of the word as it is possible to see in Figure 3.

Figure 1: Prenasalized labial stop in the word [mbuina]



**3.2.2 /t/ [t]** This sound has been described as a plosive apico-alveolar stop (Milner, 1972; Schütz, 2014). Both authors agree that this sound is unaspirated. Nevertheless, in this data was possible to notice this sound was aspirated in the majority of cases. The only precedent of this phenomenon is Scott (1948), who reported a slightly aspiration of this sound. In Bauma Fijian, Dixon (1988) pointed out that this sound has allophonic variation with [tʃ] before the high fronted vowel [i]. The same phenomenon was described by Schütz (2014). In our data, was possible to find an affricate [tʃ] before the vowel [i] in just one case. The allophones of [t] are visualized in the Figure 1.

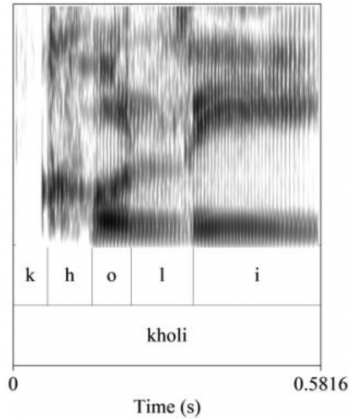
Figure 2: Allophones of /t/: [t] and [tʰ] in the word [βuti], [tʰ] in the word [matʰau].



**3.2.3** *d/ [ʰd]* As well as /b/, it would be easier to listening to the nasalized part of this sound word-internally as in [ʰdoʰdonu] ‘straight’. Schütz (2014) points out that before a high fronted vowel [i], a palatalization occurs. Nevertheless, we did not find any case of palatalization.

**3.2.4** */k/ [kʰ]* This velar voiceless sound according to Milner (1972) is unaspirated, Scott (1948) mentioned it could be slightly aspirated and Schütz (2014) described it as relatively aspirated. In our data it was possible to hear [k] aspirated in the majority of words. In Bauma Fijian, a glottal stop in place of [k] is reported. Figure 3 shows the velar aspirated in the word [kʰoli] ‘dog’.

Figure 3: Velar aspirated in the word [kʰoli]



**3.2.5** */g/ [ʰg]* In the data set, was not possible to find many times this sound, one example is the word [ʰgalo] ‘swim’. The literature states that it is also difficult to hear [ʰg] in an isolated word. In Bauma Fijian, this velar sound is part of the inventory of phonemes (Dixon, 1948).

**3.2.6** */m/ [m]* No difference with previous reports were found. We did not find a case of lengthened [m] before [u] in an unstressed syllable as Schütz (2014). Examples of words with this sound are: [moðe] ‘sleep’, [mamaða] ‘dry’.

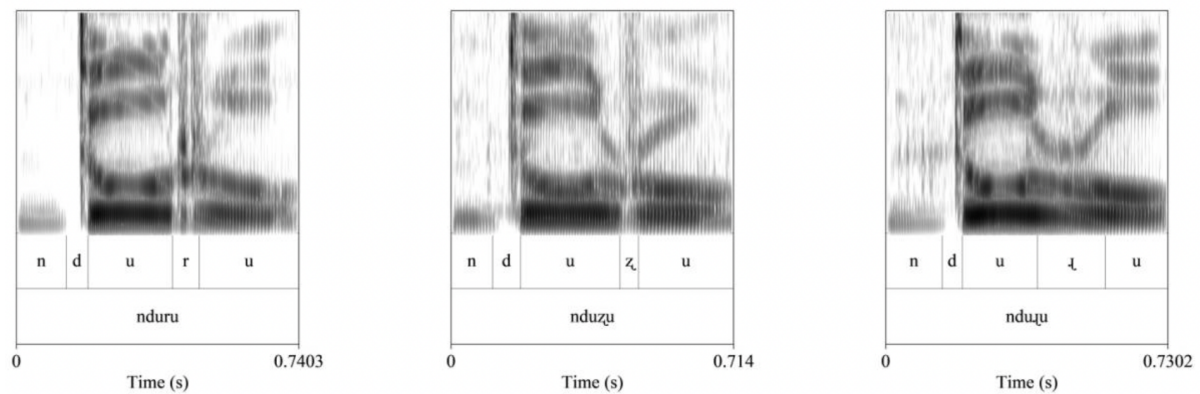
**3.2.7** */n/ [n]* No difference with previous reports were found. For instance, in the data the words [donu] ‘correct’, [βinaka] have this sound.

**3.2.8** */ŋ/ [ŋ]* No difference with previous reports were found.

**3.2.9** */r/ [r] [ɹ]* According to Schütz (2014), when the speech is slow, there are more time to do the trill sound instead the tap one. Milner (1972) compare it with the Scottish rhotic pronunciation. In Bauma Fijian, it is described as a trill (Dixon, 1948). In our data set, it was possible to hear at least three sounds. Figure 4 shows the

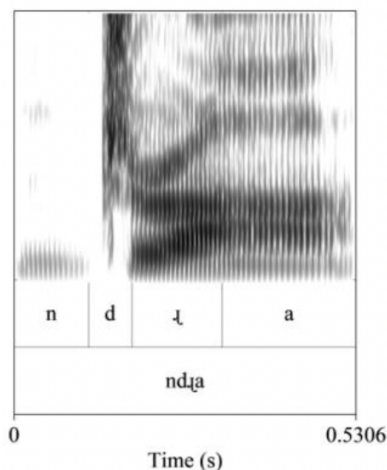
same word /duru/, but in all of them the rhotic is articulated differently.

Figure 4: Allophones of /r/ in the word /duru/



**3.2.10** /dr/ [ʰdr] [ʰdɹ] It was particularly difficult to determine the manner of articulation of this sound. Schütz (2014) point out it is a tap or trill. In our data set we heard retroflex and trill sounds. Figure 5 shows the word /dra/:

Figure 5: Word /dra/



**3.2.11** /β/ [β] No difference with previous literature were found. Schütz (2014) reports a case of lengthened [β] before [u] in an unstressed syllable, but in words like [βulaβula] it was not observed.

**3.2.12** /ð/ [ð] Comparing the data set analyzed with previous reports, no differences were found. Examples of words with [ð] are: [ðena] ‘breathe’ and [βuða] ‘swell’.

**3.2.13** /s/ [s] Schütz (2014) described an allophonic variation with a post alveolar sound, but this was not observed in the data. This phoneme is the same described in previous reports. [seleŋa] ‘cut’ and [masi] ‘rub’, between others, has been elicited in the data set.

**3.2.14** /l/ [l] No difference with previous reports were found. For instance the following words has been elicited: [lakomai] ‘come’, [sala] ‘road’.

**3.2.15** /j/ [j] This semivowel has a restrictive position, because it has been reported just before [a] (Schütz, 2014). Milner (1972) reports [j] after all vowels but always before an [a]. In our data set it just appears at the beginning of the word and before an [a] as in [jame] ‘tongue’.

**3.2.16** /w/ [w] Schütz (2014) points out that this semivowel does not occur adjacent rounded vowels, in our

data set we just found this semivowel between [a] vowels as in [jawa] ‘far’, between [a] and [i] as in [mawi] ‘left’, between [e] vowels as in [lewena] ‘meat’. Milner (1972) states that [w] occurs contrastively after [a], [e] and [i]. We did not find [w] after [i].

Table 4: Consonants.

	Bilabial	Dental	Alveolar	Retroflex	Palatal	Velar
Plosive	<sup>m</sup> b		t / d			k / g
Nasal	m		n			ŋ
Trill			r			
Tap or Flap						
Fricative	β	ð	s			
Approximant				ɭ	j	
Lateral			l			
Approximant						
Glide	w					

## 4 Discussion

The principal differences found in this study are related with the voiceless alveolar and velar stop consonants /t/ and /k/, the voiced alveolar tap (or trill) /r/, and the voiced prenasalized alveolar tap /dr/ (or trill) (Schütz, 2014).

In the first case, there is a clear aspiration in /t/ and /k/. It is assumed that these sounds are in free variation: [t] and [t<sup>h</sup>], and [k] and [k<sup>h</sup>]. The influence of English aspirated stops could affect these sounds, but more data would be necessary to affirm it.

One example of palatalization of /t/ before [i] has been found, in other words, the affricate [tʃ]. This could be explained for the fact that the majority of /t/ sounds are dental, instead, alveolar. In the case of [n<sup>d</sup>] no examples of [dʒ] has been reported, and maybe it is because, instead alveolar [n<sup>d</sup>] is postdental.

Regarding the voiced alveolar tap (or trill), there are at least three allophones of the same phoneme. It was not possible to hear a tap. According to this author, there is trill sound [r], an approximant retroflex [ɭ], and also another approximant sound which has a kind of friction. In order to try to differentiate the approximant retroflex [ɭ] with this other sound, the symbol [z] was used, but there must be another form to symbolize this, because it is not completely fricative.

As described in 3.2.10 the rhotic part of the sound /dr/ is an approximant retroflex [ɭ]. It was difficult to evaluate the sound produced in /d/. In the spectrogram showed in Figure 5, it seems to be an affricate sound before [ɭ], but further studies are needed to confirm it.

It would be very interesting to analyze VOT in the stop consonants of Fijian to determine the level of aspiration of these sounds and also to know if the phonetic context has an effect on the variation. In addition, it could be very useful to use ultrasound to study the rhotic consonants. It would be convenient to analyze the prenasalized consonants [m<sup>b</sup>], [n<sup>d</sup>], [n<sup>g</sup>], [n<sup>dr</sup>] with nasal/oral airflow measurement in order to corroborate if there is a weak nasalization, for instance.

## 5 References

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