Pacific Languages

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CHAPTER 5

Sound Systems

The sound systems of languages in different parts of the Pacific vary enormously, sometimes even when the languages themselves are closely related. Major similarities and differences exist between languages of the three broad genetic groups—Austronesian, Papuan, and Australian. Below I discuss the vowel systems, consonant systems, stress and tone, and the way in which words are structured in each group, touching briefly as well on the development of orthographies.¹

5.1. Oceanic Languages²

5.1.1. Vowel Systems

The great majority of Oceanic languages have five vowel phonemes, which is also the commonest system found among the world’s languages generally. A vowel’s position in the diagram corresponds to how it is described, e.g., i is a high front vowel.

```
i u
 e o
 a
```

This system is universal in the languages of Polynesia and widespread in Melanesia, though among Micronesian languages only Kiribati has five phonemic vowels. This same system has also been reconstructed for Proto Oceanic. In many languages there is also a phonemic (significant) difference between short vowels and long vowels, a long vowel being one that takes almost twice as much time to articulate as a short vowel. The examples
below show, in various languages, that vowel length alone is sufficient to distinguish two otherwise identical words. A long vowel is marked with a following colon: /a:/ is long, and /a/ is short.

**Samoan**

/malo/ ‘loincloth’
/malo:/ ‘hard’
/lulu/ ‘barn owl’
/lu:lu:/ ‘shake’

**Nukuoro**

/nui/ ‘coconut’
/nu:i/ ‘green’
/ahe/ ‘go back’
/ahe:/ ‘when?’

**Paamese**

/men/ ‘it’s ripe’
/me:n/ ‘his tongue’
/vati/ ‘he stopped’
/va:ti/ ‘he’ll bite if’

A handful of languages have fewer than five vowels. One Micronesian language, Marshallese, has been analyzed as having only four vowel phonemes. These are written i, ɨ, e, and a, but they have wide variations in pronunciation. The vowel e, for example, is variously pronounced [ɛ], [e] and [o], depending on the neighboring consonants. Some languages in the Morobe Province of Papua New Guinea also have fewer than five vowels: Mari, for example, has just /i a u/, Adzera /i a o u/.

Quite a few languages have more than five phonemic vowels. Rotuman, for example, has ten. Almost all of the languages of Micronesia have more than five vowels: Kosraean has twelve, Lagoon Trukese and Saipan Carolinian each have nine, Yapese and Ulithian eight, Mokilese seven, and Nauruan, Chamorro, and Palauan six. Some dialects of Ponapean have seven vowel phonemes, others six. (See appendix 3 for the vowel inventories of Kosraean and Mokilese.) Vowel length is also significant in Micronesian languages, as the example shows.

**Mokilese**

/paj/ ‘nest’
/pa:j/ ‘hollow of canoe’
/ros/ ‘darkness’
/ro:s/ ‘flower’

In Melanesia, most languages with more than five vowels have just one or two extra ones. In Tanna and Malakula (Vanuatu), as well as in New Ireland (Papua New Guinea), languages with six vowels generally add /a/ (the sound of a in English words like *ago* or *sofa*). Some languages in Melanesia have developed seven-vowel systems, the basic five vowels plus either front rounded vowels (like the vowels in French *rue* and *heureux*), or a contrast between two different e-sounds and two different o-sounds (/e/ and /ɛ/, /o/ and /ɔ/).

The most complex Oceanic vowel systems, however, are almost certainly those of New Caledonia (see appendix 3). Iaai in the Loyalty Islands,
for example, has eleven short vowels, all of which can also occur long; while Xārācūù, on the mainland, has ten oral and seven nasal vowel phonemes, each of which can occur short or long, yielding thirty-four vowel contrasts!

How do such complex vowel systems evolve out of an original five-vowel system? The changes that took place in different Oceanic languages are very different. Here I give just two kinds of examples. First, phonemes often have more than one pronunciation, depending on their phonetic environment. Imagine that the phoneme /a/ was pronounced [æ] (the sound represented by a in English cat) when the vowel in the next syllable was /i/, but as [a] (like in father) elsewhere. We would have pairs of words like:

<table>
<thead>
<tr>
<th>Long form</th>
<th>Short form</th>
<th>Phonemic pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>/mati/</td>
<td>‘sick’</td>
<td>[mæti]</td>
</tr>
<tr>
<td>/mata/</td>
<td>‘eye’</td>
<td>[mata]</td>
</tr>
</tbody>
</table>

The pronunciation of phonemic /a/—[æ] or [a]—is totally predictable. Now imagine that this language drops out all vowels at the end of words, as has happened in many Oceanic languages. The following changes occur:

<table>
<thead>
<tr>
<th>Long form</th>
<th>Short form</th>
<th>Phonemic pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>[mæti]</td>
<td>&gt;</td>
<td>[mæt] ‘sick’</td>
</tr>
<tr>
<td>[mata]</td>
<td>&gt;</td>
<td>[mat] ‘eye’</td>
</tr>
</tbody>
</table>

Now the contrast between [æ] and [a] creates a minimal pair, and /æ/ has been added to the language’s phonemic (as opposed to phonetic) inventory.

Rotuman illustrates a second kind of process. Most Rotuman words have “long” and “short” forms that are used in different grammatical contexts. In some cases, the short form simply drops the final vowel of the long form. (Note that the symbol ŋ represents the ng sound in English sing, while ? represents the glottal stop.)

<table>
<thead>
<tr>
<th>Rotuman</th>
<th>Long form</th>
<th>Short form</th>
</tr>
</thead>
<tbody>
<tr>
<td>haŋa</td>
<td>haŋ</td>
<td>‘feed’</td>
</tr>
<tr>
<td>heleʔu</td>
<td>heleʔ</td>
<td>‘arrive’</td>
</tr>
</tbody>
</table>

Metathesis, however—two phonemes exchanging places—is more common. With some vowel combinations, metathesis has no further phonological repercussions:

<table>
<thead>
<tr>
<th>Rotuman</th>
<th>Long form</th>
<th>Short form</th>
</tr>
</thead>
<tbody>
<tr>
<td>hosa</td>
<td>hoas</td>
<td>‘flower’</td>
</tr>
<tr>
<td>tiko</td>
<td>tiok</td>
<td>‘flesh’</td>
</tr>
<tr>
<td>pepa</td>
<td>peap</td>
<td>‘paper’</td>
</tr>
</tbody>
</table>
But with other combinations, the two vowels that came into contact have fused to produce a third, different vowel. (The vowel ő is a bit like the vowel in French *heureux*, while ü is the vowel in French *rue*.)

<table>
<thead>
<tr>
<th>Rotuman</th>
<th>Long form</th>
<th>Short form</th>
</tr>
</thead>
<tbody>
<tr>
<td>mose</td>
<td>(&gt; moes &gt;)</td>
<td>mös</td>
</tr>
<tr>
<td>futi</td>
<td>(&gt; fuit &gt;)</td>
<td>füt</td>
</tr>
</tbody>
</table>

Because of this Rotuman, which originally probably had five vowels, now has ten.

### 5.1.2. Consonant Systems

**Polynesian Languages**

In general terms, the Polynesian languages have the simplest consonant systems of all the Oceanic languages. Tongan has the largest inventory of consonant phonemes of all of the Polynesian Triangle languages, with twelve. A number of Polynesian languages, for example, Hawaiian, have only eight consonants:

<table>
<thead>
<tr>
<th>Tongan</th>
<th>Hawaiian</th>
</tr>
</thead>
<tbody>
<tr>
<td>P t k ? p k ?</td>
<td></td>
</tr>
<tr>
<td>v w</td>
<td></td>
</tr>
<tr>
<td>f s h   h</td>
<td></td>
</tr>
<tr>
<td>m n η m n</td>
<td></td>
</tr>
<tr>
<td>l l</td>
<td></td>
</tr>
</tbody>
</table>

The consonant systems of the Polynesian Outlier languages are generally slightly more complex (Krupa 1982). In some cases this is a result of contact with neighboring non-Polynesian languages. First, unlike any Polynesian Triangle language, quite a few Outliers, among them West Futuna, Ifira-Mele, Emae, and Takuu, make a distinction between /l/ and /r/. Second, in addition to the normal Polynesian *stop* consonants /p t k ?/, some Outliers show a contrast with the *aspirated* stops /pʰ tʰ kʰ/ (e.g., Takuu and Kapingamarangi), with the *voiced* stops /b d g/ (Fagauvea), or with the *prenasalized* stops /bⁿ dⁿ/ (e.g., Emae and Pileni). Third, there is contrast between the ordinary nasals /m n η/ and one or more of the voiceless nasals /m̥ n̥/ in Kapingamarangi, Fagauvea, and Pileni.

**Micronesia**

The consonant systems of the languages of Micronesia are quite different from those of the Fijian and Polynesian languages. Lagoon Trukese is fairly
typical of the majority of these languages. It has the following fourteen consonants (/tʃ/ represents a sound something like ch in English church, but with the tongue turned back).

**Lagoon Trukese**

<table>
<thead>
<tr>
<th>P</th>
<th>T</th>
<th>Tʃ</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>N</td>
<td>η</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>S</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>W</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All consonants except /w/ and /y/ have both short and long forms.

**Lagoon Trukese**

/sik/ ‘appear’ /s:ik/ ‘bleed’
/kamw/e/ ‘clam’ /kamw:et/ ‘sweetheart’
/tʃi:m/w/ ‘head’ /tʃ:in/ ‘speedy’
/takir/ ‘laugh’ /tak:itʃ/ ‘torch-fishing’

Most other Micronesian languages have similar consonant systems (including the distinction between short and long consonants), although Kiritibati has no phonemic fricatives. A number have, in addition to the trilled /r̃/, either a flapped /r/ or an /l/. Some, like Kosraean, Nauruan, and Yapese (see appendix 3), have more complex systems of consonants.

**Melanesia**

There is a considerable variety of consonant systems in Melanesia, and although neighboring languages often have similar systems, one cannot make broad generalizations on a geographical basis. It is fair to say, however, that the consonant systems of New Caledonia are considerably more complex than those of the rest of this region.

Some of the simpler consonant systems in this region are found in the New Guinea area. Below, for example, are the consonants of the Tigak language of New Ireland:

**Tigak**

<table>
<thead>
<tr>
<th>P</th>
<th>T</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>N</td>
<td>η</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Probably half of the Melanesian languages would fall into a category of medium complexity as far as any classification of consonant systems is concerned. This complexity usually involves one or more of the following: (1) contrast between oral and prenasalized stops; (2) contrast between simple and aspirated stops; (3) contrast between voiced and voiceless fricatives; and (4) contrast between simple and labialized or velarized consonants. Standard Fijian and the To‘aba‘ita dialect of North Malaita (Solomon Islands) illustrate such phonological systems.

<table>
<thead>
<tr>
<th>Fijian</th>
<th>To‘aba‘ita</th>
</tr>
</thead>
<tbody>
<tr>
<td>(p)</td>
<td>(t)</td>
</tr>
<tr>
<td>(\text{mb})</td>
<td>(\text{mb})</td>
</tr>
<tr>
<td>(n_d)</td>
<td>(\text{nd})</td>
</tr>
<tr>
<td>(\eta_g)</td>
<td>(\eta_g)</td>
</tr>
<tr>
<td>(f)</td>
<td>(f)</td>
</tr>
<tr>
<td>(\delta)</td>
<td>(\theta)</td>
</tr>
<tr>
<td>(m)</td>
<td>(m)</td>
</tr>
<tr>
<td>(\eta)</td>
<td>(\eta)</td>
</tr>
<tr>
<td>(l)</td>
<td>(l)</td>
</tr>
<tr>
<td>(r)</td>
<td>()</td>
</tr>
<tr>
<td>(w)</td>
<td>(w)</td>
</tr>
</tbody>
</table>

An unusual phonological feature of some of the languages of north Malakula and east Santo in Vanuatu are the **apico-labial** consonants /\(\text{p} \vline \text{m}\)/, which are produced with the tip of the tongue touching the upper lip.

The most complex consonant systems in Melanesia are those of the languages of New Caledonia (see appendix 3 for two examples). The Drehu language of the Loyalty Islands has twenty-eight consonant phonemes, including a contrast between the alveolar stops /\(t\ \text{d}\)/ and the **retroflex** stops /\(\text{t} \ \text{d}\)/ (similar to that found in many Indian languages)—a fairly rare contrast /\(t\ \text{d}\)/ (similar to that found in many Indian languages)—a fairly rare contrast in Oceanic languages. Both Drehu and Pije, a language of the northern mainland that has thirty-five consonant phonemes, contrast voiced and voiceless nasal, lateral, and semivowel phonemes.

### 5.1.3. Prosodic Features

The system of consonants and vowels in a language is often referred to as the **segmental phonology** of the language, since linguists break up (segment) a stream of speech into discrete units. Other features of speech that do not belong to individual segments—consonants or vowels—but to syllables or words are known as **suprasegmental** or **prosodic** features. Stress and tone are two of the most important of these.

**Stress**

The term **stress** refers to the relatively greater prominence given to one syllable in a word through extra effort, extra loudness, a change in pitch, or some combination of these factors. The underlined syllables in the Eng-
lish words *temptation, absolute, absolutely,* and *resist* receive greater stress than the other syllables in those words.

In the majority of Oceanic languages, the position of stress in a word is predictable. Let us take Samoan as an example. The basic pattern in Samoan is one of **penultimate stress.** Stress (marked here by an acute accent over the vowel of the syllable) falls on the next-to-last syllable of the word.

**Samoan**

/túli/ ‘dismiss’ /táma/ ‘child’
/tulíŋa/ ‘dismissal’ /tamáʔi/ ‘young of animals’

When a suffix is added to a word in Samoan, the stress shifts to the right so that it still falls on the penultimate syllable: /túli/ becomes /tulíŋa/.

When a Samoan word ends in a diphthong (like /ae ai au/, for example) or in a long vowel, stress falls on this final diphthong or long vowel:

**Samoan**

/atamái/ ‘clever’ /faifeʔáu/ ‘pastor’
/tamá:/ ‘father’ /paʔú:/ ‘fall’

Most Oceanic languages seem to have a predictable pattern of penultimate stress, but in some languages, while stress is predictable, the patterns are different. One such language is Māori. There are three rules involved in the assignment of stress in Māori: (a) The first long vowel in a word is stressed, as in the examples in (a) below; (b) if there are no long vowels, the first vowel cluster is stressed, as in (b); and (c) if there are no long vowels or vowel clusters, as in (c), then the first vowel is stressed.

**Māori**

(a) /maná:ki/ ‘support’ /pá:tu:tahi/ ‘a village’
(b) /tamáiti/ ‘child’ /táutau/ ‘barking’
(c) /támariki/ ‘children’ /hóro/ ‘fast’

Languages with unpredictable stress patterns are relatively uncommon in the Pacific, although they do exist. In many languages of this type, however, there seems to be one common stress pattern, other patterns being very much in the minority. The Big Nambas language of Malakula in Vanuatu is an example of this type of language. In it the majority of words are stressed on the penultimate syllable:

**Big Nambas**

/áγau/ ‘go away!’ /patiráni/ ‘put it up’
/ipáli/ ‘he’ll burn it’ /iputakmáni/ ‘he’ll spoil it’

But sometimes stress falls on the final syllable. Compare the two pairs below, identical except for stress:
Further, as is not the case in Samoan, the stress remains in its original position even when suffixes are added:

**Big Nambas**

| /áγau/ | ‘go away!’           | /aγáu/ | ‘chief’s wife’         |
| /ipáli/ | ‘he’ll burn it’ | /ipali/ | ‘he’ll tie it’         |

**Big Nambas**

| /γápat/ | ‘chief’           | /γápatak/ | ‘my chief’         |
| /prápar/ | ‘sow (pig)’ | /práparan/ | ‘his sow’         |

**Tone**

Phonemic **tone** refers to contrasting pitch occurring at the word level. The same string of consonants and vowels can mean different things if the pitch of the voice is high or low, rising or falling. While common in Asian and African languages—and in Papuan languages as well—tone is fairly rare in the rest of the Pacific. Among Oceanic languages, just a few in New Caledonia (like Cēmuhi) and a few more in the Morobe Province of Papua New Guinea (like Yabēm), have phonemic tone.

Cēmuhi has three tones: high (marked here with an acute accent), mid (marked with a macron), and low (marked with a grave accent), as exemplified in the following words:

**Cēmuhi**

| /tí:/ | ‘destroy’ |
| /tī:/ | ‘gather’ |
| /tì:/ | ‘write’ |

Yabēm has two tones, high and low:

**Yabēm**

| /áwá/ | ‘valuables’           | /awà/ | ‘his/her mouth’         |
| /wá/ | ‘mango’           | /wà/ | ‘crocodile’         |
| /sá/? | ‘to hammer’ | /sà/? | ‘put on top of’         |
| /ólí/ | ‘body’           | /òlí/ | ‘wages’         |

Because tone is a rare phenomenon in Oceanic, we assume that the few languages that have it have developed it sometime after they split off from most of their other relatives. But how do languages develop tone systems? Let us look briefly at what seems to have happened in Yabēm and closely related languages (Bradshaw 1979, Ross 1993).

At one time there was probably a rule in Yabēm that a syllable containing a voiceless stop or fricative (like *p t k s*) would have high tone, but one with a voiced stop or fricative (*b d g j*) would have low tone. For example, /kápûŋ/ ‘I plant’ and /kátan/ ‘I make a sound,’ but /gàbù/ ‘I insult’ and
/gàdùʔ/ ‘I bow.’ Some consonants that conditioned high or low tone have since changed their voicing (or even disappeared), but they have left their tone “trace” behind. For example, earlier *s remained /s/ in Yabêm and, because it is, and was, voiceless, it is associated with high tone.

Yabêm

*siʔo > /sép/ ‘go down’
*saqit > /si/ ‘sew’

On the other hand, earlier *j was voiced, and it conditioned low tone on the following syllable, but later became voiceless /s/:

Yabêm

*jóŋi > /sóŋ/ ‘stop up, plug’
*joRi > /sò/ ‘tie’
*lejan > léséŋ ‘nit’

5.1.4. Word Structure

Some Oceanic languages allow only open syllables, meaning that each syllable may begin with a consonant but may not end with one. These languages do not permit consonant clusters—two or more consonants coming together without an intervening vowel. Using C for consonant, V for vowel, and ( ) to indicate that whatever is enclosed is optional, the general structure of words in languages of this type is built on the pattern (C)V(C)V ..., where vowels (and, in some languages, consonants) may be short or long.

Languages that allow only open syllables occur in some parts of Papua New Guinea and Vanuatu, the southeastern Solomons, most of Fiji, and Polynesia. Examples:

Mekeo

/akaikia/ ‘great’
/oisofai/ ‘off you go!’
/ekapaisau/ ‘he made me’

Arosi

/taroha/ ‘news’
/amamu/ ‘your father’
/haʔaheuheu/ ‘change form’

Fijian

/veitau/ ‘friends’
/vakasalataka/ ‘advise’
/mbata/mbata:/ ‘cold’
Hawaiian
/[pauloa]/ ‘everything’
/[hoaha:nau]/ ‘cousin’
/[ku:konukonu]/ ‘excessive’

Probably the majority of Austronesian languages, however, allow both open and closed syllables (syllables ending in a consonant). In some cases, only a few consonants (most frequently nasals) can close a syllable. In such cases there are few consonant clusters, and they mainly occur across morpheme boundaries. Here are some Banoni examples (note that /ts/ represents a single phoneme in Banoni, not a consonant cluster):

Banoni
/[matam]/ ‘your eye’
/[βatamumam]/ ‘make us eat’
/[teŋtapatsi]/ ‘broken off and scattered’

In other cases, however, consonant clusters are frequent and can occur in syllable-initial position as well as across syllable boundaries:

Adzera
/[tatariʔ]/ ‘fowl’
/[romgam]/ ‘yourself’
/[tafa-ŋga-ŋʔ]/ ‘our ancestors’

Maringe
/[fnakno]/ ‘famous’
/[kñaokñar_o]/ ‘be stringy’
/[snaplu]/ ‘slip out’

Big Nambas
/[prapar]/ ‘sow (female pig)’
/[vənamaran]/ ‘old woman’
/[kataysrasr]/ ‘you’ve swept’

Most Oceanic languages have a large amount of reduplication, a process wherein all or part of a word is repeated. Look at the following examples from Hawaiian:

Hawaiian
/[ʔaki]/ ‘to take a nip and let go’
/[ʔakiʔaki]/ ‘to nibble (as a fish)’
/[ʔaʔaki]/ ‘to nip repeatedly’
The basic verb is /ʔaki/. The verb /ʔakiʔaki/ shows **complete reduplication**, with the whole verb root being repeated, while the verb /ʔaʔaki/ is an example of **partial reduplication**, in which only part of the verb (in this case, the first syllable) is repeated. Reduplication commonly has a number of functions in the languages in which it is productive. Take a look at these examples.

1. Repetition or continuous action.

   **Māori**
   
   /paki/ ‘pat’ /pakipaki/ ‘clap’
   /kimo/ ‘wink’ /kimokimo/ ‘blink, wink repeatedly’

2. Intensity.

   **Tahitian**
   
   /hiʔo/ ‘look at’ /hiʔohiʔo/ ‘stare at’
   /parau/ ‘converse’ /parauparau/ ‘talk a lot’

3. Similarity or diminution. The reduplicated word refers to something similar to, but often smaller or more moderate than, its unreduplicated counterpart.

   **Tongan**
   
   /viku/ ‘wet all over’ /vikuviku/ ‘damp’
   /havili/ ‘strong wind’ /havilivili/ ‘gentle wind, breeze’

4. Change in part of speech, e.g., making a noun into an adjective.

   **Kosraean**
   
   /pΛk/ ‘sand’ /pΛkpΛk/ ‘sandy’
   /pW eŋ/ ‘news’ /pW eŋpW eŋ/ ‘famous’

5. Change from transitive to intransitive. (In the transitive verbs below, the suffix /-i/ marks the third person singular object.)

   **Tigak**
   
   **Transitive**  **Intransitive**
   /nol-i/ ‘think about’ /nonol/ ‘be thinking’
   /vis-i/ ‘hit him’ /visvis/ ‘fight’
   /kalum-i/ ‘see it’ /kalkalum/ ‘look, appear’

6. Indication of plurality, usually of the subject of a verb, but sometimes of some other aspect of the action. (In the examples below, the reduplicated form is used if the subject of the verb is plural.)
Samoan

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ʔai/</td>
<td>/ʔaʔai/</td>
</tr>
<tr>
<td>/tu:/</td>
<td>/tutu:/</td>
</tr>
<tr>
<td>/ŋalue/</td>
<td>/ŋalulue/</td>
</tr>
</tbody>
</table>

Nearly all the examples so far have been from Polynesian and Micronesian languages. Here is a set of examples from a Melanesian language, the Nguna Island dialect of Nakanamanga (Vanuatu). The function of each example of reduplication is given in the right-hand column.

Nakanamanga (Nguna dialect)

| /kati/     | ‘bite’      | /katikati/ | ‘nibble’      | diminution |
| /ta:ki/    | ‘throw’     | /tata:ki/  | ‘continually’ | repetition |
| /namalo/   | ‘piece’     | /namalomal/| ‘pieces’      | plurality  |
| /vano/     | ‘go’        | /vanovano/ | ‘travel around’| randomness |
| /ta:re/    | ‘white’     | /ta:reare/ | ‘very white’  | intensification |

When reduplication is partial, it may be prefixed, suffixed, or infixed, occurring before, after, or in the middle of the root. A rare example of infixed reduplication, given above, is Samoan /ŋalue/ ‘work (singular),’ /ŋalulue/ ‘work (plural).’ Below are four examples from Manam. The first two show partial prefixed reduplication and the last two partial suffixed reduplication:

Manam

| /salaga/ | ‘be long’ | /sasalaga/ | ‘long (plural)’ |
| /eno/    | ‘sleep’   | /eneno/    | ‘always sleep’ |
| /sapara/ | ‘branch’  | /saporapara/ | ‘having branches’ |
| /ʔulan/  | ‘desire’ | /ʔulanlan/ | ‘desirable’ |

The last Manam example shows that there are often morphophonemic changes involved with reduplication, so that the reduplicated part of the word is not always phonologically identical to the unreduplicated part. In Tongan, vowels undergo changes in many reduplicated words. Some of these changes involve differences in length, others differences in vowel quality:

Tongan

| /poʔuli/ | ‘be dark’ | /po:po:ʔuli/ | ‘be somewhat dark’ |
| /mafi/   | ‘powerful’| /ma:fimafi/   | ‘almighty’ |
| /telina/ | ‘ear’     | /taliŋelina/ | ‘fungus’ |
| /muʔa/   | ‘front’   | /muʔomuʔa/   | ‘go in front’ |

In Ponapean, when certain categories of consonants come together across a morpheme boundary as a result of reduplication, the first is re-
placed by a nasal, as in (a) below. In other cases, a vowel is introduced to break up the consonant cluster, as in (b).

**Ponapean**

(a) /pap/ ‘swim’ /pampap/
/kak/ ‘able’ /kaŋkak/
/sas/ ‘stagger’ /saŋsas/
/ṭīṭ/ ‘build a wall’ /ṭiŋṭiŋ/
(b) /tsep/ ‘begin’ /tsepitsep/
/katso:re/ ‘subtract’ /katsikatso:re/
/kaṭek/ ‘be kind’ /kaṭakaṭek/
/masuŋ/ ‘be blind’ /masamasuŋ/

5.2. Papuan Languages

5.2.1. Vowel Systems

The majority of Papuan languages have the standard five-vowel system found among the Austronesian languages as well:

\[
\begin{array}{c}
\text{i} \\
\text{e} \\
\text{a} \\
\text{u} \\
\text{o} \\
\end{array}
\]

Although this is the most common system, some Papuan languages, including many of those in the Sepik area of Papua New Guinea, have fewer than five phonemic vowels, while others have more. Compare Iatmul’s three vowels to Vanimo’s eight:

<table>
<thead>
<tr>
<th>Iatmul</th>
<th>Vanimo</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>ᡠ</td>
<td>ᡠ</td>
</tr>
<tr>
<td>ε</td>
<td>ᡣ</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>u</td>
</tr>
<tr>
<td>ᡠ</td>
<td>ᡠ</td>
</tr>
<tr>
<td>ε</td>
<td>ᡣ</td>
</tr>
</tbody>
</table>

Foley (1986, 54) says that no Papuan language with more than eight phonemic vowels has been attested.

A number of Papuan languages, for example, Pawaian, contrast oral and nasalized vowels. (The examples below are all low tone.)

**Pawaian**

/sù/ ‘ginger’ /yè/ ‘ancestor’
/sû/ ‘road’ /yê/ ‘type of nut’

Distinctions of vowel length do occur in Papuan languages, though this feature is much rarer than it is in Oceanic languages.
5.1.2. Consonant Systems

Consonant inventories in many Papuan languages are relatively small (a sample of Papuan consonant inventories is given in appendix 3). No language in the world has a smaller consonant inventory than Rotokas (spoken on Bougainville), which has only six consonant phonemes.\(^5\)

Rotokas

\[
\begin{array}{ccc}
p & t & k \\
v & r & g \\
\end{array}
\]

There are, however, Papuan languages with more complex consonant systems. A number of languages distinguish prenasalized and simple stops, while some languages (like Kâte, for example) have coarticulated labial-velar stops. In addition to the labial stops /p/ and /b/, made by closing the lips, and the velar stops /k/ and /g/, made by putting the tongue up in the back of the mouth, there are the coarticulated stops /\(k\)p/ and /\(g\)p/ produced by simultaneously closing the lips and raising the tongue at the back of the mouth.

Languages of the Highlands of Papua New Guinea are well known for, among other things, their range of laterals (or l-like sounds). Kobon, for example, has three laterals: an alveolar lateral /l/, rather like English l; a retroflex lateral /l/, with the tip of the tongue turned back to the roof of the mouth; and a palatal lateral /\(\lambda\)/, a bit like the ly in the English word hal- yard. Melpa also has three laterals: dental /\(l\)/ (made with the tongue between the teeth), velar /\(\lambda\)/ (with the tongue raised at the back of the mouth), and flapped /\(\tilde{l}\)/ (where the tongue flaps against the tooth ridge). Both Kobon and Melpa also have an /r/ phoneme that contrasts with all of these laterals.

Perhaps the most complex Papuan phonological system, however, is found in Yele (or Yeletnye), the language of Rossel Island. In addition to a set of simple phonemes, Yele also has labialized, palatalized, prenasalized, and postnasalized consonants, plus in some cases coarticulated consonants as well. So in addition to simple /p/, there is labialized /p\(^w\)/, palatalized /p\(^\gamma\)/, prenasalized /p\(^m\)/, postnasalized /p\(^m\)/, and coarticulated /\(k\)p/ and /\(k\)p/. And similar statements could be made about many other Yele consonants!

5.2.3. Prosodic Features

Many descriptions of Papuan languages do not mention stress, perhaps because it is often associated with tone, and it is difficult to find general patterns. In some languages, stress appears to be predictable, though there is a range of patterns. Waskia, for example, tends to stress the last syllable of a word, whereas Kewa prefers the first.
In other Papuan languages, though, stress is not predictable, as the following examples from Koita illustrate.

**Koita**

/kómo/ ‘head’  /ómó/ ‘adze’

/yúdó/ ‘digging stick’  /yudó/ ‘lime’

/yúmá/ ‘path’  /yumá/ ‘axe’

Quite a number of Papuan languages have phonemic tone. Tone languages are mainly found in the central Highlands and in parts of the Morobe and Sepik provinces of Papua New Guinea, but they do occur in other parts of the Papuan region as well. Most Papuan tone languages contrast only high and low tones.

**Pawaian**

/sú/ ‘tooth’  /sú/ ‘ginger’

/yè/ ‘new’  /yè/ ‘ancestor’

**Fore**

/ásiyúwè/ ‘I stand up’  /ásiyúwè/ ‘I peel it’

/náyá:né/ ‘my hair’  /náyá:né/ ‘my kidney’

Foley (1986, 63) says that in many such languages tone is closely associated with the stress system, with high tone correlating with accented syllables, and that these are not, strictly speaking, tone languages.  

In some languages—especially in the Eastern Highlands of Papua New Guinea—tonal systems are more complex. These seem to be true tonal systems. The following words in Awa, which has four phonemic tones, illustrate this.

**Awa**

/pá/ ‘fish’  rising tone

/ná/ ‘taro’  falling tone

/ná/ ‘breast’  high tone

/ná/ ‘house’  low tone
5.2.4. Word Structure

Some Papuan languages have only open syllables. A number of these languages allow combinations of vowels, sometimes quite a few vowels appearing in sequence without any intervening consonant.

**Toaripi**

- /pasisa/ ‘ladder’
- /easo/ ‘fish spear’
- /maeamariti/ ‘shame’
- /eeae/ ‘erroneously’

**Mountain Koiari**

- /neinuvaebbe/ ‘their mothers’
- /neiniai/ ‘properly’
- /saiamo/ ‘slow’
- /ialelua/ ‘consequently’

Some Papuan languages that generally have open syllables (see the first two words in the example below), allow syllables to be closed with a nasal.

**Buin**

- /itaka/ ‘freshwater shrimp’
- /topituumoru/ ‘fish-killer’
- /kuikuiŋ/ ‘driftwood’
- /rempo/ ‘battle axe’

Probably the majority of Papuan languages allow fairly widespread consonant clustering. Words may end in a range of consonants.

**Wahgi**

- /amŋa/ ‘yawn’
- /okšnal/ ‘avoid’
- /molmŋe/ ‘they were’
- /e^nᵣdžmo/ ‘waste?’
- /kopšⁿde/ ‘cut open’
- /kaⁿᵣdžIp/ ‘they saw’

**Kamasau**

- /beryi/ ‘bean’
- /torbiŋ/ ‘mouth harp’
- /fraⁿgi/ ‘tomorrow’
- /suⁿgrum/ ‘type of grass’
- /surog/ ‘caterpillar’
- /waⁿd/ ‘speech’
Reduplication is a much less common feature of Papuan than of Oceanic languages.

5.3. Australian Languages

In comparison with Oceanic and Papuan languages, Australian languages are probably of moderate phonological complexity. None of them has phonemic tone, for example, and in most stress is predictable, occurring on the first syllable of the word. Many have quite small vowel inventories, though a few Australian languages rival those of New Caledonia in their large number of vowels. Consonant inventories are neither small nor large.

5.3.1. Vowel Systems

Most Australian languages have just three vowel phonemes, though many of these also distinguish vowel length, for a total of six vowel contrasts.

\[
\begin{array}{c}
\text{i} & \text{u} & \text{i}:
\end{array} \quad \begin{array}{c}
\text{a} & \text{a}
\end{array}
\]

Exceptions are generally of two kinds. First, there are a few languages in Central Australia that have only two vowel phonemes: Kaitij, for example, has just /i/ and /a/ (though each of these has a number of different pronunciations in different phonetic contexts). Second, some languages in the north and northwest have a four-or five-vowel system, for example, Alawa and Kunjen.

Alawa\hspace{1cm}Kunjen

\[
\begin{array}{c}
\text{i} & \text{u} & \text{i} & \text{u} \\
\text{e} & \text{e} & \text{o} \\
\text{a} & \text{a}
\end{array}
\]

But a few languages, especially those in the Cape York area, have developed complex vowel systems from what was probably an ancestral three-vowel system. One such system, that of Anguthimri, appears in appendix 3.

5.3.2. Consonant Systems

In discussing the consonants of Australian languages it is helpful to use two technical terms: Apical refers to sounds made with the tip of the tongue, and laminal describes sounds made with the blade of the tongue. Many
Australian languages distinguish apical and laminal stops and nasals, and many have two sets of apicals and two sets of laminals. Apicals include the apico-alveolar (tongue tip on the tooth ridge) consonants /d t n/ and the apico-postalveolar, or retroflex (tip on the roof of the mouth) consonants /ḍṭṇ/. Laminals occur as laminodentals (tongue blade on the teeth), namely /d̪t̪n̪/, and laminopalatals (blade on the roof of the mouth), /d̦d̦țțn̪n̪/. Australian languages generally have bilabial (/b p m/) and velar (/g k ŋ/) stops and nasals as well. Along the east coast, languages usually have only one lateral, but elsewhere they have two or more. Most Australian languages have two rhотics, or r-sounds. One is usually a retroflex semivowel /ṛ/ (rather like English r), and the other a flapped or trilled r.

Consonant inventories for four languages illustrate some general patterns. Wargamay is an example of an east-coast language, with no contrast between apicals or between laminals, and with one lateral. Kunjen is an eastern language with a laminal contrast but no apical contrast, and with one lateral. Wajarri, a western language, exhibits apical contrast but no laminal contrast, and has more than one lateral. Pitta-Pitta is a central Australian language that contrasts both apicals and laminals and has more than one lateral.

### Wargamay

<table>
<thead>
<tr>
<th>b</th>
<th>ḍ</th>
<th>d</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>ŋ</td>
<td>n</td>
<td>ŋ</td>
</tr>
<tr>
<td>w</td>
<td></td>
<td>y</td>
<td></td>
</tr>
</tbody>
</table>

### Kunjen

<table>
<thead>
<tr>
<th>p</th>
<th>ḍ</th>
<th>d</th>
<th>ṭ</th>
<th>t</th>
<th>ṭ̦</th>
<th>ț</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>ŋ</td>
<td>n</td>
<td>ŋ</td>
<td>l</td>
<td>ṛ</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>w</td>
<td></td>
<td>y</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Wajarri

<table>
<thead>
<tr>
<th>p</th>
<th>ḍ</th>
<th>d</th>
<th>ṭ</th>
<th>t</th>
<th>ṭ̦</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>ŋ</td>
<td>n</td>
<td>ŋ</td>
<td>ŋ</td>
<td>l</td>
<td>l</td>
</tr>
<tr>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Two other patterns emerge from an examination of the four consonant systems given above. First, contrast between voiceless and voiced stops, i.e., between /p t k/ and /b d g/, is not common, though it does occur in a minority of languages. Second, fricative phonemes are rare. Of the languages above, only Kunjen has fricative phonemes (/f ð ɣ/). (But in some languages stops like /h/ are pronounced as fricatives, say [f] or [v], in some phonetic contexts.)

5.3.3. Word Structure

Australian languages show remarkable similarity in the way in which consonant and vowel phonemes combine to form words. As in other Pacific languages, words of one syllable are extremely rare. Most words contain two syllables, some more than two. Words seldom begin with a vowel, and sequences of vowels are also rare. Two-consonant clusters are common in the middle of words, but not initially or finally. Words may end in either a consonant or a vowel. The typical pattern is CVC(C)V(C), and words of more than two syllables simply build on this pattern.

There are commonly restrictions on where consonants occur. Typically, laterals and rhotics do not occur in word-initial position, and stops do not occur finally. Rules also govern the formation of two-consonant clusters in medial position. Here are some examples from Bandjalang, showing the distribution of laterals, rhotics, and stops, as well as a limited range of medial two-consonant clusters (rb, ŋb, ηb, mb):

<table>
<thead>
<tr>
<th>Bandjalang</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/dya:djam/</td>
<td>‘child’</td>
</tr>
<tr>
<td>/burbi/</td>
<td>‘koala’</td>
</tr>
<tr>
<td>/gulunbay/</td>
<td>‘flu’</td>
</tr>
<tr>
<td>/dymimbaŋ/</td>
<td>‘sheep’</td>
</tr>
</tbody>
</table>

There are exceptions to these constraints. Anguthimri, mentioned above as an atypical Australian language for its vowel system, is exceptional in other ways as well. It contrasts voiceless and voiced prenasalized stops and possesses five fricative phonemes. It also has a phonemic glottal stop (see appendix 3). Besides these phenomena, Anguthimri has
many monosyllabic words and allows word-initial vowels and consonant clusters. It does not, however, allow word-final consonants (except /w/ and /y/). Some examples:

**Anguthimri**

- /pwe:ke/ ‘groper’ /pæŋa/ ‘elbow’
- /kyabara/ ‘alligator’ /i日本人/ ‘brown’
- /ubu/ ‘red gum’ /baw/ ‘tooth’
- /d̪wa/ ‘eye’ /d̪r ya/ ‘wing’

Reduplication is often used in Australian languages to form the plural of nouns and adjectives:

**Dyirbal**

- /bari/ ‘axe’ /baribari/ ‘axes’
- /bulgan/ ‘big one’ /bulganbulgan/ ‘big ones’

It sometimes has such other functions as intensity (Kalkatungu), diminution (Diyari), or unreality (Western Desert).

**Kalkatungu**

- /jagabi/ ‘listen’ /jagabijagabi/ ‘listen intently’
- /buyud/ ‘hot’ /buyubuyud/ ‘Very hot’

**Diyari**

- /kin̪ala/ ‘dog’ /kin̪alakin̪ala/ ‘puppy’

**Western Desert**

- /wati/ ‘man’ /watiwati/ ‘child playing at being an adult’

### 5.4. Orthographies

No Pacific languages were written before European contact, and even today, not all Pacific languages are written. This usually means that no missionaries or linguists have done sufficient work on these languages to design an orthography. Languages in this category are found almost exclusively in Melanesia and Australia.

Many languages in Melanesia and Australia are used for a much narrower range of written purposes than are other Pacific languages: The main writers are probably linguists! One reason for this has to do with the relatively small numbers of speakers of these languages, and the fact that they generally write in a more widely understood language (English, French, or Melanesian Pidgin, for example).
5.4.1. General Issues

The Latin alphabet (in which English and most European languages are written) is universally applied to the writing of Pacific languages. Orthographies for most of the written languages of the Pacific were developed by Christian missionaries during the nineteenth and twentieth centuries, although linguists have also made their contributions.

In developing orthographies for Pacific languages, missionaries and linguists faced a number of problems that reliance on the spelling system of, say, English or French could not always resolve. The first of these, of course, is that the spelling systems of these two European languages are themselves not always consistent—or at least not transparently so. In English, for example, we now spell Fiji as Fiji, but earlier explorers wrote it as Fejee or Feejee; the French write it as Fidji. The “correct” Fijian spelling, however, is Viti.

There are also distinctive phonological features in Pacific languages that languages like English or French do not have. For these there is no “natural” orthographic representation. Two examples common to many parts of the region are (1) the contrast between short and long vowels and (2) the glottal stop phoneme. Different solutions were often found for these kinds of problems in different areas. For vowel length, the macron (as in ā, ē) has been used in many Polynesian languages, although double vowels (aa, ee) are used in others. The glottal stop has most often been indicated in Polynesia by a quotation mark (as in Hawai‘i), though in some parts of Melanesia letters like c or q, which are not otherwise needed in the spelling system, have been used.

The problem with additional marks like apostrophes and macrons is that, because they are not perceived as “normal” letters, they are very often left out by people when they are writing the language. For example, although Hawaiian has both the glottal stop and the distinction between long and short vowels, many people do not indicate either of these distinctions when they write Hawaiian. Thus the words /pau/ ‘finished’ and /paːʔuː/ ‘lavalava, sarong’ are often both written as pau, although a more accurate writing system (and the one recently officially re-endorsed) would write the word for ‘finished’ as pau and the word for ‘lavalava’ as pāʻū.

The problems have not only been technical, however. There are general principles on the basis of which a good orthography can be developed, but there is often a certain amount of choice even after the application of these scientific principles. For example, it makes equal scientific sense to write /aː/ as ā, as aa, or in a number of other ways (like ah in parts of Micronesia). Orthographic design in many parts of the Pacific has often revolved around these areas of choice, and reflects the fact that speakers of a language—and
outsiders—have very strong feelings about how a language ought to be written, regardless of any scientific approach to the situation.

Factionalism of various kinds shows itself in spelling controversies all over the Pacific. There has been a long debate in Kiribati over whether to write b’ and m’ or bw and mw for the phonemes /b^w/ and /m^w/. The Nauruan Language Board is currently preparing a Nauruan dictionary in two different orthographies, pending a final decision on spelling. One of these systems derives from the Protestant Bible translation, while the other was developed by Catholics and endorsed by an earlier official body. In the spelling of Tok Pisin in Papua New Guinea before the Second World War, there were the following competitive orthographic decisions.  

<table>
<thead>
<tr>
<th></th>
<th>/g/</th>
<th>/ŋ/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lutherans</td>
<td>g</td>
<td>η</td>
</tr>
<tr>
<td>Catholics</td>
<td>g</td>
<td>ng</td>
</tr>
<tr>
<td>Methodists</td>
<td>q</td>
<td>g</td>
</tr>
</tbody>
</table>

There have also been other nonlinguistic factors at work. English and French, as international languages, have considerable prestige in the Pacific. Although linguists have their own phonetic symbols for sounds, many of these are not standard letters in the English or French writing systems—β ð θ ū a ŋ, for example. Attempts to use letters like these to represent sounds in Pacific languages are often met with resistance by speakers of those languages, who don’t want their languages to look “funny” in comparison with English or French.

Other problems are also related to the orthographies of the prestige languages. In general, a scientific approach to orthographic design requires that, wherever possible, each phoneme should be represented by a single letter. Following this principle, the early missionaries used the single letter g to represent the phoneme /ŋ/ (the sound written ng in English singer) in a number of Polynesian languages: Pago Pago, the capital of American Samoa, for example, is pronounced /paŋopaŋo/. This principle was extended by Methodist and related missionaries to some other parts of Polynesia, to Fiji, and to certain areas in Melanesia.

But though this decision may follow scientific rationality, there is a conflict with the spelling system of English, where the letter g has a very different value. In Tongan, for example, original g was later changed to ng, since it was felt that Tongans learning English would be confused by the two different values of the letter g in these two languages. Many languages in Melanesia and Micronesia use ng for this sound, but this has led to problems of a different sort. On the one hand, English ng represents both the sound /ŋ/ as in singer and the sounds /ŋg/ as in fine-
ger, and outsiders often mispronounce words written in Pacific languages with this letter combination (Tonga frequently being pronounced by English speakers as if it were Tongga, for example). On the other hand, if ng is used for /ŋ/, then designers of writing systems are often forced to use the somewhat unsightly three-letter combination ngg to represent /ŋg/. There have, then, been a number of problems in the development of spelling systems in the Pacific, by no means all of them having to do with the nature of the languages.

5.4.2. Polynesia and Fiji

Because of their relatively simple phonological structures, the development of writing systems for the Polynesian languages has been a fairly straightforward matter. There have been different approaches to the velar nasal phoneme /ŋ/, written g or ng, and to long vowels, written with macrons or with double vowels. Sometimes even in the same language some writers have used macrons and some double letters, while others have ignored vowel length altogether: Māori, Maaori, and Maori have all had some currency in New Zealand, for example, though the first seems now to be the preferred spelling.

The designers of the Fijian writing system fairly consistently applied the one-phoneme-one-letter principle, although not without controversy. In Fijian, the prenasalized stops /mb nd ng/ have been written with the single letters b, d, and q rather than mb, nd, and ngg. According to the same principle, /ŋ/ is written as g and /ð/ as c (rather than the ng and th of English). Where vowel length is written, the macron is used, but many writers of Fijian ignore this feature.

5.4.3. Melanesia and Micronesia

In some parts of Melanesia, the early missionaries made similar kinds of decisions as those made for Fijian and Polynesian languages. In a number of languages in Vanuatu especially, g is used for /ŋ/, and in some c is used for /γ/. Additional single symbols were created to try to adhere to this principle, p̃ and m̃ being used to represent /p̃w/ and /m̃w/. Many of these languages, along with those of the Solomons, have only five vowels, which caused no problems. Vowel length (where it was recognized), however, was generally represented by doubling vowels.

Further west, in the New Guinea area, the Methodist traditions from Fiji and Polynesia had less influence, and orthography designers have generally kept fairly closely to English spelling, at least as far as consonants
are concerned. In these languages, for example, the prenasalized stops /mb, nd, ng/ tend to be written b, d, and g in word-initial position (where the prenasalization is fairly weak), and mb, nd, and ngg in other positions. The velar nasal [ŋ] is usually written ng, although in some areas where the Lutheran church is strong, the letter ñ is used. The occurrence of more than one lateral in Highlands languages has required the use of two letters to represent a single phoneme, like tl, dl, gl, and so on, in addition to simple l, while gh is frequently used for the velar fricative /γ/. In dealing with languages which have more than five phonemic vowels, both digraphs (two-letter combinations) and diacritics (additional marks like accents) have been used. Thus where there is a contrast between /i/, /u/, and /e/ (as in English seat, sit, set), for example, these vowels are written i, î, e; or i, ê, e; or ii, i, e.

The complex nature of the consonant and vowel systems of most New Caledonian languages has forced linguists to use both diacritics and combinations of letters. The vowels of Xârácùù, for example, are a à a ë è ê i o ò ô u ù û, and the long vowels are written by doubling these letters. Writing the consonant phonemes of Pije involves single letters (p, m, h, w), digraphs (pw, ph, hm, hw) and even trigraphs—combinations of three letters representing a single phoneme—like phw, hmw, hny, hng.

In Micronesia, digraphs are usually used to help represent complex vowel and consonant systems. A number of Micronesian languages use oa for /oa/ when this contrasts with /o/ (written o), and h is often used to mark long vowels: thus i represents /i/, while ih represents /i:/.

5.4.4. Australia

In general, the small number of vowel phonemes in Australian languages has not posed many problems for designers of orthographies. Long vowels have sometimes been written as double vowels, sometimes with a following h; thus /a:/ is written aa in some languages, but ah in others.

Decisions made about writing consonants vary, but a common pattern is to write retroflex sounds with a preceding r, dentals with a following h, and palatals with a following y; palatal stops are sometimes written j. In Gooniyandi, for example, the stop and nasal phonemes given on the left below are written with the letters on the right:
Gooniyandi

<table>
<thead>
<tr>
<th>Phonemes</th>
<th>Letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>b ḍ d ḍ d ḍ d̪ y g b th d rd j g</td>
<td>m ṇ n ṇ ŋ ɳ m nh n rn ny ng</td>
</tr>
</tbody>
</table>

Similarly, multiple laterals are generally written lh, l, rl, and ly (or lj), while the two rhotics are generally written r and rr.

I have adopted these spelling conventions here and transliterated symbols in this way from sources that use phonetic symbols. Note, however, that there is pressure to spell Australian languages following English conventions. For example, the Bandjalang (/baŋdylaŋ/) people now choose to write their language name Bundjalung, to avoid its possible mispronunciation as /bæŋdylæŋ/ by English speakers.

5.5. Summary

Pacific languages show a great diversity of phonological systems. Vocalically they range from Australian languages with just three short vowels to New Caledonian languages with seventeen short vowels. Consonant inventories can be very small and simple, or extremely large and complex. Some languages have phonemic tone, others do not. Some allow a great deal of consonant clustering; others allow none.

Various social issues surround and affect the development of orthographies for these languages. In the remainder of this book, I use the standard writing system, in italics, for each language from which I give examples. In the case of languages without a generally accepted writing system, I use a modified set of phonetic symbols, also in italics.