The Phonological History of Iaai

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Abstract
Iaai is one of four languages spoken in the Loyalty Islands, which form part of New Caledonia. One of these four (Fagauvea) is a Polynesian Outlier; the other three form a distinct subgroup within the New Caledonian family, which is a subgroup of Southern Oceanic. Iaai has a rich phonemic inventory—37 consonants, ten short vowels, and ten long vowels—and the development of these phonemes from Proto-Oceanic is quite complex. This paper charts that development, paying special attention to historical reduplication, vowel loss, and vowel and consonant alternation.

1. INTRODUCTION
There are almost thirty languages spoken in New Caledonia, and all except for the Polynesian Outlier Fagauvea belong to a single subgroup within Southern Oceanic (Lynch 1999, 2000; Lynch and Ozanne-Rivierre 2001). They appear to divide into two lower-level groups: a Mainland group (further divisible into Northern and Southern subgroups), and a Loyalty Islands group (Haudricourt 1971; Geraghty 1989; Ozanne-Rivierre 1992; inter alia). The Loyalties group consists of three languages: Iaai, Drehu, and Nengone. Iaai, the focus of this paper, is spoken on the island of Ouvéa, which it shares with Fagauvea. There are around 4,000 speakers of the language, probably more than half of whom live away from Ouvéa, most in the territorial capital, Nouméa.

This paper attempts to describe the phonological history of Iaai. In doing so, I am hoping to set the scene for a reconstruction of the phonology of Proto-Loyalties. Given the complexities involved, however, and the fact that I have access to rather more data on Iaai than on the other two Loyalties languages, this is a first step in that reconstruction. Reference will be made in passing throughout the paper to certain developments of interest in Drehu and Nengone.

Primary data on Iaai are drawn virtually exclusively from the grammar and dictionary produced by Françoise Ozanne-Rivierre (1976 and 1984, respectively). A summary version of the grammar appeared as Lynch (2002). Apart from papers of a general nature on New Caledonian languages, which mention Iaai only in passing or as just one among many members of the New Caledonian group, only two previous papers have really tackled aspects of the historical phonology of Iaai, Drehu, and Nengone in any detail: Ozanne-Rivierre (1986) on reduplication and splits in certain phonemes, and Lynch (2003) on developments associated with the bilabials. This paper attempts to cover developments in all protophonemes. Section 2 provides general background regarding the phoneme inventory of Iaai, and synchronic consonant and vowel alternations that reflect earlier phonemic splits. In section 3, I look at the development of Proto-Oceanic (POC) canonical forms, paying particular attention to the right periphery (final consonants and vowels). Section 4 examines the development of POC consonants, and section 5 looks at POC vowels. Section 6 concludes the paper.

2. SOME BACKGROUND

2.1 Phoneme Inventory
The phoneme inventory of Iaai is given in table 1 (based on Ozanne-Rivierre 1976:35–91, summarized as Lynch 2002:776–78). I have used a mixture of orthographic and standard IPA conventions to represent phonemes: basically, I have tried to avoid diacritics, and have also tried to avoid any digraphs that might be confusing (like th, for example, which might represent /θ/ or /tʰ/); so I write t, θ, and f rather than what are written tr, th, and sh

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I am grateful to the late Françoise Ozanne-Rivierre for sharing with me her data on Iaai (and other languages of New Caledonia), and for introducing me more generally to her “beautiful Kanak languages”. Data on Drehu and Nengone are from Sam (1995) and Tryon and Dubois (1969; 1971), respectively.
in the sources, but I write the voiceless nasals and liquids with a preceding \( h \) rather than a voiceless diacritic (thus \( hm, hn, hl \), rather than \( m̥, n̥, l̥ \)). Similarly, I write vowels with their IPA symbols (except I use \( û \) for the high front rounded vowel and \( y \) for the palatal semivowel); vowel length is written by doubling the vowel. In table 1, \( hw \) represents a voiceless /w̥/; \( v \) represents the voiced bilabial fricative /β/ and \( hv \) its voiceless equivalent /ɸ/; and the laterals are retroflex, not alveolar. Syllable structure is (C)V(C), with medial clusters restricted to N + C or r + N. Primary stress is on the initial syllable of a word.

<table>
<thead>
<tr>
<th>Table 1. Iaai Phonemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p t ʈ c k</td>
</tr>
<tr>
<td>hw hv f ो s ʃ x h</td>
</tr>
<tr>
<td>w v δ r</td>
</tr>
<tr>
<td>hmw hm hn hη hň hŋ</td>
</tr>
<tr>
<td>mw m n ǝ ɳ ŋ hl l</td>
</tr>
<tr>
<td>i ü u e ø ō æ a ɔ</td>
</tr>
<tr>
<td>+ vowel length</td>
</tr>
</tbody>
</table>

2.2 Consonant and Vowel Alternations

There are a number of splits in the reflexes of Proto-Oceanic (POC) phonemes, many of which apparently derive from morphophonemic alternations in Proto-Loyalties (PLOY) or some early descendant of it. The ones of greatest concern to us here derive from earlier reduplications, which have affected the initial segment(s) of roots, especially verbs. Ozanne-Rivierre (1986:26‒28) says that “the morphology of Iaai … retains important traces of ancient derivations by reduplication.” Below I very briefly outline some of the morphophonemics of Iaai (Ozanne-Rivierre 1976:123‒30, summarized as Lynch:2002:783‒86).

The major phonological changes that are involved in Iaai verbal morphophonemics are preaspiration or spirantization of the initial consonant, mutation of the vowel of the root, and occasionally also changes to the final consonant. Some of these occur in deriving verbs from nouns; for example:

(1) Noun  Verb

| liʈ  ‘night’            | hliʈ  ‘be black’            |
| noko-n ‘his/her child’ | hnako ‘be the mother of’    |
| ae[:e]ɔɔ-n ‘his/her spouse’ | hæ[ø]k ‘be married’ |

Iaai distinguishes between “determinate” and “indeterminate” forms of the verb: the former are used with specific objects (‘he planted the yam(s)’), the latter with generic or incorporated objects (‘he planted yams’, ‘he was yam-planting’). With some verbs, there are morphophonemic changes in both the vowel(s) and the final consonant:

(2) Determinate  Indeterminate

| degec | digic | ‘reject’ |
| sɔ | sii | ‘cut’ |
| aoc | auk | ‘hold in the fist’ |
| ɔc | hæc, hɔk | ‘break with the teeth’ |
| ɳooc | ɳuuk | ‘attach’ |

More importantly for our purposes here, alternation in the initial consonants of some verbs parallels the determinate/indeterminate distinction. Alternations noted are:

(3) Determinate  Indeterminate

| k > x | kap | xap | ‘welcome’ |
| l > hl | lele | hlhil | ‘pull, haul in’ |
| n > hn | ɳn | hnąŋ | ‘brandish’ |
| ɳ > hɲ | ɳooc | ɳuuk | ‘tie’ |

2 In the original: “la morphologie du iaai … conserve les traces importantes d’anciennes dérivations par redoublement “.
As will be seen below, Ozanne-Rivierre hypothesizes that the indeterminate form of verbs as well as other derived forms—the forms with the spirantized or preaspirated consonants, as on the right in (3)—derive from earlier reduplications. She bases this in part on similar developments in the languages of the Northern Mainland subgroup, but also on the basis of reflexes of CVCV-initial forms (as opposed to forms beginning with CVC). Consider the forms in (4):

(4) POC | IAAI | DREHU | NENGONE
--- | --- | --- | ---
a. *mate ‘die’ | mək | meci | neti
b. *mamasa ‘dry, low tide’ | hmɛ | hmcə | hnede
c. *mutaq ‘vomit’ (> *mu-mutaq) | hmita | hmita | hnija

Example (4a) shows simple unreduplicated *m-; (4b) shows a different reflex for *mVm; and in (4c), this same reflex occurs, suggesting that *mutaq was inherited as reduplicated *mutaq (from *mu-mutaq).

This distinction between C-initial and CVC-initial forms, illustrated above by the contrast between *mate and *mamasa, can also be seen in Iaai in the following:

(5) POC | IAAI | cf. | DREHU | 
--- | --- | --- | --- |
(patut ‘stone’ | veto | *papa ‘mouth’ | hwan-uma ‘door’
*toqa ‘fowl’ | xo/to | *(td)otoq ‘mangrove’ | 033 ‘Cerbera manghas’
*roŋoR ‘hear’ | liŋ, liŋ | *raŋaŋ ‘warm’ | hlaŋ ‘warm, warmth’
*sake ‘go up’ | dɔŋ | *sasa ‘hunt, beat’ | saa ‘throw’

Thus the assumption by Ozanne-Rivierre that the explanation for the two sets of reflexes of many POC consonants hinges on the presence or absence of initial reduplication—even if that reduplication is not synchronic—is eminently reasonable.

3. CANONICAL FORMS

Proto-Oceanic syllables were of the form (C)V(C), and the most common POC words were disyllables of the form CVCCV or CVCV, with no medial consonant clusters and with final consonants in some words. (Of course, both longer and shorter words occurred, as did words with initial vowels and with medial or final vowel clusters.) Although certain specific consonants were lost in all or some positions, generally speaking, the POC canonical form was preserved in Iaai and the other Loyalties languages, except at the end of words: final consonants were (with one significant exception) regularly lost, and final vowels were often lost.

3.1 Proto-Oceanic Final Consonants

POC final *t is retained in every case in which it occurs in the data available to me:

(6) POC | IAAI | cf. | DREHU | 
--- | --- | --- | --- |
*buRat ‘Fagraea sp.’ | poʔ | *papa ‘mouth’ | hwan-uma ‘door’
*kurat ‘Morinda sp.’ | hulak | *(td)otoq ‘mangrove’ | 033 ‘Cerbera manghas’
*mapat ‘heavy’ | hmæek | *raŋaŋ ‘warm’ | hlaŋ ‘warm, warmth’
*pukot ‘net’ | eet | *sasa ‘hunt, beat’ | saa ‘throw’

Final *r is retained in the only example I have: *tuqr ‘stand’ > tef, tooq.

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4 Although most protoforms are Proto-Oceanic, I occasionally cite lower-level protolanguages like Proto-Eastern Oceanic (PEOc), Proto-Remote Oceanic (PROC), and Proto-Southern Oceanic (PSOc), which are marked with a preceding ø, ø, and ø, respectively. I also occasionally cite Proto-North-Central Vanuatu (PNCV) forms (from Clark 2009), marked with an on the grounds that these are probably identical or very similar to forms in Proto-Southern Oceanic, the protolanguage directly ancestral to the NCV, Southern Vanuatu, and New Caledonian languages.

The phoneme correspondences need to be taken on trust for the moment: reflexes of individual POC phonemes will be discussed in succeeding sections.
Unreduplicated *k, *q, and *R are regularly lost in all positions, and so are lost finally; while *p is regularly lost non-initially:

(7) *kapak ‘wing, shoulder’ abɔ
    *tasik ‘sea’ kɔa ‘water, sea’
    *tusuk ‘flick w. finger’ kǜù
    *mutaq ‘vomit’ hmita
    *p*anaq ‘bow, shoot’ faŋa ‘arrow’
    *Rum*aq ‘house’ uma
    E*(ma)luR ‘shadow’ hmenu
    *niuR ‘coconut’ nu
    *maqurip ‘be alive’ mʷəŋ
    *Ruap ‘high tide’ uoũ

In the data I have, final *s is also regularly lost: *paus ‘weave, plait’ > hwaau ‘plait pandanus’, and *qonos ‘barracuda’ > oŋo.

However, there are other consonants which are sometimes retained finally (8a) and sometimes lost in the same position (8b):

(8) a. *taqon ‘roast’ bɔɔn
    *ranaŋ ‘warm’ hlaŋ ‘warm, warmth’
    *tanum ‘bury’ kɔnɔm (det.), xɔnɔm (indet.)
    *qipil ‘Intsia bijuga’ hveeŋ
b. *qusan ‘rain’ we
    *manŋaŋ ‘power’ meŋ
    *manaŋ ‘power’ meŋ
    *sARum ‘needle’ dɔ
    *qebal ‘mat’ kubwɔ

At least in the case of the first three forms in (8a), the most likely explanation for retention of the final consonant is that it was often followed by a transitive suffix, and thus was rarely word-final.

3.2 Proto-Oceanic Final Vowels

In this section, I deal very briefly with the general behavior of final vowels, and I treat a POC vowel that occurred before a deleted final consonant as being final for purposes of discussion here, since *-VC# > Ø followed exactly the same pattern as *-V# > Ø. Reflexes of the POC vowels are discussed at greater length in section 5.

Because of the regular loss of some POC consonants in final position, it is sometimes difficult to decide whether a vowel that followed one of these consonants is retained or lost in Iaai. So, while *paRu ‘Hibiscus tiliaceus’ > vææu shows clear retention of the final vowel *u, and *paRi ‘stingray’ > ve suggests earlier **vai with retention of final *i, in cases like *draRaq ‘blood’ > da or *kaboRa ‘catfish’ > wa/aba, the situation is less clear: does the final vowel of the Iaai form reflect the vowel that preceded *R, or the vowel that followed it, or perhaps both? In what follows, I will put these ambiguous cases aside, and try to capture some generalizations based on data that show clear retention or clear loss of final vowels; in addition, any form that takes a suffix is excluded from consideration here, since by virtue of the suffix the final vowel of the root is not word-final.

No vowel is regularly lost or regularly retained when it was or came to be word-final. The pattern that emerges in the discussion in section 5 is that (i) final *a is very often retained, though it is also lost in a number of etyma; and (ii) final *u is often retained, and (iii) the other POC vowels are lost considerably more often than they are retained. However, there appears to be no clear conditioning factor responsible for loss or retention. The examples in (9) show retention and loss of the same POC vowel in virtually the same environment.⁶

(9) *taŋis ‘cry’ teŋe but *anin ‘wind’ aŋ
    *tubuq ‘grow’ xibi *tabu ‘taboo’ kap
    *kutu ‘louse’ uto R*matu ‘Gerres sp.’ o/mɔk
    *qonos ‘barracuda’ oŋo *łaŋo ‘a fly’ nŋa
    *mutaq ‘vomit’ hmita *maputa ‘sleep’ mʊʊk
    E*bana ‘mat (worn as clothing)’ beŋo *baga ‘banyan’ bæk

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⁶ There are very few examples of reflexes of words ending in*e, and I exclude this vowel from (9).
4. PROTO-OCEANIC CONSONANTS

In this section, I examine the Iaai reflexes of the PO\textsubscript{C} consonants. One theme that crosses the discussion of different PO\textsubscript{C} phonemes, and should briefly be mentioned here, is that a number of PO\textsubscript{C} phonemes have split reflexes, depending on whether the simple or reduplicated form is reflected (see 2.2 above): this applies to the voiceless obstruents *p, *t, *s (which merges with *c), *k, and *q; to the nasals *m and *n (which merges with *ñ); and to *l (which merges with *n and *ñ) and *r. Recall also that all consonants except *t are apparently regularly lost when they occurred word-finally in PO\textsubscript{C}. In what follows, I will make no reference to final consonants in discussing positional reflexes (except in the case of *t).

4.1 Labiovelars

In this section, I deal with the three labiovelars *p\textsubscript{w}, *b\textsubscript{w}, and *m\textsubscript{w}, as well as the semivowel *w.

4.1.1 *p\textsubscript{w}

The only Iaai reflexes of this protophoneme can be found in:

(10) *p\textsubscript{w}anaq ‘bow, shoot’
    *p\textsubscript{w}ano ‘Guettarda speciosa’

4.1.2. *b\textsubscript{w}

In Iaai, *b\textsubscript{w} merges with *b (see 4.2.2) as b-, -p, though I have no reflexes in medial position in Iaai:

(11) *b\textsubscript{w}ana ‘mat (worn as clothing)’
    *b\textsubscript{w}ano ‘new leaves or shoots’
    *b\textsubscript{w}atu ‘head’
    *b\textsubscript{w}ea ‘drum, slitgong’
    *b\textsubscript{w}aka ‘bat, flying-fox’
    *toba ‘bay’

4.1.3. *m\textsubscript{w}

The regular reflex of *m\textsubscript{w} appears to be m:

(12) *m\textsubscript{w}aqane ‘brother of female’
    *qaram\textsubscript{w}aqi ‘Pipturus argenteus’
    *Rum\textsubscript{w}aq ‘house’
    *rakum(u) ‘k.o. land-crab’

In one case—*m\textsubscript{w}ala(q)u ‘Glochidion sp.’ > hmaŋa—the reflex is voiceless hm, suggesting possible earlier reduplication (see 4.2.3).

4.1.4 *w

There is a tendency for *wa > o or ə:

(13) *waga ‘canoe’
    *walasi ‘Semecarpus sp.’
    *lawaq ‘spider’
    *maŋawa ‘breathe’
    *pulewa ‘k.o. eel’
    *qasawa ‘spouse’
    *qawaq ‘milkfish, Chanos chanos’

Note also *wakaR ‘root’ > wə2ə-, where vowel rounding has occurred but where *w is retained, as w.

There is also a tendency for *awi sequences > e or i:

\textsuperscript{7} PO\textsubscript{C} *s > medial i in Iaai (see 4.3.3): thus the initial ae in this form derives from *ai < *qas, and the final θ from *awa.
It is not clear what the fate of *w is in *kaowa ‘Egretta’ > aea ‘heron’.

4.2 Bilabials

The bilabials have had a number of effects on the following vowel (see Lynch 2003), and while this will be discussed in more detail later, I arrange examples in this section in the alphabetical order based on the vowel following the bilabial, so that these patterns can be more easily observed: thus in medial position, *CVpa precedes *CVpe which precedes *CVpi, and so on, irrespective of the alphabetization of the initial syllable of the word.

4.2.1 *p

Ozanne-Rivierre (1986:38) says that unreduplicated *p became Iaai v (except that *puV became wV), while reduplicated *p was variously reflected as Iaai hw, h, and hv. The actual situation, however, is a little more complex than that, since Ozanne-Rivierre was largely concentrating on the distinction between reduplicated and unreduplicated consonants—not only in relation to *p, but in relation to a whole range of consonants—and she therefore dealt mainly with their behavior in initial position, which is where reduplication generally took place.

As far as reflexes of unreduplicated *p are concerned, there is actually a positional split:8 POC initial unreduplicated *p- before non-back vowels is reflected as v (15a); initially before back vowels (15b), or medially before any vowel (15c), it is lost, though in this environment a following back vowel is often fronted.

There are a few exceptions: cases of v for expected Ø (16a), and one case of Ø for expected v (16b).

Note, however, that the POC back vowel following *p in (16a) has been fronted, which is the environment for retention; and the front vowel in (16b) has been backed, which is the environment for loss. I will have more to say about the relationship between consonant changes and the development of vowels in section 5.

The data in (17) most likely reflect reduplicated *p: the first POC form shows a root beginning with *pVp-, and the next two are *p-initial verbs which could have had reduplicated forms in some contexts.

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8 There are also some cases where *p behaves as if it were *b; I will leave those till the discussion on *b in 4.2.2.

9 As Ozanne-Rivierre suggested, POC *puV became wV. However, rather than suggesting, as she did, that *p > w in this instance, it makes more sense to state that *p was lost here (as it is lost before *u elsewhere), and that it was the *u which developed as w immediately before *a.
It is more difficult to explain why the medial *p in the last form, but I present evidence in 4.3.5 that suggests that metathesis was involved (*qipil > *piqil), and that reduplication then took place (*piqil > *pi-piqil > *ppiqil). Iaai shows hw and hv as reflexes of reduplicated *p: the data are insufficient to establish any conditioning. The data also show that vowels are not fronted after reduplicated *p.

(17) *papa ‘mouth’ hwan Uma ‘door’
*patuR-i ‘weave’ væae, hvæk
*pau ‘weave, plait’ hwaau
*qipil ‘Intsia bijuga’ hween

4.2.2. *b
In Iaai, *b regularly became initial b-(18a), medial -b- (18b), and final -(p (18c):10

(18)a. *baga ‘banyan’ bæk b. *bayan ‘bait’ o/bæ
*bani ‘arm, hand, wing’ beñi- *siba ‘cut, slice’ subs?
*bɔarapu ‘long’ beei *kaboRa ‘catfish’ wa/aba
*baRa ‘wall’ bææ *buli(q) ‘cows (generic)’ o/biŋa
*boni ‘smell’ bon *tubu ‘grandparent’ kibe-
*boji ‘night; day of 24 hrs’ boŋ ‘day’ *tubuq ‘grow’ xibi ‘swell’
*bune ‘pigeon, dove’ biñ ‘Ptilinopus greyii’ c. *tabiRa ‘wooden bowl’ kap
*butoŋ ‘navel’ bi/bikV *tabu ‘taboo’ kap

There are also some cases where original *p behaves as if it were *b:

(19) *kapak ‘wing, shoulder’ abɔ
*kape ‘k.o. crab’ xop
*pinu(q)an ‘Macaranga spp.’ biñwɔ

4.2.3 *m
Unreduplicated *m > Iaai m initially (20a), medially (20b), and in one possible case finally (20c).

(20)a. *madraR ‘ripe’ maet *manuk ‘bird’ menɔ
*mañawa ‘breathe’ menɔ *maputa ‘sleep’ mɔsk
*mata ‘eye’ ec-maka- *mata ‘point’ ho-maka-
*mataqu ‘right hand’ mæ (via metathesis: *mataqu > *mataq) *mate ‘die’ mɔk
*maturuR ‘sleep, lie down’ mokut *ma-wiRi ‘left (hand)’ me
*mimiR ‘urine/ate’ hi/mæ-
*b. *tama ‘father’ kame-
*kumi ‘squeeze’ hum, hom *ñami ‘taste’ hname-
*jumu ‘triggerfish’ wa/jimü *-m ‘2SG.POSS’ -m
*ñamuk ‘mosquito’ minɔ (via metathesis: *ñamuk > *muñak)
c. *tanum ‘bury’ kɔm, xɔnim

POC *maqurip ‘be alive’ > m”ɔŋt shows the apparently irregular development *m > m”.

10 There are a couple of possible cases of *b > Iaai -b-, though these are irregular in other ways: *makubu ‘grandchild’ > əəbųwii, has unexplained loss of *m among other irregularities; and *qebal ‘(pandanus sleeping) mat’ > kubwɔ shows an irregular reflex of *q.
There are also two cases of *b > p, at least one of which (*bou ‘centre post’ > pou ‘small post’) may be a Polynesian loan: Fagauvea has pou ‘central post in house’.
Cases of *m > hm initially (21a) and medially (21b) probably derive from reduplication:

\[(21a)\]
\[
\begin{align*}
*mamasa &\quad \text{‘dry, low tide’} \\
*maya &\quad \text{‘tongue’} > b\text{hme-} \\
*mapat &\quad \text{‘heavy’} \\
*mayaq &\quad \text{‘ashamed’} \\
*mutaq &\quad \text{‘vomit’} \\
*(ma)luR &\quad \text{‘shadow’}
\end{align*}
\]

\[
\begin{align*}
*hmææk &\quad \text{bo/hme-} \\
*mapat &\quad \text{hmæek} \\
*mutaq &\quad \text{hmehmæ} \\
*mutaq &\quad \text{hmite} \\
*mutaq &\quad \text{hmenu}
\end{align*}
\]

b. \[*ka[m]li, *kamamami \quad \text{‘EXC.PL’} \]

The sequence *mVm is clear in *mamasa, *meme (< *maya), and *kamamami. With the other forms, it is likely that the initial consonant was reduplicated to encode some grammatical function, and that form has now become the sole reflex.

4.3 Coronals and Palatals

In this section, I discuss the obstruents *t, *d, *c, *s, and *j; the nasals *n and *ñ, along with *l, which merges with them; the rhotics *r and *dr; and the semivowel *y.

4.3.1. *t

The reflexes of *t show a complex situation. Ozanne-Rivierre’s findings (1986:36‒38) can be summarized as follows, with the distribution of the (i) and (ii) sets not explained:

\[(22)\]

<table>
<thead>
<tr>
<th>Determinate</th>
<th>Indeterminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>*tali ‘plait; rope’</td>
<td>kən</td>
</tr>
<tr>
<td>*tanum ‘bury’</td>
<td>kənom</td>
</tr>
<tr>
<td>*tau(d,r)a ‘hold’</td>
<td>kəʊt</td>
</tr>
<tr>
<td>*tusaR ‘separate into two’</td>
<td>kia</td>
</tr>
</tbody>
</table>
(24)a. *tabiRa ‘wooden bowl’
   *tabu ‘taboo’
   *taci ‘younger same-sex sibling’
   *tali ‘rope’
   *talina ‘ear’
   *tama ‘father’
   *tanaq / *tanoq ‘land’
   *tanum ‘bury’
   *tapu(n)i ‘placenta’
   *taRutu(mŋ) ‘porcupinefish, Diodon sp.’
   *tasi ‘sea’
   *tobaw ‘bay’
   *tolu ‘three’
   *tubu ‘grandparent’
   *tupa ‘Derris sp.’
   *taRutu ‘porcupinefish, Diodon sp.’
   *tasik ‘sea’
   *tobw ‘bay’
   *tolu ‘three’
   *tubu ‘grandparent’
   *tupa ‘Derris sp.’

b. *maputa ‘sleep’
   *mata ‘eye’
   *mata ‘point’
   *mate ‘die’
   *pati ‘four’
   *p’atoRu ‘cycad’
   *matu ‘Gerres sp.’
   *maturu ‘sleep, lie down’
   *natu ‘child’
   *patuR ‘weave’

(25)a. *takuRu ‘back’
   *tana ‘basket’
   *tanis ‘cry’
   *taqe ‘excrement’
   *toqa ‘domestic fowl’
   *tuqaka ‘older same-sex sibling’
   *katapa ‘frigate bird’
   *mutaq ‘vomit’
   *qata ‘mark, shadow’
   *qata ‘person’
   *qutan ‘inland’
   *buton ‘navel’
   *katou ‘hermit crab’
   *kutu ‘louse’
   *qatop ‘thatch’
   *mataq ‘right hand’ > *matuqa-

c. *kurat ‘Morinda sp.’
   *mapat ‘heavy’
   *kurat ‘Morinda sp.’
   *mapat ‘heavy’

Thus the conditioning is as follows (with *K representing dorsals):

(26)  *t > t / *KV__, __VK (set ii)
      > k elsewhere (set i)

nature of the following vowel. Thus the dissimilation cannot even be reconstructed to the level of Proto-Loyalties, and so was clearly a relatively recent phenomenon—far more recent than the loss of *R.
There is a small number of apparent exceptions: (27a) lists three items which have \( k \) for expected \( t \); (27b) has one case of \( t \) for expected \( k \); and (27c) has a number of cases where the reflex is neither \( t \) nor \( k \) (including at least one case of complete loss), and which may well be only chance resemblances.

(27a)  *qate ‘liver’
*qatoluR ‘egg’
*quta ‘burden’

(27b)  *tina ‘mother’
*tokoR ‘mangrove’
*qutok ‘brain’

(27c)  *qutoluR ‘egg’
*tokon ‘crutch’
*toŋoR ‘mangrove’

While I have no examples of *tVt sequences—apart from *dotoq > *totoq > \( θɔɔ \) ‘Cerbera manghas’ in (28b)—it appears clear that the forms in (28) nevertheless represent reduplicated *t: almost all are verb-initial, the prime location for such a development.

(28a) Set i:  POC *tV(-)t
*ta\(l\i\) ‘plait, rope’
*tapi ‘touch w. hand’
*tau(d,r)a ‘hold’
*tunu ‘hot’
*turu ‘knee’
*tusaR ‘separate into two’

(28b) Set ii:  POC * tV(-)t
*taqon ‘roast’
*dotoq, S*(td)otoq ‘mangrove, \( θɔɔ \) ‘Cerbera manghas’

With reduplicated *t, the same dissimilatory conditioning seems to be found, though I have only two secure cases of *t adjacent to a dorsal consonant. The rule is given as (29):

(29)  *tV(-)t > \( θ / *KV__, *__VK \)  (set ii)
> \( x \) elsewhere  (set i)

4.3.2 *d, *r, and *dr

I treat these three POC protophonemes together here, since their reflexes seem to at least partly overlap.

POC *dr has few reflexes, but a pattern does seem to emerge, and it is similar to one of the patterns we will see for *r below: it appears to be reflected as \( d-, -d-, -t \) in Iaai.

(30)  -*dra ‘their: 3PL.POSS’
*draRaq ‘blood’
*(dr,r)uRi ‘thorns’
*madraR ‘ripe’
*rodrom ‘dark; night’

Ozanne-Rivierre (1986:35–36) has very few examples of *r (which was written as *d before changes to POC orthography were accepted), but suggests that, in Iaai, the unreduplicated reflex is \( f \) and the reduplicated reflex is \( hl \); however, she cites few forms that were actual reflexes of *r itself, and only one POC form for reduplicated *r (all other examples given being forms without known POC antecedents). But the situation is in fact more complicated than she reports. It is clear, despite not much evidence, that the reduplicated reflex is \( hl \): cf. especially the *rVr sequence in *raraŋ and the alternative reflexes of *raun in (31):

---

13 Ross (2008:181) states that there are a number of irregular developments affecting the reflexes of POC *dotoq, one major and common one being “a voicing assimilation which reflects a variant *totoq”.
But as far as unreduplicated *r is concerned, Iaai has both l (32a) and ɖ (32b) initially and medially, and t finally (32c):

(32a. *raqani ‘daylight’  laañ
 *raun ‘leaf’  laa- (plus hlaəo- ‘cover w. leaves’)
 *roŋoR ‘hear’  laŋ, liŋ
 *rua ‘two’  lo
 *kurat ‘Morinda sp.’  hulak
 *pura(q), *puro ‘bubble up, boil’  bubulu ‘bubble’
 *turu ‘knee’  bo/xulu caa-n

b. *rakum(u) ‘k.o. land-crab’  dʒəm
 *rapu(R) ‘ashes’  dʒə
 *ira ‘they’  ədia

c. *quraŋ ‘prawn’  oṭ
 *tau(d,r)a ‘hold’  kɔɔt, xəət
 *maqurip ‘be alive’  məət
 *kuron ‘pot’  ət
 *maturuR ‘sleep, lie down’  mokut
 *tuqur ‘stand’  teṭ, tooṭ

I suspect that, in the case of the initial ɖ- reflex (32b), there has been an oral/nasal crossover, with what has been reconstructed as *r being reflected as if it were *dr in these cases, while the remaining forms are reflexes of *r; that is, the Iaai reflexes of *r are l-l-ʈ.

There are not many forms reflecting *d: the ones that look as if they might do so are given below:

(33) -da ‘our: 1 INC.POSS’ -ta
 *ŋado ‘gums’  eŋədi-
 *pudi ‘banana’  o/vic
 *qoda ‘raw’  hət
 *tau(d,r)a ‘hold’  kəət (det.), xəət (indet.)

Although Iaai has five forms that are possible continuations of POC forms that contained *d, between them they seem to show four different reflexes of *d, so we are unable to make any serious statement here. And while the reflexes of *ŋado and *tau(d,r)a in (33) suggest a possible merger with *r, the remaining three do not.

4.3.3. *c and *s
Proto-Oceanic *c and *s merged in most Oceanic subgroups (Lynch, Ross, and Crowley 2002:64), and here I will treat them as a single protophoneme (which will I refer to simply as *s). Unreduplicated *s is reflected as d-initially (34a) and i elsewhere (34b) in Iaai. Note that vowels adjacent to the i reflex of *s in Iaai often fuse with the i to produce a single vowel, as *as > ai > e, and so on. Such cases are marked with following † in (34b).

(34a. *sake ‘go up’  dəə
 *salan ‘path’  dee-
 *saRum ‘needle’  dʒ
 *suRuq ‘liquid’  du ‘full of water’

b. *kanase ‘mullet’  eneə
 *mamasa ‘dry’  hme †
 *pica ‘how many?’  ve †
 *pisiko ‘flesh’  viii-
 *qasawa ‘spouse’  æəə- †
 *qase ‘chin, jaw’  wa/ai-
 *qusu ‘smoke’  hai
 *qusan ‘rain’  we †
*taci ‘younger same-sex sibling’
*taŋis ‘cry’
*tasik ‘sea’
*tusaR ‘separate into two’
*tusuk ‘flick w. finger’

Given the forms *sasa and *susu in the list below, it would appear that Iaai s is the reflex of reduplicated *s:

(35) *saku ‘needlefish’
*sasa ‘hunt, beat’
*sauq ‘far’
*siba ‘cut, slice’
*sinaR ‘shine’
*susu ‘breast’

The following forms, which are apparent POC reflexes, show unexplained developments in one or more languages:

(36) *sai ‘who?”
*sisiq ‘nerite’
*suRi ‘bone’

The nature of the reflex of unreduplicated *s requires a brief discussion, especially given the significant phonetic difference between the initial (d) and non-initial (l) reflexes. Some perspective can be gained here from examining the reflexes in Drehu and Nengone: unreduplicated *s > Drehu d, Nengone l (37a), and reduplicated *s > θ in both (37b):

(37) DREHU NENGONE
a. *salan ‘path’ óð, óðən la, len
*saRum ‘needle’ óð
*sapa ‘what?’ —
*kasupe ‘rat’ aði yeli
*pica ‘how many?’ iða el, ele
*qaca(ŋ) ‘name’ eð yele-
*qasu ‘smoke’ hað kəali
*tasik ‘sea’ keðə cele
b. *sasa ‘hunt, beat’ óðaŋ ‘throw’ óð ‘throw to the ground’
*siba ‘cut, slice’ ðupa —
*sinaR ‘shine’ óðiŋa, óðiŋa óðena
*sulu ‘burn’ —
*susu ‘breast’ ði

These data suggest a voicing contrast between PLOY *ð (< POC *s) and *θ (< POC *ss). Drehu retains these unchanged, as δ and θ; Nengone retains θ, but shows a fairly natural change *ð > l. In Iaai, however, initial *ð has undergone fortition, to d-, while non-initial *ð has undergone further lenition, to [y] = /i/.

4.3.4 *j
POC *j has reflexes in only two forms in Iaai, both of which show *j > j:

(38) *jiRi ‘Cordyline sp.’ ji, ü/ji
*jumu ‘triggerfish’ wa/jimü.

14 The dash in (37) indicates that I have no data for a reflex of that form in that language, or that the forms in my data with this meaning are not cognate.
15 Iaai salala ‘mackerel, Rastrelliger kanagurta’ is probably not a direct reflex of *jalala ‘Rastrelliger sp., small mackerel’, but more likely a loan from Fagauvea salala ‘Sardinella sp.’
4.3.5 *l, *n, and *ñ

POC *l, *n, and *ñ merged as Proto-New Caledonian *n, and this merger continues in Proto-Loyalties. As with a number of other protophonemes, PLOY *n has both reduplicated and unreduplicated reflexes. However, it also appears to have undergone a split into alveolar, retroflex, and palatal reflexes in Iaai, although the situation is by nomeans straightforward. I will present the data first, and then try to draw some conclusions.

I begin with the retroflex reflex, found in the following examples: *l > ñ in (39a), *n > ñ in (39b).

(39) a. *m̩wala(q)u 'Glochidion sp.'  hmanañ
   *buli(q) 'cowries (generic)'  o/biññ
   *qipil 'Intisia bijuga'  hveenñ
   b. *b̩ana 'mat (worn as clothing)'  beññ (coconut mat)
   *p̩anaq 'bow, shoot'  faññ 'arrow'
   *qonos 'barracuda, Sphyraena sp.'  oññ

In all but *qipil and *b̩ana, there is a *q in the adjacent syllable. In the case of *qipil, the vowel length and the nature of the initial consonant in the reflex hveen suggests that there may have been metathesis involved—*qipil > *piqil > *pi-piqil—and, if this were the case, there would also have been a *q in an adjacent syllable. So there is some validity in the suggestion that the presence of *q in a neighboring syllable conditioned the change *n > ñ. However, there are other similar cases where the reflex is not retroflex but alveolar (40a) or palatal (40b):

(40) a. *q̩alilõ 'Turbo sp.'  aen
   *q̩uluŋa 'headrest'  hunañ 'rest head on'
   b. *m̩q̩ane- 'brother of female'  maññi- 'sibling of opposite sex'
   *q̩one 'sand'  oññ
   *raqani 'daylight'  laññ

The palatal reflex ñ of *l (41a), *n (41b), and *ñ (41c) is illustrated below; in (41) forms are alphabetized on the basis of the vowel following the consonant under consideration—thus, in (41a), *pulewa precedes *lipon which precedes *bulu, since it is the vowel following *l that determines alphabetization.

(41) a. *p̩ulewa 'k.o. eel'  vẽññ
   *lipon 'tooth'  ŋu
   *keli 'dig'  hiññ
   *tali 'plait'  te/keñ (n.)
   *taliña- 'ear'  bara/kaññ-ñ
   *bulu 'Garcinia sp.'  hviññ
   *p̩ulũ 'rub, wash'  ŋũũ
   *q̩atoluR 'egg'  wa/akuññ
   b. *b̩une 'pigeon, dove'  biññ 'Ptilinopus greyii'
   *m̩q̩ane- 'brother of female'  maññi- 'sibling of opposite sex'
   *q̩one 'sand'  oññ
   *bani 'arm, hand, wing'  beññi-ñ
   *raqani 'daylight'  laaññ
   *p̩i̩nu(q)an 'Macaranga spp.'  biññwẽ
   c. *poññu 'turtle'  ŋũñ

The data in (41) suggest that the reflex ñ when *l, *n, and *ñ occurred before POC *i and *u (and probably *e as well). There are, however, other cases where the reflex ñ this same environment is alveolar rather than palatal:

(42) a. *alali 'flatfish'  hnen 'Bothus sp.'
   *q̩alilõ 'Turbo sp.'  aen
   *k̩ulũ 'skin'  une-ññ
   *k̩uluR 'breadfruit'  o/ünñ
   *q̩(a)luR 'shadow'  huneñ
   *p̩il̩u 'Caranx sp.'  vĩññ

But note also ken (det.), xin (indet.), with n rather than ñ.

65
*pulu ‘body hair’
*quluŋa ‘headrest’
*sulu ‘burn’
*tolu ‘three’

b. *boni ‘smell’
*kani ‘eat’
*nunu ‘shadow, spirit’
*manuk ‘bird’
*tanum ‘bury’
*tunu ‘hot’

Before *a, the reflex is n:

(43a) *laŋo ‘a fly’
*lawaq ‘spider’
*kila ‘to know’
*qulapi ‘parrotfish’
*walasi ‘*Semecarpus* sp.’

b. *kanase ‘mullet’
*manuŋ ‘power’
*quin(ae)pi ‘scale’
*natu ‘child’
*penako ‘steal’
*tanaq / *tanoq ‘land’
*sinaR ‘shine’

The following, however, show unexplained ñ for expected n:

(44) *kona ‘bitter’
*tina- ‘mother’

Finally, before *o, the situation is unclear, with few examples, and with both n (45a) and ñ (45b) occurring:

(45a) *tanoq ‘land’

b. *[p*ano]p*ano ‘*Guettardia speciosa*’
*talos ‘*Colocasia esculenta*’

Where does this all leave us? It is clear that POC *l, *n, and *ñ merged: although the data above contain inconsistencies, none of these suggest in any way that this merger did not take place. What appears to have happened is:

i. there was a tendency for PLOY *n to be backed to retroflex ŋ when an adjacent syllable contained *q;
ii. there was a tendency for PLOY *n to assimilate to a following front or high vowel, occurring as ñ before *i, *u, and *e; and
iii. the “default” reflex was n.

Neither of these tendencies (i) and (ii), however, constitute “complete” phonological developments: they appear to have been halted before applying throughout the lexicon.

Reflexes of what are reduplicated forms appear below: hn in (46a) and the sole case of hñ in (46b).

(46a) *alali ‘flatfish’
*ñami ‘taste’
*lawaq ‘spider’

b. *nuŋa ‘ask for’

(43b) *boni ‘smell’
*kani ‘eat’
*nunu ‘shadow, spirit’
*manuk ‘bird’
*tanum ‘bury’
*tunu ‘hot’

Before *a, the reflex is n:

b. *boni ‘smell’
*kani ‘eat’
*nunu ‘shadow, spirit’
*manuk ‘bird’
*tanum ‘bury’
*tunu ‘hot’

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*kila ‘to know’
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b. *kanase ‘mullet’
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*quin(ae)pi ‘scale’
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Reflexes of what are reduplicated forms appear below: hn in (46a) and the sole case of hñ in (46b).

(46a) *alali ‘flatfish’
*ñami ‘taste’
*lawaq ‘spider’

b. *nuŋa ‘ask for’
4.3.6 *y
There is a tendency for *y to fuse with a preceding *a as a low or mid fronted vowel in Iaai. The following, though, are all the data I have:

(47)  *bayan ‘bait’ o/bæ
*mayā ‘tongue’ > *meme bo/hme-
*mayɑq ‘ashamed’ hmehmæ
*qayuyu ‘coconut crab’ eu

4.4 Velars and Postvelars

4.4.1 *k and *q
Ozanne-Rivierre (1986:33–34) suggests the following reflexes of *k and *q in the three Loyalties languages:

(48)

<table>
<thead>
<tr>
<th></th>
<th>IAAI</th>
<th>DREHU</th>
<th>NENGONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>*k</td>
<td>Ø</td>
<td>Ø</td>
<td>y, Ø</td>
</tr>
<tr>
<td>*q</td>
<td>Ø</td>
<td>Ø</td>
<td>Ø</td>
</tr>
<tr>
<td>*kk</td>
<td>h</td>
<td>x</td>
<td>kʰ</td>
</tr>
<tr>
<td>*qq</td>
<td>h</td>
<td>h</td>
<td>kʰ</td>
</tr>
</tbody>
</table>

Thus suggested to her that *k and *q were still distinct in PLOY, though they appeared to have undergone some mergers: in Iaai, *k and *q merged, as did *kk and *qq; in Drehu, *k and *q merged, but not their reduplicated equivalents; and in Nengone, *kk and *qq merged, but not their unreduplicated equivalents. Once again, though, the situation is a little more complex than Ozanne-Rivierre described.

The loss in Iaai of PO unreduplicated *k (49a,b) and *q (49c,d) is illustrated below: initial occurrences are in (49a,c) and medial in (49b,d):

(49)a.
*kani ‘eat’ (unredup.) an c. *qata ‘person’ at
kapak ‘wing, shoulder’ abo qate- ‘liver’ ak, aki-
*katapa ‘frigate bird’ atau qone ‘sand’ aŋ
*katou ‘hermit crab’ otōo *qulapa ‘parrotfish’ unea
*kulit ‘skin’ une-* *qunae ‘scale’ eneũ, uneũ
*kuluR ‘breadfruit’ o/un *qusan ‘rain’ we (< **uia)
*kuron ‘pot’ at *b. *penako ‘steal’ venou
*kutu ‘louse’ ufo

I have no examples at all of reflexes of PO forms containing *kVk or *qVq sequences. There are, however, alternations like *qasawa ‘spouse’ > aceã- ‘spouse’, hoã ‘be married’, which suggest unreduplicated vs. reduplicated forms. What is apparently reduplicated *k is most frequently reflected as h (50a), but is also occasionally reflected as x (50b), with no conditioning that I can establish:

(50)a. *kani ‘eat’ han
*keli ‘dig’ hĩŋ
*kona ‘bitter’ hiŋ
*kumi ‘squeeze’ hum, hom
*kurat ‘Morinda sp.’ hulak
*kuRa ‘bony fish, prob. Alacula’ hu ‘Alacula vulpes(gros)’

17 Loss of *m- unexplained.
18 There is clear evidence in New Caledonia and Southern Vanuatu that *mataqu ‘right hand’ > *matuqa-.
19 In (50) and (51), I give verbs first, since these are more likely to have been candidates for reduplication than other word classes.
b. *kila ‘to know’ xanaa
   *kutu ‘cut’? xüü
   *kalaka ‘Planchonella sp.’ xaño/ŋ hmae
   *kape ‘k.o. crab’ xop

Reduplicated *q is reflected as h:

(51) *qasu ‘smoke’ hai
   *qata ‘mark, shadow’ hate
   *ma(kq)eto ‘a dark fish’ o/mæ/had/n ‘Acanthurus dussumieri’
   *qota, *qoda ‘raw’ hate
   *quluŋa ‘headrest’ hunəŋ ‘rest head on’
   *quta ‘burden’ hook
   *qutan ‘inland’ hook
   *qutok ‘brain’ haec

Most of these forms are nouns, but many may be derived from reduplicated verbs. The form tuha from *tuqaka ‘older same-sex sibling’ suggests reduplication, with medial *qak developing as either *qq or *kk.

All of these reflexes are summarized in (52). It can be seen there that there is almost a complete merger of *k and *q, and also of *kk and *qq:

(52) *k > Ø *kk > h,x
   *q > Ø *qq > h

It would seem a logical assumption that the original reflex of *kk was x, and that there was a subsequent, though lexically incomplete, change x > h.

Recall from 4.3.1, though, that the default reflex of reduplicated *t in Iaai is also x. That is, there is an apparent partial merger of this reflex with one of the reflexes of reduplicated *k; but there are no cases where the change to h affected the x that derives from *tt. This suggests that one or the other reflex was originally not x. Nengone has cʰ as the reflex of *tt in all environments, and cʰ, or something like it, may have been the original reflex of reduplicated *t. A possible timeline would be:

(53)

<table>
<thead>
<tr>
<th></th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
</tr>
</thead>
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<tr>
<td>*tt</td>
<td>&gt; cʰ</td>
<td>&gt; x</td>
<td></td>
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<tr>
<td>*kk</td>
<td>&gt; x</td>
<td>some x &gt; h</td>
<td></td>
</tr>
</tbody>
</table>

4.4.2 *g

Very few etyma reflecting *g occur in Loyalties languages. The data I have suggest that *g became Iaai k finally, though I have no data on what its non-final reflexes were:

(54) *baga ‘banyan’ bæk
    *waga ‘canoe’ ok
    *-gu ‘my: 1SG.POSS’ -k

4.4.3 *ŋ

POC *ŋ is regularly reflected as ŋ. The examples below show reflexes of initial (55a) and medial (55b) *ŋ:

(55)a. *ŋado ‘gums’ e/ŋadj-
    *ŋuŋa ‘ask for’ hñiiŋ

b. *laŋo’a fly’ naŋ
   *puŋa ‘flower’ vəŋo-
   *puŋao ‘in-law’ ŋo- ‘parent-in-law’
   *quluŋa ‘headrest’ hunəŋ ‘rest head on’
   *Raŋi ‘wild duck’ ŋ
   *Raŋa ‘spider conch, Lambis’ anŋe/t
   *roŋoR ‘hear’ laŋ, liŋ

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4.4.4 *R. POC *R is regularly lost in initial (56a) and medial (56b) positions:

(56)a. *Raŋa ‘spider conch, Lambis sp.’ aŋe/t
   *Raŋ ‘wild duck’ eŋ
   *Ruap ‘high tide’ uōū
   *Rum ‘house’ uma

b. *draRaq ‘blood’ qa
   *(dr,r)uRi ‘throrns’ ĭū/đāō ‘sting’, ĭū/đāōō ‘thorny’
   *ma-wiRi ‘left hand’ me
   *paRa ‘stingray’ ve
   *paRu ‘Hibiscus tiliaceus’ vææu
   *patuR ‘weave’ vææk (det.), hvəsk (indet.)
   *saRum ‘needle’ dɔ
   *tabiRa ‘wooden bowl’ (ho)too-n ? ju, joo-nn

4.5 Consonants: Summary

The foregoing discussion is summarized in table 2. Conditioned reflexes are separated by a comma, and a footnote describes the conditioning.

<table>
<thead>
<tr>
<th>POC</th>
<th><em>p</em></th>
<th>*p-</th>
<th><em>b</em></th>
<th><em>m</em></th>
<th><em>mm</em></th>
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</table>

5. VOWELS

I showed above that there is alternation of vowels in some verb forms (2.2), and that there is a tendency to loss of POC final vowels (3.2). These factors, plus a number of apparently sporadic individual changes, make charting the history of the POC vowels in Iaai a difficult task.

5.1 POC *i

Word-final *i is lost in most items in which it occurred; the data in (57) include not only cases of POC word-final *i (57a), but also POC forms in which *i came to be word-final after loss of a final consonant (57b).

(57)a. *boni ‘smell’ bon b. *aŋin ‘wind’ aŋ
   *boŋi ‘night; day of 24 hrs’ boŋ ‘day’ *maqurip ‘be alive’ m’ɔŋ
   *kani ‘eat’ an, han *qalilin ‘Turbo sp.’ aen
   *kawil ‘fish-hook’ ge
   *kumi ‘squeeze’ hum, hom
   *ma-wiRi ‘left (hand)’ me
   *pati ‘four’ væk
*pudi ‘banana’  o/vic
*qupi ‘yam’  u
*raqani ‘daylight’  laañ

There are a few cases, however, in which word-final *i seems to have been retained ([a] and [b] as in [57]):

(58)a.  *paRi ‘stingray’  ve (*ai > e)
*dr,RuRi ‘thorns’  ü/dəə ‘sting’, ü/dəə ‘thorny’
*qulapı ‘parrotfish’  unea
b.  *buli(q) ‘cowries (generic)’  o/biŋa
*taŋis ‘cry’  teŋe
*tašik ‘sea’  kəə ‘water, sea’

I will deal with these reflexes along with those of non-final *i below.

The most common reflexes of *i appear to be i (59a) and e (59b):

(59)a.  *bani ‘arm, hand, wing’  beñi-
*jiRı ‘Cordyline sp.’  ji. üji
*paRı ‘stingray’  ve (*ai > e)
*pilu ‘Caranx sp.’  vinee
*pinu(q)an ‘Macaranga spp.’  biñwọ
*pašiko ‘flesh’  vii-
*sišiq ‘nerite’  wa/jia
*taci ‘younger same-sex sibling’  keiñ ??
b.  *kulit ‘skin’  une-
*sìm ‘taste’  hname-
*pica ‘how many?’  ve ?
*qaliliŋ ‘Turbo sp.’  aen ??
*qipil ‘Intsia bijuga’  hveeŋ
*tašiŋa ‘ear’  bara/kañe-
*taŋis ‘cry’  teŋe
*tina ‘mother’  hine-?

I cannot account for the distribution of these two reflexes: both occur finally, both occur after bilabials and after PLoY *n, and both occur when the preceding vowel was *a. I can only assume that a change *i > e was not completed.

In addition, there are other possible reflexes: a in (60a), ø in (60b), ø in (60c), and u in (60d):

(60)a.  *buli(q) ‘cowries (generic)’  o/biŋa
*kila ‘to know’  xanaa
*qulapı ‘parrotfish’  unea
b.  *(dr,ruRı ‘thorns’  ü/dəə ‘sting’, ü/dəə ‘thorny’
*ira ‘they’  øda
*tašik ‘sea’  kəə ‘water, sea’
c.  *mimiR ‘urine/ate’  hi/mæ-
d.  *kamami ‘1EXC.PL’  shmun
*lipon ‘tooth’  ŋu
*niuR ‘coconut’  nu
*siba ‘cut, slice’  subə

5.2 POC *e

Word-final *e is regularly lost:

(61)  *bune ‘pigeon, dove’  biñ  *mate ‘die’  mək
*kape ‘k.o. crab’  kop  *qate ‘liver’  ak
The most common reflex of non-final */e/ is */i/* (62a), In (62b), I list other possible reflexes, indicating the nature of the change to the right in each case. Note that the last three forms in (62a) are morpheme-final but not word-final, since they are followed by possessive suffixes.

(62).  

(a) */bʷ*ea ‘drum, slitgong’  
  *keli ‘dig’  
  *m*qane- ‘brother of female’  
  *qate- ‘liver’  
  *taqe ‘excrement’

(b) *penako ‘steal’  
  *bʷ*eka ‘bat, flying-fox’  
  *ma(kq)eto ‘a dar (k) fish,  
  poss. *Ctenochaetus striatus’  
  *pulewa ‘k.o. eel’  
  *saku ‘needlefish’

(b) *penako ‘steal’  
  *bʷ*eka ‘bat, flying-fox’  
  *ma(kq)eto ‘a dar (k) fish,  
  poss. *Ctenochaetus striatus’  
  *pulewa ‘k.o. eel’  
  *pulü ‘rub, wash’  

5.3 POc */u*

Word-final */u/ is often retained (certainly far more often than */i/*), both when it was originally word-final (63a), and also when it was followed by a word-final consonant that was later lost (63b):

(63).  

(a) *bʰʷ*arapu ‘long’  
  *jumu ‘triggerfish’  
  *katou ‘hermit crab’  
  *kuτu ‘louse’  
  *mala(q)u Glochidion sp.’  
  *nunu ‘shadow, spirit’  
  *patu ‘stone’  
  *pulü ‘rub, wash’  
  *saku ‘needlefish’

(b) *manuk ‘bird’  
  *tusuk ‘flick w. finger’  
  *wa/jimü  
  *wa/sa  
  *taRutu(mŋ) ‘porcupinefish.’

But there are also quite a number of cases of loss of final */u* (64a) or */u*C (64b):

(64).  

(a) *bʰ*’arapu ‘long’  
  *pohü ‘turtle’  
  *matu ‘Gerres sp.’  
  *mu ‘2SG.POSS.’  
  *qasu ‘smoke’  
  *tabu ‘taboo’  
  *tulu ‘three’  
  *tunu ‘hot’

(b) *kuluR ‘sleep’  
  *matu ‘Gerres sp.’  
  *puŋao ‘in-law’  
  *puru ‘run’

There is a very strong tendency for */u/ to be fronted after a POc bilabial. After a voiced bilabial, the reflex is commonly */i/* (65a), whereas after */p/ (which was subsequently lost) it is commonly */u/ (65b):

(65).  

(a) *bulü ‘Garcinia sp.’  
  *poth ‘turtle’  
  *matu ‘Gerres sp.’  
  *mu ‘2SG.POSS.’  
  *qasu ‘smoke’  
  *tabu ‘taboo’  
  *tulu ‘three’  
  *tunu ‘hot’

(b) *kuluR ‘breadfruit’  
  *matuR ‘sleep, lie down’  
  *patuR-i ‘weave’  
  *qatoluR ‘egg’  
  *taRutu(mŋ) ‘porcupinefish.’  
  *bina ‘body hair’  
  *pu³ ‘rub, wash’  
  *punao ‘in-law’  
  *puru ‘run’

20 The *i in *enei ‘mullet’ derives from */s/ not */e/.
*mutaq 'vomit'    hmita
*pudi 'banana'    o/vic
*tubuq 'grow'    xibi

Note also the metathesized form *ñamuk 'mosquito' > **muña > minə.

There are, however, some exceptions:

- e for expected i (*tubu 'grandparent' > kibe-)
- ù for expected i (*jumu 'triggerfish' > wa/jimù);
- failure of *u to front as expected (*tubuq 'grow' > küü)
- a for expected ü or i (*puŋa 'flower' > vəŋgə);
- ə for expected ü or i (*tubuq 'grow' > küü);

In the case of *buRat 'Fagraea sp.' > poʈ, the change is *ua > o.

When *u after *t came to be morpheme-final, it was lowered to o or ə:

(66)  *kurat 'Morinda sp.'    hulak  *qayuya 'coconut crab'    eu
*kulit 'skin'    une-  *qulapi 'parrotfish'    unea
*kulur 'breadfruit'    o/un  *quluna 'headrest'    hunəŋ 'rest head on'
*kumi 'squeezee'    hum, hom  *qumi 'yam, Dioscorea alata'    u
*ku'tu 'house'    uto  *Run'aq 'house'    uma
*(ma)ujuR PEOc 'shadow'    hmenu  *suRuq 'liquid'    du 'full of water'
*maturuR 'sleep, lie down' mokut  *tunu 'hot'    xun 'sweat'
*niuR 'coconut'    nu  *tuqaka 'older same-sex sibling'    tuha
*nunu 'shadow, spirit'    ha/nu  *turũ 'knee'    bo/xulu caa-n

There are, however, a handful of forms that are apparently cognate, but where the vowel that reflects *u is, unpredictably, i, e, a, ü, o, or ɔ.

5.4 POc  *o

POc *o is often lost word-finally (68a), but is occasionally retained in that environment (68b):

(68a)  *boni 'smell'    bôŋ  b. *qota, *qoda 'raw'    hst
*laŋo 'a fly'    naŋ  *tanoq 'land'    kəŋ
*roŋoR 'hear'; liŋ  *boRe 'dream'    boŋ    *taqon 'roast'    əŋ
*toŋoR 'mangrove'    -ciŋ  *qonos 'barracuda, Sphyraena sp.'    oŋ

In the cases of *ma(kq)eto 'a dark fish, poss. Ctenochaetus striatus' > o/mæhad ɔ/n 'Acanthurus dussumieri', and *talos 'Colocasia esculenta' > koŋiŋ, the final vowel is retained with a supporting non-etymological following consonant.

The most common reflex of *o is o (69a), and rounded reflexes ɔ (69b) and u (69c) also occur:

(69a)  *boni 'smell'    bon  b. *qupa, *qupa 'raw'    hst
*boni 'night; day of 24 hrs'    bɔŋ 'day'  *tanoq 'land'    kəŋ
*boRe 'dream'    boo  *taqon 'roast'    əŋ
*katou 'hermit crab'    otoo  *qonos 'barracuda'    oŋ
*toŋoR 'mangrove'    -ciŋ  c. *penako 'steal'    venə

21 Classificatory prefix used with trees.
22 Cf. also the reflex of *ma(kq)eto in the previous paragraph.
There are, however, a number of cases where the reflex of *o is a front or central vowel. I list these in (70):

(70) *o > i:  
*konɑ ‘bitter’  hiŋ
*ŋado ‘gums’  eŋdi-
*[p’ano][p’ano ‘Guetta speciosa’  hveŋi
*rodnɔ ‘dark; night’  ɦliŋ
*talɔs ‘Colocasia esculenta’  ʔaŋŋiŋ?
*totuR ‘mangrove, Bruguiera sp.’  ciŋ

*o > ə:  
*rɔŋo ‘hear’  liŋ, liŋ
*p(w)atoRu ‘cycad’  i/veŋə
*qone ‘sand’  əŋ
*qaboRa ‘catfish’  wa/aba

At this stage, I am unable to suggest what might have conditioned these reflexes.

5.5 POc *a

Unlike the other POc vowels, final *a was generally retained. There are, however, some cases of loss, illustrated below, where (71a) shows word-final *a and (71b) word-final *æC.

(71)a. *baga ‘banyan’  bæk  b. *bayan ‘bait’  o/bæ
*maputa ‘sleep’  mʊɔk
*qata ‘person’  at
*quluna ‘headrest’  hunəŋ ‘rest head on’
*quta ‘burden’  hook
*Raŋa ‘wild duck’  eŋ
*taŋa ‘basket’  taŋ
*waga ‘canoe’  ok

POC *a underwent fronting when it was preceded by a bilabial: (72a) shows *a > æ, and (72b) *a > e.

(72)a. *baga ‘banyan’  bæk  b. *bani ‘arm, hand, wing’  beŋi-
*baRa ‘wall’  bææ ‘build wall’
*bayan ‘bait’  o/bæ  b. *bayan ‘bait’  o/bæ
*madRa ‘ripe’  mæŋ
*manəŋ ‘power’  mæŋ
*mapat ‘heavy’  mæəŋk
*mata ‘eye’  ec-mækə-
*mata ‘point’  ho-mækə-
*paRu ‘Hibiscus tiliaceus’  vææu
*pat, *pati ‘four’  væk
*patuR-i ‘weave’  væk (tr.)
*N*vara ‘kin group’  væi ‘anciens clans’

It is difficult to see any conditioning of these two reflexes: there is a tendency for æ to occur if the next vowel was *a, and for e to be the reflex if the next vowel was *i or *u, but there are exceptions to both of these statements; and note also *mayaq ‘ashamed’ > hmehmæ (with reduplication), with both reflexes occurring.

There are some cases of *a > i when the following syllable contained *i (or *y) (73a), but there are others where *a remained a in this same environment (73b):

*qayuyu ‘coconut crab’  eu
*qulapi ‘parrotfish’  unea
*taqi ‘younger same-sex sibling’  keŋ
*tali ‘rope’  te/keŋ (n.)

*toqa ‘domestic fowl’  xo/ø
*toRas ‘Intsia bijuga’  kohu
*qatoluR ‘egg’  wa/akuŋ
*tolu ‘three’  kun
*taliŋa ‘ear’  bara/kəne-  *tapi ‘touch w. hand’  xaũ, xoũ
*tajis ‘cry’  tenje

Once again, no explanation for the two different reflexes is apparent. In addition, there are other cases of *a > e which I cannot easily explain:

(74)  \(^*\)bʷana PNCV ‘mat (worn as clothing)’  berŋo (coconut)
*kanase ‘mullet’  ene
*p’ano ‘Guetardia speciosa’  hveñi
*qata ‘mark, shadow’  hate
*Raŋa PEOc ‘wild duck’  en
*Raŋa ‘spider conch, Lambis’  anŋe/t
*sapa ‘what?’  ieũ?
*tama ‘father’  kame-
*tina- ‘mother’  hiñe-?

POc *a was backed to o or ɔ or when adjacent to *w:

(75)  *lawaq ‘spider’  wahai/hnɔ
*qasawa ‘spouse’  æcɔ-
*qawaq ‘milkfish, Chanos chanos’  ɔ
*waga ‘canoe’  ok
*wakaR ‘root’  wɔɔ-

There is also a tendency for *a > o or ɔ when the vowel in the next syllable was *u (76a); but, once again, there are cases where *a remains a in this environment (76b):

(76a)  *natu ‘child’  noko-
*tanum ‘bury’  kɔñɔm (tr.)
*tapu(n)i ‘placenta’  koiũ
b.  *bʷatu- ‘head’  ba-
*mʷala(q)u ‘Glochidion sp.’  hmanaŋa
*paus ‘weave, plait’  hwααu (pandanus)
*qanu-su ‘to spit’  hanteč
*qasu ‘smoke’  hai
*saku ‘needlefish’  wa/saŋ
*tabu ‘taboo’  kap
*taRutu(mŋ) ‘porcupinefish, Diodon sp.’  kaat

The default reflex is a, as can be seen, for example, in (73b) and (76b), and also in cases like the following:

(77)  *-da ‘our (INC)’  -ta  *-dra ‘their’  -dŋa ~ -ra
*draRaŋ ‘blood’  ðŋa  *ira ‘they’  ʔaŋa
*kila ‘to know’  xanaa  *kurat ‘Morinda sp.’  huľak
*mutaq ‘vomit’  hmita  *papa ‘mouth’  hwan-uma ‘door’
*puaq ‘fruit’  wa-  *pʰanaq ‘bow, shoot’  fanaŋ ‘arrow’
*qaramʷaŋi ‘Pipturus sp.’  arma  *qase ‘chin, jaw’  wa/ai-
*qata ‘person’  at  *qate- ‘liver’  ak, aki-
*qatoluR ‘egg’  wa/akuŋ  *taŋa ‘basket’  taŋ

There are, however, unexplained examples of a, o, ɔ, and ə as reflexes of *a (other than those discussed above as being the result of certain tendencies). A few examples of each are given in (78).

(78a)  *laŋo ‘a fly’  naŋ  b.  *lala(ʔ) ‘trochus’  wa/hlo
*rapu(R) ‘ashes’  q曙光  *bʷana ‘mat’  berŋo ‘coconut mat’
*raraŋ ‘warm’  hloŋ  *katou ‘hermit crab’  otoo
*taliŋa- ‘ear’  bara/kəne-  *maturuR ‘sleep, lie down’  mokuŋ
5.6 Interim Summary

The discussion in 5.1–5.5 is summarized in table 3. Reflexes that are not the default reflex are in parentheses.

Table 3. Iaai Reflexes of Proto-Oceanic Vowels

<table>
<thead>
<tr>
<th>POC</th>
<th>*i</th>
<th>*e</th>
<th>*a</th>
<th>*o</th>
<th>*u</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iaai</td>
<td>i, e</td>
<td>i</td>
<td>a (æ, e, ɔ)†</td>
<td>o (ɔ, u, i)‡</td>
<td>u (ü, i, o, 2)§</td>
</tr>
</tbody>
</table>

† æ, e after bilabials; ɔ adjacent to *w.
‡ Conditioning of ɔ, u and i not clear.
§ ü after *p; i after other bilabials; o or ɔ / *t_#.

5.7 Development of Vowel Length

All vowels occur both short and long. Long vowels are often derived from earlier vowel clusters, which may have either been actual vowel clusters in POC or else the result of regular loss of certain medial consonants (like *p, *k, *q, or *R). Examples are given in (79), where the middle column indicates the kinds of changes that have taken place (some more regular than others), leading to the current reflex in the right hand column.

(79)  *taqe ‘excrement’  **aqe > ai > i  tii-
    *qipil ‘Intsia bijuga’ > pi-piql\footnote{23}
      **iqi > ee  hveen
    *baRa ‘wall’  **æRa > æRa > ææ  bææ ‘build a wall’
    *mapat ‘heavy’  **eæ > ææ  hmææk
    *paqan ‘thigh’  **ææ > ææ  je/vææ-
    *pituqun ‘star’  **uqu > uu > üü  oxüü
    *maputa ‘sleep’  **æpu > æu > øø  møøk
    *(dr,r)Ri ‘throms’  **uRi > ui (or ue) > ææ  ü/dæ ‘sting’, ü/dadæ ‘thorny’
    *maqurip ‘be alive’  **aq > ææ  m’æət
    *rakumu ‘k.o. land-crab’  **aku > æ > ææ  ãlam
    *sake ‘go up’  **ake > ai > ææ  ðæø
    *raqani ‘daylight’  **aqa > aa  laaŋ
    *raun ‘leaf’  **au > aa  laa-
    *sai ‘who?’  **ai > aa  iaa
    *taRutu(mŋ) ‘porcupinefish’  **aRu > au > aa  kaat
    *kotou ‘hermit crab’  **ou > oo  ooto
    *takuRu ‘back’  **akuR > au(u) > oo  (ho)too-n
    *tuqur ‘stand’  **uqu > oo  tooʃ
    *lawaq ‘spider’  **awa > çç  wahi/hnɔɔ
    *qasawa ‘spouse’  **awa > çç  æçç-
    *taqon ‘roast’  **aqo > ao > çç  ðɔɔn
    *tau(d,r)a ‘hold’  **au > çç / ææ  kɔt (tr.), xaɔ (incorp.)
    *wakaR ‘root’  **oka > çç  wɔɔ-

In a few cases, long vowels develop in two other ways: (i) medial *s regularly became i, and this also created vowel clusters, some of which develop as long vowels (80a); and (ii) reduplication occasionally produced a long vowel, with C,V-C,V… > C,C,V: (80b).

(80a)  *pisiko ‘flesh’  vii-
    *tusuk ‘flick w. finger’  kũũ

\footnote{23}{See 4.3.5 for a justification of the metathesis and reduplication involved in *qipil > *piql > *pi-piql.}
There are, however, a few cases where what was clearly a single vowel, not occurring in a cluster, was reflected as a long vowel for reasons I cannot explain:

(81) *pilu ‘Caranx sp.’ vinee
*salan ‘path’ dee-
*patuR-i ‘weave’ vææk (det.), hvææk (indet.)
*tau(d,r)a ‘hold’ kəət (det.), xəət (indet.)
*kila ‘to know’ xanaa

6. CONCLUSION

In this paper, I have tried to outline the development of the POC phonemes in Iaai. Individual developments can be seen in the summaries in Tables 2 and 3 for consonants and vowels, respectively.

Features of particular interest include

- a distinction between reflexes of historically reduplicated and unreduplicated consonants, even though that reduplication is no longer synchronically productive;
- dissimilation in the reflexes of *t;
- vowel fronting after bilabials; and
- widespread loss of a number of consonant phonemes.

Overriding all of this is the large number of apparent irregularities—or, at least, the large number of cases of reflexes whose conditioning cannot, or has not yet, been established. This is particularly prevalent with reflexes of the POC vowels.

It is hoped that this paper adds to our knowledge of the complex history of New Caledonian languages, and that it will form a prelude to the reconstruction of the phonology of Proto-Loyalties.

References


