

Japanese loanwords in Woleaian

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Abstract: This paper reviews the Japanese loanwords found in the Woleaian dictionary (Sohn & Tawerilmang 1976), and discusses the mechanisms used to adapt Japanese sounds into Woleaian in relation to models of loanword phonology.

Key words: loanwords, Japanese, Woleaian

1. Introduction

Woleaian belongs to the Trukic branch of the Austronesian family, spoken on the island of Woleai in Micronesia. Based on the census in 1987 (cited in Ethnologue (2009)), the language has 1,630 speakers. Due to the presence of Japanese military in Micronesia between 1919 and 1945, quite a few Japanese loanwords are found in the Woleaian language.¹

This paper provides a brief sketch of adaptation of Japanese sounds into Woleaian. The data comprises 175 Japanese loanwords found in Sohn & Tawerilmang (1976). Some background information about Japanese, Woleaian, and models of loanword phonology will be provided in section 2. Sections 3 and 4 focus on adaptation of Japanese consonants and vowels into Woleaian respectively. Section 5 and 6 conclude the paper.

2. Background information

2.1. Comparison of phoneme inventories

The phoneme inventories of Woleaian and Japanese are summarized in (1), (2) and (3) respectively.

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(1) Woleaian consonant phonemes (Sohn 1975)

| | Bilabial | Labiodental | Alveolar | Postalveolar | Palatal | Retroflex | Velar | Glottal |
|-----------|---------------------|-------------|----------|--------------|-----------|----------------------|-----------|---------|
| Stop | p | | t | | c “ch” | | k | |
| Fricative | ɸ “p” | f | s | | | ʂ ʐ “sh” “r” | x “g” | |
| Affricate | | | | | | | | |
| Nasal | m m ^w | | n | | | | ŋ “ng” | |
| Flap | | | r | | | | | |
| | | | “l” | | | | | |
| Glide | w | | | | y | | w | |

(2) Japanese consonant phonemes (and allophones) in the native Yamato stratum
(c.f. Vance 1987, Itō & Mester 1995)

| | Bilabial | Labiodental | Alveolar | Postalveolar | Palatal | Retroflex | Velar | Glottal |
|-----------|------------|-------------|-------------|-------------------------|------------|-----------|------------|----------|
| Stop | p b | | t d | | | | k g | |
| Fricative | (ɸ) | | s z | (ɕ) | (ç) | | | h |
| Affricate | | | (ts) | (tɕ) (dʒ) | | | | |
| Nasal | m | | n | | | | ŋ | |
| Flap | | | r | | | | | |
| Glide | w | | | | y | | w | |

(3) Summary of Woleaian and Japanese vowels (Sohn 1975, Vance 1987)
(Vowels in both languages, **Woleaian only**, and **Japanese only**)

| | Front | Center | | Back | |
|------|-------|-----------|---------------|-----------|---------------|
| | | Unrounded | Rounded | Unrounded | Rounded |
| High | i | | ɨ “iu” | ɯ | u |
| Mid | e | | ɛ “oe” | | o |
| Low | | a | | | ɔ “oa” |

Japanese possesses a complete series of voiced stops /b/, /d/ and /g/, while Woleaian does not. Also, Japanese has a voiced fricative /z/ and a voiceless /h/, which Woleaian lacks. In addition, as shown in (3) above, Woleaian does not have the Japanese high back unrounded vowel /ɯ/, though it has a high center rounded /ɨ/ and a high back rounded /u/. Therefore, a Woleaian speaker must adapt these Japanese sounds into Woleaian ones when s/he borrows a word.

2.2. Phonetic vs phonological adaptation

The current discussion of loanword phonology usually recognizes two models of loanword adaptation – phonetic adaptation and phonological adaptation. An example of phonetic adaptation appears in Thai in example (4) (Kenstowicz & Suchato 2006). The English phoneme /p/ has at least two allophones: [p] and [p^h]. They are mapped into the Thai phonemes /p/ and /p^h/, despite the fact that they belong to the same phoneme in English. In other words, Thai speakers are able to notice the phonetic differences between [p] and [p^h], adapted them into two separate phonemes, instead of lumping them into a single phoneme.

- (4) Phonetic adaptation: English stop → Thai (Kenstowicz & Suchato 2006)
- | | |
|---------------------|---------------------|
| ENG /p/ | Thai |
| [p ^h]in | /p ^h in/ |
| s[p]are | /səpɛe/ |

On the other hand, phonological adaptation of loanwords ignores the allophonic variations in the donor’s language, and matches the donor’s phonemes one-by-one to the native ones. This is shown in the example (5) (LaCharité & Paradis 2005). The English phoneme /t/ has two allophones of [t] and [ɾ], while Mexican Spanish has exactly the two phonemes /t/ and /ɾ/. Had the Mexican Spanish speakers paid attention to the allophonic variations, the English /t/ would have been adapted as two different phonemes /t/ and /ɾ/, depending on the environments. However, speakers of Mexican Spanish ignored the variations and simply matched the English phoneme /t/ into Mexican Spanish /t/.

- (5) Phonological adaptation: English alveolar flap → Mexican Spanish (LaCharité & Paradis 2005)
- | | |
|---------------|---------------------------|
| ENG /t/ → [ɾ] | Mexican Spanish /t/, */ɾ/ |
| bi/t/er → [ɾ] | bi/t/əɾ |
| wa/t/er → [ɾ] | wɔ/t/əɾ |

Therefore, our research questions are (1) how would Woleaian adapt the Japanese sounds, and (2) whether they adapt the sounds phonetically or phonologically.

3. Adaptation of Japanese consonants into Woleaian

The orthography used for Woleaian is directly adopted from Sohn & Tawerilmang (1976), while the Japanese romanization uses the standard Hepburn system. Readers are reminded, however, that it is very unlikely for these romanizations to have any significant impact on the adaptation of Japanese words, due to the following reasons: (1) the Woleaian dictionary (Sohn & Tawerilmang 1976) and grammar (Sohn 1975) were written long after the Japanese words were borrowed, and (2) the Japanese language was taught using the traditional Japanese writing systems (Hiragana and Katakana) and Kanji (Chinese characters) in Micronesia during the presence of Japanese military (Shuster 1978).

3.1. Bilabials

3.1.1. /p/

Japanese /p/ is straightforwardly adapted as Woleaian /p/:

| | | | |
|-----|--------------|--------------|--------------|
| (6) | Japanese /p/ | Woleaian /p/ | |
| | [p]achinko | [p]aachingko | “slingshot” |
| | [p]annomi | [p]annomi | “breadfruit” |
| | gam[p]eki | kaam[p]eek | “dock” |
| | sam[p]atsu | sam[p]aash | “haircut” |

3.1.2. /b/

Japanese /b/ sounds are commonly adapted as Woleaian / ϕ /, while it also becomes /p/ sometimes, often after a nasal. This can be seen in the data set (7).

| | | | |
|-----|--------------|---------------------------------------|------------------|
| (7) | Japanese /b/ | Woleaian / ϕ / and sometimes /p/ | |
| | [b]aikin | [ϕ]aiking | “disease” |
| | [b]ōkūgō | [ϕ]ookuugo | “shelter” |
| | tsu[b]ame | chu[ϕ]ame | “swallow (bird)” |
| | kōkū[b]ōkan | koko[ϕ]okang | “carrier” |
| | [b]aidoku | [p]aitok | “syphilis” |
| | [b]akudan | [p]akutang | “bomb” |
| | nom[b]ei | nom[p]e | “drunkard” |
| | shim[b]un | sim[p]iung | “newspaper” |

(8) Count of adaptation of Japanese [b] in Woleaian

| | [ϕ] | [p] |
|-------|-----------|---------|
| Count | 16 (64 %) | 9 (36%) |

Here we observe a split in adapting Japanese /b/ into Woleaian. In many cases, instead of its voiceless counter part /p/, the /b/ sound is mapped to the voiceless bilabial fricative /ϕ/. It is possible that Woleaian speakers tried to distinguish Japanese /p/'s from /b/'s, and thus adapted them into two Woleaian different categories (/p/ and /ϕ/ respectively). In other occasions, Woleaian speaker have decided that the /p/ is phonetically more similar to Japanese /b/, and thus used /p/ to match. This split is comparable to data below in 3.2.4, where Japanese /z/ is split into /s/ and /c/ in Woleaian.

Vance (1987) discusses an optional rule in Japanese which changes /b/ into [β] intervocalically. It is possible that the Japanese /b/ becomes [β], and then turns into Woleaian /β/. However, this does not explain how the word-initial /b/ in Japanese also becomes /β/ in Woleaian. Therefore, this is unlikely to be the main reason for Woleaians to adapt Japanese /b/ as /β/.

3.1.3. /m/

As both languages possess bilabial nasal as phonemes, Japanese /m/ is easily adapted as /m/ in Woleaian.

| | | | |
|-----|--------------|--------------|------------------|
| (9) | Japanese /m/ | Woleaian /m/ | |
| | [m]iyari | [m]iyaari | “binocular” |
| | [m]iso | [m]iiso | “soybean paste” |
| | tsuba[m]e | chubaa[m]e | “swallow (bird)” |
| | su[m]i | su[m]i | “crayon” |

When /m/ occurs before either /o/ or /u/ in Japanese, it is adapted into Woleaian as /m^w/. The adapted vowels after the /m^w/, however, do not necessarily correspond to the /o/ or /u/ in Japanese.

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| | | | |
|------|---------------------|--|--|
| (10) | Japanese /mo/, /mu/ | Woleaian /m ^w V/ | |
| | [m]o[m]otarō | [m ^w]o[m ^w]otaro | “momotarō (a hero in Japanese folklore)” |
| | [m]onosashi | [m ^w]unosasi | “ruler” |
| | nani[m]onai | nani[m ^w]onai | “nothing” |
| | ta[m]ushi | ta[m ^w]ishi | “skin fungus” |

All Japanese /m/s in (10) occur before either /o/ or /u/, and are mapped into Woleaian /m^w/. However, these /o/'s become /o/ or /u/ in Woleaian, while /u/'s turn into /u/ or /i/. On the other hand, Woleaian phonotactics does allow sequences of /m^w/ plus front/low vowels. Examples from (11) shows that the /m^w/ can occur with all six vowels. Therefore, instead of Woleaian phonotactics, it was the (mis) adaptation process that changed the vowel quantities.

| | | |
|------|----------------------|-----------------------------------|
| (11) | /m ^w a:l/ | “confused” |
| | /m ^w e:l/ | “to tie, bind, fasten” |
| | /m ^w i:l/ | “to walk together, holding hands” |
| | /m ^w u:ɕ/ | “firewood” |
| | /m ^w o:c/ | “kind of fish” |
| | /m ^w u:l/ | “caterpillar, silkworm” |

The adaptation of /u/ is detailed in 4.1 below.

3.2. Alveolars (and postalveolars)

3.2.1. /t/

Japanese /t/ has three allophones – (1) [ts] before the high back unrounded [u]; (2) [tɕ] before the high front unrounded [i]; and (3) [t] elsewhere (Itō & Mester 1995). The allophone [t] is simply adopted as [t] in Woleaian:

| | | | |
|------|------------------|--------------|---------------------|
| (12) | Japanese /t/ [t] | Woleaian /t/ | |
| | [t]aiko | [t]aiko | “drum” |
| | [t]ōdai | [t]ootai | “tower, lighthouse” |
| | saruma[t]a | saruma[t]a | “underwear” |

On the other hand, the Japanese [tɕ] becomes mostly /c/ in Woleaian, but is occasionally adopted as /ɕ/.

- (13) Japanese /t/ [t̚] Woleaian /c/ and /s̥/
 [t̚]i[t̚]ibando [c]i[c]ibanto “brassiere”
 pa[t̚]inko paa[c]ino “slingshot”
 ha[t̚]i ga[c]i “eight”
 shi[t̚]i si[s̥]i “seven”

- (14) Count of adaptation of Japanese [t̚] in Woleaian

| | [c] | [s̥] |
|-------|-----------|--------|
| Count | 15 (94 %) | 1 (6%) |

Finally, the Japanese allophone [ts] is adopted almost exclusively as Woleaian [c]. However, there are also cases where it is adopted as [s̥] or [t].

- (15) Japanese /t/ [ts] Woleaian /c/, /s̥/ and /t/
 [ts]ubame [c]ubame “swallow (bird)”
 [ts]uki [c]uki “moon”
 ku[ts]ushita ku[c]usita “socks”
 sampa[ts]u sampaa[s̥] “haircut”
 [ts]uruhashi [t]urubbashi “pickax”

- (16) Count of adaptation of Japanese [ts] in Woleaian

| | [c] | [s̥] | [t] |
|-------|----------|----------|----------|
| Count | 5 (72 %) | 1 (14 %) | 1 (14 %) |

This appears to be a phonetically motivated pattern of loanword adaptation. The allophones of the Japanese phoneme /t/ – [t], [t̚] and [ts] – are being adapted as a number of variants in Woleaian. Therefore, the phonemic category is not preserved, and the adaptation is phonetically driven.

3.2.2. /d/

The adaptation of Japanese /d/ is very simple – all /d/ sounds become /t/ in Woleaian (and surfaces as [t]).

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| | | | |
|------|--------------|--------------|---------------------------|
| (17) | Japanese /d/ | Woleaian /t/ | |
| | [d]aikusan | [t]aikusang | “carpenter” |
| | [d]empō | [t]empo | “dispatch, radio” |
| | [d]enki | [t]eengki | “flashlight, electricity” |
| | bai[d]oku | pai[t]ok | “syphilis” |
| | baku[d]an | paku[t]ang | “bomb” |

3.2.3. /s/

Japanese /s/ as two allophones: [ç] before an [i] or [y], and [s] elsewhere. Both of these allophones are adapted as /s/ in Woleaian.

| | | | |
|------|------------------|--------------|-------------|
| (18) | Japanese /s/ [s] | Woleaian /s/ | |
| | [s]aifu | [s]aaif | “wallet” |
| | [s]en[s]ei | [s]en[s]ei | “teacher” |
| | [s]umi | [s]umi | “crayon” |
| | kō[s]an | koo[s]ang | “surrender” |
| | rakka[s]an | raake[s]ang | “parachute” |

| | | | |
|------|------------------|--------------|-------------|
| (19) | Japanese /s/ [ç] | Woleaian /s/ | |
| | [ç]i | [s]i | “four” |
| | sa[ç]mi | sa[s]imi | “fish; raw” |
| | kai[ç]a | kai[s]a | “company” |

3.2.4. /z/

Japanese /z/ sound has two allophones: [dz] before [i] or [j], and [z] elsewhere. [z] sounds are straightforwardly adapted as Woleaian /s/ (and surface as [s]).

| | | | |
|------|------------------|--------------|------------------|
| (20) | Japanese /z/ [z] | Woleaian /s/ | |
| | [z]asshi | [s]assi | “magazine” |
| | [z]ōri | [s]oori | “slipper” |
| | kake[z]an | kake[s]ang | “multiplication” |

Similarly, the allophone [dz] mostly becomes /s/ in Woleaian, but is also adapted as /ç/ in a number of cases.

| | | | |
|------|-------------------|---------------------|------------------------|
| (21) | Japanese /z/ [dz] | Woleaian /s/ or /c/ | |
| | [dz]anken | [s]ankeng | “paper-scissors-stone” |
| | [dz]ikan | [s]ikang | “time” |
| | [dz]idōsha | [s]toosa | “car” |
| | kan[dz]i | kan[s]i | “Chinese characters” |
| | [dz]ū | [c]u | “ten” |
| | ben[dz]o | ben[c]o | “toilet” |

(22) Count of adaptation of Japanese [dz] in Woleaian

| | [s] | [c] |
|-------|----------|----------|
| Count | 7 (70 %) | 3 (30 %) |

While the Japanese allophone [z] is consistently adapted as Woleaian /s/, we can see a split of phonetic and phonological adaptation for the allophone in [dz] (21). First of all, a portion of Japanese [dz] is adopted as Woleaian /s/, along with the Japanese [z]. This match of phonemic categories between Japanese and Woleaian is an evidence of phonological adaptation. On the other hand, there are also cases of [dz] becoming /c/, instead of /s/, in Woleaian. This shows that Woleaian speakers did notice the phonetic differences between Japanese [z] and [dz] in cases, and thus phonetically adapted these allophones differently.

3.2.5. /n/

Adaptation of Japanese /n/ is very consistent: they become /n/ in Woleaian.

| | | | |
|------|-----------------|------------------|-----------|
| (23) | Japanese /n/ | Woleaian /n/ | |
| | [n]ami | [n]ami | “wave” |
| | [n]a[n]imo[n]ai | [n]a[n]imwo[n]ai | “nothing” |
| | mo[n]osashi | mwu[n]osasi | “ruler” |

3.2.6. /r/

We should also consider the cases of the adaptation of Japanese (post) alveolar flap /r/. While Woleaian also has an alveolar flap /r/, the Japanese /r/ is not mapped to the Woleaian /r/, but is instead adapted as a retroflex fricative /z/.

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| | | | |
|------|--------------|--------------------|------------|
| (24) | Japanese /r/ | Woleaian /z/, */r/ | |
| | zō[r]i | soo[z]i | “slipper” |
| | hi[r]agana | gi[z]akena | “hiragana” |
| | fu[r]oshiki | fu[z]osiki | “wrapper” |

3.3. Velar and others

3.3.1. /k/

Not surprisingly, Japanese /k/s are directly matched with Woleaian /k/s.

| | | | |
|------|--------------|--------------|------------------|
| (25) | Japanese /k/ | Woleaian /k/ | |
| | [k]ōsan | [k]oosang | “surrender” |
| | [k]a[k]ezan | [k]a[k]esang | “multiplication” |
| | furoshi[k]i | furosi[k]i | “wrapper” |

3.3.2. /g/

There is a process in Japanese which changes /g/ sounds into a velar nasal after a nasal sound (i.e. /g/ → [ŋ] / ŋ___), and this nasalized pronunciation “has kind of official status” (Vance 1987: 110). If Woleaian speakers adapt the Japanese sounds phonetically, Japanese /g/s would be treated differently in different environments where they surface as [g] and [ŋ]. On the other hand, if Woleaian speakers adapt the sounds phonologically, all the Japanese /g/s should be treated the same.

| | | | |
|------|--------------|------------------------------------|---------------|
| (26) | Japanese /g/ | Woleaian /k/ but /ŋ/ after a nasal | |
| | [g]ampeki | [k]aampeek | “dock” |
| | [g]unkan | [k]iungkang | “warship” |
| | hira[g]ana | gira[k]ena | “hiragana” |
| | ha[ŋŋ]ō | gan[ŋŋ]o | “rice cooker” |
| | ka[ŋŋ]ofu | ka[ŋŋ]of | “nurse” |

Based on the data in (26), the adaptation of Japanese /g/ appears to be phonetically motivated, as the /g/ sounds becomes /k/ in Woleaian *unless* when it occurs after a nasal, where it becomes /ŋ/. This split in adaptation suggests that Woleaian speakers are aware of the allophonic differences when borrowing the words.

3.3.3. /h/

Japanese /h/ has at least three allophones – (1) [ϕ] before the high back unrounded [u]; (2) [ç] before the high front unrounded [i]; and (3) [h] elsewhere (Itō & Mester 1995). One might expect the [ϕ] sound in Japanese would be simply adapted into Woleaian as /ϕ/, yet this again is not we see from the data: Japanese [ϕ] becomes /f/ in Woleaian (27). The Japanese [ç] sound becomes /x/ or /k/, as in (28), while the [h] sound becomes /x/ or /s/ or even /ϕϕ/ in Woleaian (30).

(27) Japanese /hu/ [ϕu] Woleaian /f/

| | | |
|-------------|------------|-------------|
| [ϕ]undoshi | [f]untoosi | “loincloth” |
| [ϕ]uroshiki | [f]urosiki | “wrapper” |
| kango[ϕ]u | kanngo[f] | “nurse” |
| sai[ϕ]u | saai[f] | “wallet” |

(28) Japanese /hi/ [çi] Woleaian /x/ or /k/

| | | |
|------------|------------|------------------------------|
| [ç]inomaru | [x]inomaru | “Japanese flag” |
| [ç]iragana | [x]irakena | “hiragana” |
| [ç]inomaru | [k]inomaru | “Japanese flag” ² |
| [ç]ikōjo | [s]kooso | “airport” |

(29) Count of adaptation of Japanese [ç] in Woleaian

| | [x] | [k] | [s] |
|-------|----------|----------|----------|
| Count | 2 (40 %) | 1 (20 %) | 2 (40 %) |

(30) Japanese /h/ Woleaian /x/, /s/ or /ϕϕ/

| | | |
|--------------|--------------|---------------|
| [h]achi | [x]achi | “eight” |
| [h]angō | [x]anngo | “rice cooker” |
| [h]appyō | [x]appiyo | “to announce” |
| [h]aramaki | [s]aremaaki | “belt” |
| tsuru[h]ashi | туру[ϕϕ]ashi | “pickax” |

(31) Count of adaptation of Japanese [h] in Woleaian

| | [x] | [s] | [ϕϕ] |
|-------|----------|----------|----------|
| Count | 6 (75 %) | 1 (13 %) | 1 (13 %) |

First of all, these adaptations of Japanese /h/ are phonetically motivated, as we have a split at least between Japanese [ϕ], which becomes /f/, and [ç]&[h], which becomes /x/ or /k/ (or sometimes /s/). What is unexpected, however, is the adaptation of Japanese [ϕ] into Woleaian /f/, regardless of the presence of the phoneme /ϕ/ in Woleaian. This might be explained by a push-chain-like process, beginning from the adaptation of Japanese [b] into /ϕ/ in Woleaian, which in turn pushes Japanese /h/ → [ϕ] to be adapted as Woleaian /f/. This shows yet again a mix of phonological and phonetic adaptation.

3.3.4. /y/ and Cy sequences

The /y/ sound in Japanese is mapped to the /y/ in Woleaian when it occurs as the beginning of a syllable.

| | | | |
|------|--------------|--------------|--------------|
| (32) | Japanese /y/ | Woleaian /y/ | |
| | [y]akyū | [y]aakiyu | “baseball” |
| | ko[y]ashi | ko[y]aas | “fertilizer” |
| | mi[y]ari | mi[y]aari | “binocular” |
| | ni[y]aku | ni[y]aaku | “to unload” |

A /Cy/ cluster can occur at the beginning of a syllable in Japanese. However, since Woleaian prohibits complex onsets, the vowel [i] is inserted between the /C/ and /y/ when such Japanese clusters are adapted into Woleaian (33).

| | | | |
|------|---------------|----------------|------------|
| (33) | Japanese /Cy/ | Woleaian /Ciy/ | |
| | [by]ōki | [piy]ooki | “sickness” |
| | [hy]aku | [hiy]aku | “hundred” |
| | ben[ky]ō | beng[kiy]o | “study” |
| | ha[ppy]ō | ga[ppiy]o | “announce” |
| | ya[ky]ū | yaa[kiy]u | “baseball” |

However, if the /C/ in /Cy/ is an alveolar obstruent, it becomes an affricate and/or palatalized (Itō and Mester 1995). As a result, this /Cy/ sequence is adapted as a single postalveolar consonant in Woleaian.

| | | | |
|------|---------------------|-----------|----------------------------|
| (34) | Japanese /ty/, /sy/ | Woleaian | (see also 3.2.1 and 3.2.3) |
| | in/ty/ō → [tɕ] | iin[ɕ]o | “chief of hospital” |
| | kō/ty/ō → [tɕ] | koo[ɕ]o | “superintendent” |
| | kai/sy/a → [ɕ] | kai[s]a | “company” |
| | ho/sy/ūka → [ɕ] | goo[s]uka | “intermediate grades” |

3.3.5. Moraic nasal

The Japanese moraic nasal appears as codas in syllables. Its place of articulation varies from velar to uvular, which is different from study to study (Vance 1987). In Woleaian, it is adopted as a velar /ŋ/ at the end of a word.

| | | | |
|------|-----------------------|--------------|------------------|
| (35) | Japanese moraic nasal | Woleaian /ŋ/ | |
| | kakesa/N/ | kakesa/ŋ/ | “multiplication” |
| | baiki/N/ | baiki/ŋ/ | “disease” |
| | raika/N/ | raika/ŋ/ | “detonator” |

When Japanese moraic nasal occurs before another consonant, it also receives the place of articulation from the following consonant (Vance 1987). We can see this reflected in Woleaian loanwords; the moraic nasal becomes [m] before bilabial consonants, [n] before alveolar and postalveolar consonants, and [ŋ] before velar consonants.

| | | | |
|------|-----------------------|------------|--------------|
| (36) | Japanese moraic nasal | Woleaian | |
| | no[m]bei | no[m]pe | “drunkard” |
| | te[m]pura | te[m]pura | “fried food” |
| | u[n]ten | uu[n]teeng | “driving” |
| | be[n]jo | be[n]cho | “toilet” |
| | pa[n]nomi | pa[n]nomi | “breadfruit” |
| | be[ŋ]kyo | be[ŋ]kiyo | “study” |

Here we see a phonetic adaptation of the Japanese moraic nasal. It splits into Woleaian /m/, /n/ and /ŋ/, corresponding to the Japanese allophones.

4. Adaptation of Japanese vowels

4.1. Japanese /i/

Japanese /i/ is stably adapted as /i/ in Woleaian.

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| | | | |
|------|--------------|--------------|--------|
| (37) | Japanese /i/ | Woleaian /i/ | |
| | sh[i] | s[i] | “four” |
| | [i]ch[i] | [i]c[i] | “one” |
| | tsuk[i] | cuk[i] | “moon” |

4.2. Japanese /e/ and /a/

Japanese /e/ and /a/ are adapted as Woleaian /e/ (38) and /a/ (39) respectively, with only one exception found.

| | | | |
|------|--------------|--------------|-------------------|
| (38) | Japanese /e/ | Woleaian /e/ | |
| | s[e]n | s[ee]ng | “line” |
| | b[e]njo | b[e]ncho | “toilet” |
| | tsubam[e] | chubaam[e] | “swallow (bird)” |
| | Exception: | | |
| | s[e]ntōki | s[i]ntooki | “fighter (plane)” |

| | | | |
|------|--------------|--------------|---------------------|
| (39) | Japanese /a/ | Woleaian /a/ | |
| | h[a]ngō | g[a]nngo | “rice cooker” |
| | k[a]nji | k[a]nsi | “Chinese character” |
| | r[a]ik[a]n | r[a]ik[a]ng | “detonator” |
| | tempur[a] | teempur[a] | “fried food” |

There are two rules in Woleaian that raise the vowel /a/. First, /a/ becomes [e] when the vowel in the next syllable is another /a/. (Sohn 1971)

| | | |
|------|-----------------------|----------------|
| (40) | /a/ → e / __Ca | |
| | /matai/ → [metai] | “my eyes” |
| | /kakaŋi/ → [kekaŋi] | “be eating it” |
| | /yafarai/ → [yaferai] | “my shoulders” |

This rule, however, is blocked when the first vowel is in fact a long /a/:

| | | |
|------|-----------------------------------|-----------|
| (41) | */a:/ → e / __Ca | |
| | /fa:raxi/ → [fa:raxi], *[fe:raxi] | “to walk” |
| | /xa:mami/ → [xa:mamj], *[xe:mamj] | “we” |

The Japanese loanwords follow the same pattern. If a loanword contains an /aCa/ sequence, the first /a/ becomes an [e].

| | | | |
|------|----------------|----------------|----------------------|
| (42) | Japanese /aCa/ | Woleaian [eCa] | |
| | sak[a]dashi | sak[e]dashi | “to stand” |
| | k[a]tak[a]na | k[e]tak[e]na | “Katakana character” |
| | komatt[a]na | komatt[e]na | “troubled” |

On the other hand, a Japanese /aCa/ sequence is sometimes adapted as /a:Ca/ in Woleaian. The long /a:/ will be unaltered. To lengthen the vowel /a/ is possibly a strategy to preserve its quality so as to match the original /a/ sound in Japanese.

| | | | |
|------|----------------|-----------------|-------------------------|
| (43) | Japanese /aCa/ | Woleaian [a:Ca] | |
| | rakk[a]san | ra:k[a:]san | “parachute” |
| | t[a]ma | t[a:]ma | “marble; electric bulb” |
| | k[a]ma | k[a:]ma | “sickle” or “pot” |

The second Woleaian rule raises /a/ to [e] if the both the previous and next vowels are high. This happens regardless of absence or presence of consonants between /a/ and the other vowels.

| | | |
|------|--|--------------|
| (44) | /a/ → e/V _{HI} (C)__(C) V _{HI} | |
| | /itai/ → [itei] | “my name” |
| | /uəli/ → [ueɭi] | “neck of” |
| | /raxiraxi/ → [raxireɣi] | “to line up” |

Similar to the first rule, it does not affect the long /a:/.

| | | |
|------|--|------------------|
| (45) | /i ta:i/ → [i ta:i], *[i te:i] | “I no longer...” |
| | /nixə:usapə/ → [nixə:usapɛ], *[nixə:usapɛ] | “area below eye” |

The Japanese loanwords are coherent with this rule as well.

| | | | |
|------|--|-------------|-----------|
| (46) | Japanese /V _{HI} (C)a(C)V _{HI} / | Woleian [e] | |
| | heit[a]i | geit[e]i | “soldier” |

And similar to the first rule, Woleaian lengthened a number of the /a/ sounds in order to exempt them from the a-raising rule, thus maintaining the vowel quality to match the original Japanese /a/.

| | | | |
|------|--|---------------|-------------|
| (47) | Japanese /V _{HI} (C)a(C)V _{HI} / | Woleaian [a:] | |
| | kirai | kir[a:]i | “bomb” |
| | miy[a]ri | miy[a:]ri | “binocular” |
| | niy[a]ku | niiy[a:]ku | “unload” |

In sum, we see mixed strategies in adapting Japanese a–a sequences. They are either adapted as e–a sequences which comply with the Woleaian constraints, or as a:–a sequences, where the preservation of vowel quality is prioritized over vowel length.

4.3. Japanese /o/

Japanese /o/ is adapted as /o/ into Woleaian in all cases.

| | | | |
|------|--------------|--------------|----------|
| (48) | Japanese /o/ | Woleaian /o/ | |
| | g[o] | k[o] | “five” |
| | r[o]ku | r[o]ku | “six” |
| | benj[o] | bench[o] | “toilet” |

4.4. Japanese /ɯ/

The Japanese high back unrounded /ɯ/ usually becomes /u/ in Woleaian, but is sometimes /ɨ/, /i/ or /o/.

| | | | |
|------|--------------|--|-------------|
| (49) | Japanese /ɯ/ | Woleaian /u/ usually, but also sometimes /ɨ/, /i/ or /o/ | |
| | k[ɯ]r[ɯ]ma | k[u]r[u]ma | “cart” |
| | ts[ɯ]ki | ch[u]ki | “moon” |
| | [ɯ]don | [u:]toong | “noodle” |
| | niyak[ɯ] | niiyaak[u] | “unload” |
| | g[ɯ]nkan | k[ɨ]ngkang | “warship” |
| | shinb[ɯ]n | simp[ɨ]ng | “newspaper” |
| | f[ɯ]ton | f[i]toong | “mattress” |
| | ab[ɯ]nai | ab[o]nai | “dangerous” |
| | sar[ɯ]mata | sar[e]maata | “underwear” |

(50) Count of adaptation of Japanese [u] in Woleaianⁱ

| | [u] | [ʉ] | [i] | [o] | [e] |
|-------|-----------|---------|---------|---------|---------|
| Count | 82 (86 %) | 4 (4 %) | 4 (4 %) | 4 (4 %) | 1 (1 %) |

Despite the variations, it is safe to claim that the vowel height and frontness are matched most of the times, and thus Japanese /u/ is mapped into Woleaian /u/. The non-roundedness of /ʉ/ is only sometimes prioritized, when forming the Woleaian /ʉ/ and /i/ in a few occasions. There are also a few cases of /ʉ/ being altered as Woleaian /o/, sacrificing both the vowel height and roundedness.

4.5. Adapting final vowels

Woleaian has a very productive word-final vowel erosion rule — underlyingly long vowels become short word finally, while underlyingly short vowels become voiceless. (Sohn 1975)

- (51) Woleaian /V/ → [V̥]
- /keli/ → [kel̥i] “to dig”
 - /mase/ → [mas̥e] “to die”
 - /gacʉ/ → [gac̥ʉ] “good”
 - /kabu/ → [kab̥u] “dull”
 - /matto/ → [mat̥to] “to sit”

As a result, whenever a Japanese word ends in a vowel, regardless of whether the original vowel is long (52) or short (53), that vowel is adapted as an underlyingly long vowel in Woleaian, and becomes short in the surface form.

- (52) Japanese [V:] Woleaian /V:/ → [V̥]
- bōkūg[o:] bookuug/o:/ → [o] “shelter”
 - hang[o:] gang/o:/ → [o] “rice cooker”
 - happy[o:] gappiy/o:/ → [o] “to announce”
 - nomb[e:] nomp/e:/ → [e] “drunkard”
 - shōch[u:] sooch/u:/ → [u] “liquor”

| | | | |
|------|--------------|---------------------|----------------------|
| (53) | Japanese [V] | Woleaian /V:/ → [V] | |
| | g[o] | k/o:/ → [o] | “five” |
| | hach[i] | gach/i:/ → [i] | “eight” |
| | kuw[a] | kuw/a:/ → [a] | “hoe” |
| | sak[e] | sak/e:/ → [e] | “Japanese sake wine” |
| | komar[ɰ] | komar/u:/ → [u] | “feel bad” |

There is also a rule in casual spoken Japanese which devoices/deletes word-final high vowels (Vance 1987). This is also reflected in some of the Woleaian loanwords.

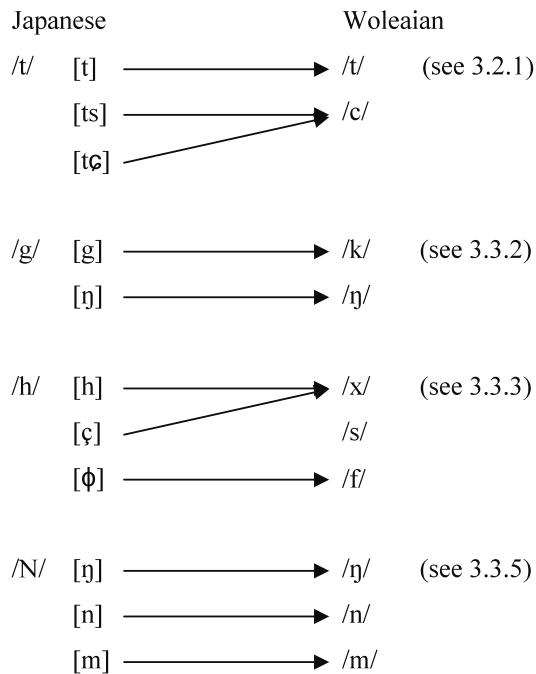
| | | | |
|------|---------------|---------------------|------------|
| (54) | Japanese [V̥] | Woleaian /?/ → [V̥] | |
| | baidok[ɰ̥] | paito/ku/ → [k_] | “syphilis” |
| | gampek[j̥] | kaampee/ki/ → [k_] | “dock” |
| | sampats[ɰ̥] | sampaa/fɰ̥/ → [ʃ_] | “haircut” |
| | saif[ɰ̥] | sai/fa/ → [f_] | “wallet” |
| | kangof[ɰ̥] | kanngo/fi/ → [f_] | “nurse” |

Based on the first three examples in (54), it seems that Woleaian speakers do have knowledge to some of the devoiced vowels in Japanese, as they are mapped to the usual counter parts in Woleaian ([ɰ̥] to [u]/[ɰ], and [i̥] to [i]). However, in the last two examples, the devoiced final [ɰ̥]’s in Japanese are mapped into Woleaian as /a/ and /i/, providing at least two cases in which the Woleaian speakers seem to be ignorant of what the underlying Japanese vowels are.

5. Discussion

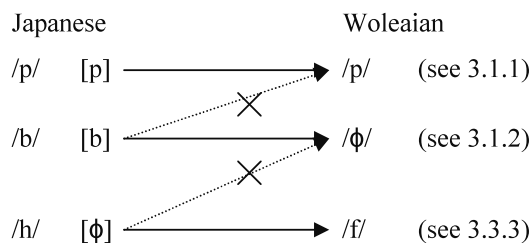
We have seen that mixed strategies are employed when Woleaian is adapted to Japanese sounds. While some adaptations seem to be phonetically motivated (55), others are not clear (56).

(55) Phonetic adaptation of Japanese sounds in Woleaian



In (55), the Japanese phonemes are split into different allophones, while each allophones are adapted differently. The phoneme categories have nothing to do with the adaptation of sounds, and thus these are cases of phonetic adaptations.

(56) Phonological adaptation of Japanese



A push chain is observed in (56). When /p/ is adapted as /p/ in Woleaian, /b/ is then forced to be adapted as /ϕ/ in order to preserve the contrast between the phoneme categories. This in turn forces the [ϕ] allophone of /h/ to be adapted as /f/. This shows that Woleaian speakers seem to have knowledge of the Japanese phoneme categories, and therefore preserved the phonemic contrast in the loanword adaptation.

Whether Japanese words are both phonetically and phonologically adapted into other

Micronesian languages remains largely uninvestigated. Miyagi (2000) listed 75 Japanese loanwords that are commonly used in Pohnpeian. While a few phonemic correspondences are specified, Miyagi did not conclude whether the loanwords are phonetically or phonologically adapted. From her list of 75 words, however, it seems that many of the loanwords are phonetically adapted. For example, Japanese /h/ is deleted when it is [h] in Japanese, but the allophone [ϕ] is preserved as [p^w]. Also, the allophones of Japanese /N/ share the same place of articulation with the following consonant, and therefore are adapted as different nasal consonants in Pohnpeian. These are shown in (57) and (58) below. As the Japanese allophones are adapted into various phonemes in Pohnpeian, it is clear that phonetic adaptation is at work here.

| | | | |
|------|--------------|----------------------------------|------------------|
| (57) | Japanese /h/ | Pohnpeian Ø or /p ^w / | |
| | [h]aizara | /_aysara | “ashtray” |
| | [h]ashi | /_asi | “chopsticks” |
| | [ϕ]undoshi | /p ^w untosi | “loincloth” |
| | [ϕ]ūsen | /p ^w uusɛŋ | “balloon” |
| (58) | Japanese /N/ | Pohnpeian /m/, /n/ or /ŋ/ | |
| | fu/N/doshi | p ^w u/n/tosi | “loincloth” |
| | ba/N/pei | pa/m/pɛy | “security guard” |
| | de/N/ki | tɛ/ŋ/ki | “electricity” |
| | daiko/N/ | tayko/ŋ/ | “radish” |

Takahashi (2006) discussed at length that Palauan did not utilize the accentual information from Japanese when borrowing words into Palauan. It also claimed that Japanese words were both phonetically (59) and phonologically (60) adapted into Palauan.

| | | | |
|------|--------------|--------------------|----------------------|
| (59) | Japanese /g/ | Palauan /k/ or /ŋ/ | (Takahashi 2006: 24) |
| | [g]omi | /k/omi | “trash” |
| | [g]omu | /k/omu | “rubber” |
| | dai[ŋ]aku | dai/ŋ/ak | “university” |
| | ne[ŋ]i | ne/ŋ/i | “green onion” |
| (60) | Japanese /b/ | Palauan /p/ | (Takahashi 2006: 26) |
| | /p/anku | /b/angk | “punctured” |

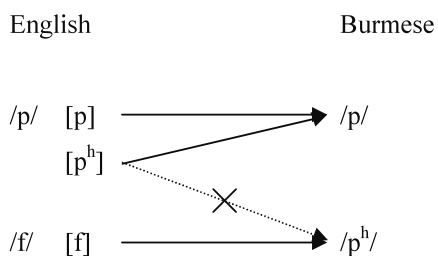
In (59), the Japanese phoneme /g/ is adapted into Palauan /ŋ/ between vowels, and /k/ elsewhere. This split adaptation of a phoneme is a clear case of phonetic adaptation. Takahashi also suggests that the /b/ to /p/ adaptation in (60) is a phonological one, because Palauan prohibits /b/ appearing at a word beginning position. However, one can equally argue that this is a case of phonetic adaptation, with Palauan /b/ being the phonetically closest sound to Japanese /p/. Without any evidence in allophonic adaptation, it is unclear whether Palauan in fact uses both strategies to adapt Japanese sounds.

While it is unclear whether other Micronesian languages utilized both phonetic and phonological information when borrowing the Japanese words, a similar situation can be found in English loanwords in Burmese, which involves both phonetic (61) and phonological adaptation (62) (Chang to appear).

(61) Phonetic adaptation of English sounds in Burmese, adapted from Chang (to appear:16)

| English | Burmese |
|---------------------------|-------------------|
| /k/ [k ^h]ream | /k ^h / |
| ice[k]ream | /k/ |

(62) Phonological adaptation of English sounds in Burmese, adapted from Chang (to appear:13)



Chang (to appear) found that both strategies can be found in the same Burmese loanwords. In (61), the English phoneme /k/ is split into two Burmese phoneme /k^h/ and /k/, according to the [k^h] ~ [k] allophonic variation in English. This shows that the Burmese speakers made use of the phonetic information, without respecting the English phonemic categories, when borrowing the English words. On the other hand, as shown in (62), the Burmese speakers had some access to the English phonemic categories. In order to preserve the distinction between English /p/ and /f/, the speakers adapted English [p^h] into Burmese /p/, instead of a direct match /p^h/, while Burmese /p^h/ is reserved for English /f/.

Since phonological and phonetic knowledge are both utilized when adapting English

sounds into Burmese, the borrowing was performed by Burmese speakers with intermediate knowledge of English. They have some internal awareness of the English phonemes, which allowed them to phonologically preserve the phonemic contrast. On the other hand, they have not yet acquired a native-like fluency, and thus adapted some sounds phonetically based on the allophonic information. This echoes the findings by San Giacomo and Peperkamp (2008). They studied Spanish loanwords in Nahuatl, spoken in southern Mexico, and showed that phonetic adaptation is inversely related to bilingualism within the community. For example, the less bilingual speakers are more likely to adapt the [r] sound phonetically from Spanish to Nahuatl.

The Japanese loanwords in Woleaian are similar to Burmese and Nahuatl, as they all exhibit traits of phonological and phonetic adaptation. In (63), the /t/ phoneme appears as [ts] in Japanese, which is further phonetically mapped to /c/ in Woleaian instead of /t/. On the other hand, the Japanese /b/ is adapted as /ϕ/ in Woleaian, instead of /p/, so as to preserve the phonemic contrast between the Japanese categories of /p/ and /b/.

| | | | |
|------|-------------|------------|------------------|
| (63) | Japanese | Woleaian | |
| | [ts]u[b]ame | [c]u[ϕ]ame | “swallow (bird)” |
| | | | |

The Japanese seized control of Micronesia from 1914 to 1945. About half of school-aged Micronesians were enrolled in Japanese schools by 1930, and all young Micronesians were obligated to attend Japanese schools by 1935 (Hanlon 1994). Micronesians were taught Japanese in these schools, and were forbidden to speak their native languages at public schools (Yui 1998). A number of Chamorro speakers are so fluent in Japanese that they consider Japanese as their “most convenient” language instead of their native one. However, they do not use Japanese with their family, especially their parents, as they can only speak Chamorro (Miyajima 1998). This shows that there are at least two groups of Micronesians in contact with Japanese: an older generation with lesser knowledge of Japanese, and a younger generation who have acquired fluency in Japanese and used Japanese everyday. Should the older generation have borrowed the Japanese words, their limited competence of Japanese would only allow them to preserve the phonemic

categories in some cases, and would otherwise utilize the phonetic information to adapt the Japanese sounds. As a result, loanwords were created with both phonetic and phonological adaptation.

Alternatively, it is equally possible that the “fluent” Japanese speakers in Micronesia have not acquired native-like Japanese phonology. While Yui (1998) suggested that Micronesian children on the main islands were able to “speak Japanese fluently from the second grade”, the amount of contact between Woleaians and Japanese is unknown because of the remoteness of the island. In addition, even fluent Japanese speakers on Chuuk, a main island, were not able to produce a number of native Japanese phonemes, and have substituted them with Chuukese sounds (Toki 1998). This implies that even the fluent speakers of Japanese in Micronesia might not have acquired a native-like phonological competence of Japanese, but have created an interlanguage with both L1 (Micronesian languages) and L2 (Japanese) information. This interlanguage contained incomplete information of Japanese phoneme categories, leading to preservation of some of them in loanwords, while others were processed phonetically and substituted with L1 phonemes.

In sum, it is very likely that Woleaian speakers with limited Japanese competence borrowed the terminologies. The speakers belonged to either an older generation with a limited knowledge of Japanese, or a younger one who are fluent in Japanese but relied on Woleaian phonologies. Their incomplete Japanese competence provided some phonological knowledge to preserve the contrast of a few Japanese phonemes in the loanwords; other times they rely on the phonetic information and matched the Japanese allophones with the closest Woleaian phoneme.

6. Conclusion

In this paper I have provided a preliminary survey of adaptation of Japanese loanwords into Woleaian. The adaptation was performed by Woleaian speakers with limited knowledge of Japanese, and thus a mix of phonological and phonetic strategies was used. This shows that phonological and phonetic loanword adaptations are not mutually exclusive. In other words, the models of loanword adaptations must acknowledge that the same speaker can utilize both phonological and phonetic information to adapt foreign sounds into the native language.

Appendix: Japanese loanwords in Woleaian, found in Sohn & Tawerilmang (1976)

| Woleaian | Japanese source | Gloss |
|-------------|-----------------|----------------------|
| abonai | abunai | “dangerous” |
| baiking | baikin | “disease” |
| bakiing | bakkin | “fine” |
| bariikang | barikan | “hand-clippers” |
| bencho | benjo | “toilet” |
| bengkiyo | benkyō | “study” |
| bookugo | bōkūgō | “shelter” |
| butai | butai | “fleet” |
| chichibanto | chichibando | “bra” |
| chikongki | chiku.on.ki | “record player” |
| Chooseeng | chōseng | “Korea” |
| chu | jyū | “ten” |
| chubaame | tsubame | “swallow” |
| chuki | tsuki | “moon” |
| fitoong | futong | “mattress” |
| funtoosi | fundosi | “loincloth” |
| furoosiki | furoshiki | “wrapper” |
| gachi | hachi | “eight” |
| ganngo | hangō | “rice cooker” |
| gappiyo | happyō | “announce” |
| geitei | heitai | “soldier” |
| ginomaru | hinomaru | “Japanese flag” |
| girakena | hiragana | “hiragana” |
| giyaaku | hyaku | “hundred” |
| goosuka | hosyūka | “intermediate grade” |
| gootaai | hōtai | “bandage” |
| ichi | ichi | “one” |
| ichibang | ichiban | “first” |
| ichineeng | ichinen | “first grade” |
| iincho | inchō | “hospital head” |

| Woleaian | Japanese source | Gloss |
|--------------|-----------------|---------------------|
| ippai | ippai | “full” |
| isongasi | isogasii | “busy” |
| itto | ittō | “win” |
| iyaasai | yasai | “vegetables” |
| kaama | kama | “sickle” |
| kaama | kama | “pot” |
| kaampeek | ganpeki | “dock” |
| kaantooku | kantoku | “foreman” |
| kachito | katsudō | “movie” |
| kaigiung | kaigun | “navy” |
| kaisa | kaisha | “company” |
| kaiyaku | kayaku | “gun powder” |
| makeeru | kakeru | “mark” |
| kakesang | kakezan | “multiplication” |
| kanngof | kangofu | “nurse” |
| kansi | kanji | “Chinese character” |
| kappa | kappa | “raincoat” |
| kereeta | karada | “muscle” |
| ketakena | katakana | “katakana” |
| Kinawa | Okinawa | “Okinawa” |
| kinomaru | hinomaru | “Japanese flag” |
| kintama | kintama | “testicle” |
| kinupakutang | bakudan | “atomic bomb” |
| kiraai | kirai | “bomb” |
| kitenai | kitanai | “dirty” |
| kiungkang | gunkan | “warship” |
| ko | go | “five” |
| kokaito | kōkaidō | “house” |
| kokobaang | kokuban | “blackboard” |
| kokobokang | kōkūbōkan | “carrier” |
| komaaru | komaru | “feel bad” |
| komattena | komattana~ | “trouble” |

| Woleaian | Japanese source | Gloss |
|-------------|-----------------|---------------------|
| koocho | kōchō | “superintendent” |
| kookang | kōkan | “exchange” |
| koome | kome | “rice” |
| koori | koori | “ice” |
| koosang | kōsan | “surrender” |
| kootai | kōtai | “change” |
| koyaas | koyashi | “fertilizer” |
| koyeeng | go en | “five dollars” |
| kuchusita | kutsushita | “socks” |
| kumi | kumi | “team” |
| kuniyooro | konoyarō | “bastard” |
| kuruuma | kuruma | “cart” |
| kuwa | kuwa | “hoe” |
| mamooru | mamoru | “guard” |
| maneeng | mannen | “pen” |
| miiso | miso | “soysauce” |
| miyaari | miyari | “binoculars” |
| Mwomwotaro | momotarō | “Momotarou” |
| mwunosasi | monosashi | “ruler” |
| naamaiki | namaiki | “impudent” |
| naangkimmai | nankin-mai | “rice” |
| naani | nani? | “what” |
| nami | nami | “wave” |
| nangiyochō | nangyōchō | “High Commissioner” |
| nanimwonai | nanimonai | “nothing” |
| ni | ni | “two” |
| niimpu | ninpu | “servant” |
| niyaaku | niyaku | “unload” |
| ningerimes | nigirimeshi | “rice” |
| niwatori | niwatori | “chicken” |
| noomi | nomi | “chisel” |
| noompe | nonbee | “drunkard” |

| Woleaian | Japanese source | Gloss |
|-------------|-----------------|------------------------|
| noori | nori | “glue” |
| paachingko | pachinko | “slingshot” |
| pageero | bakayarō! | “fool” |
| paitok | baidoku | “syphilis” |
| pakeero | bakayarō | “fool” |
| pakutang | bakudan | “bomb” |
| pannomi | pannomi | “breadfruit” |
| pengkyo | benkyō | “study” |
| piyooing | byōin | “hospital” |
| piyooki | byōki | “sickness” |
| raakaasang | rakkasan | “parachute” |
| raakesang | rakkasan | “parachute” |
| raikang | raikan | “detonator” |
| riyaka | riyakaa | “cart” |
| roku | roku | “six” |
| saaif | saifu | “wallet” |
| saakana | sakana | “fish” |
| saiyoonaara | sayōnara | “goodbye” |
| sake | sake | “sake” |
| saketachi | sakadachi | “stand” |
| sakura | sakura | “cherry” |
| sampaash | sanpatsu | “haircut” |
| sanken | janken | “paper-scissors-stone” |
| saremaata | sarumata | “underwear” |
| sasiing | shashin | “picture” |
| sasimi | sashimi | “fish” |
| sassi | zasshi | “magazine” |
| sato | satō | “sugar” |
| seen | sen | “cent” |
| seeng | sen | “line” |
| seineeng | seinen | “youth” |
| seito | seito | “youth” |

| Woleaian | Japanese source | Gloss |
|-----------|-----------------|-------------------------|
| sengko | senkō | “mosquito-coil” |
| sensei | sensei | “teacher” |
| sereibu | shireibu | “officer” |
| si | shi | “four” |
| sikaansu | kikanjyū | “gun” |
| sikang | jikan | “time” |
| sikeeng | shiken | “exam” |
| simpai | shinpai | “worried” |
| simpiung | shinbun | “newspaper” |
| sintooki | sentōki | “fighter” |
| sishi | shichi | “seven” |
| sitoong | futon | “mattress” |
| sitoosa | jidōsha | “car” |
| skiooki | hikōki | “plane” |
| skooso | hikōjō | “airport” |
| soochu | shōchū | “liquor” |
| sooiu | shōyu | “soy sauce” |
| sooko | sōko | “warehouse” |
| soongasi | isogashii | “busy” |
| soori | zōri | “slipper” |
| sooruk | jōriku | “trip” |
| sukiyaaki | sukiyaki | “sukiyaki” |
| sumi | sumi | “crayon” |
| taabi | tabi | “shoe” |
| taama | tama | “marble, electric bulb” |
| taamwisi | tamushi | “skin fungus” |
| taiko | taiko | “drum” |
| taikusang | daikusan | “carpenter” |
| taisob | daijyōbu | “don’t worry” |
| taiyo | taiyō | “sun” |
| takooma | takeuma | “bamboo horse” |
| teempo | denpō | “dispatch” |

| Woleaian | Japanese source | Gloss |
|------------|-----------------|---------------------------|
| teempura | tempura | “fried food” |
| teenchi | denchi | “battery” |
| teeng | ten | “mark” |
| teengami | tegami | “letter” |
| teengki | denki | “flashlight, electricity” |
| teengko | tenko | “roll-call” |
| tokeiku | dokoiku | “hurry!” |
| tooming | tōmin | “natives, islanders” |
| tootai | tōdai | “tower, lighthouse” |
| turubbas | tsuruhashi | “pickax” |
| uunteeng | unten | “driving” |
| uutoong | udon | “noodle, udon” |
| wokas | okashi | “biscuit, candy” |
| wooki | ookii | “big” |
| wosongaach | oshōgatsu | “Christmas” |
| yaakiyu | yakyū | “baseball” |
| yainoko | ainoko | “half-caste, mixed-blood” |
| yasimi | yasumi | “break, rest” |
| yen | yen/en | “dollar” |

Notes

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2. Both [xinomazu] and [kinomazu] appear in the Woleaian dictionary (Sohn & Tawerilmang 1976).
3. Word final vowels are excluded in this count because of the final vowel deletion in Woleaian. See 4.5 for a detailed discussion.

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