



Journal of the Linguistic Society of Papua New Guinea

ISSN: 0023-1959

Vol. 33 No. 1, 2015

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).¹

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 /t^h/); so I write *t*, *θ*, and *f* rather than what are written *tr*, *th*, and *sh*

¹ 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 *ü* 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 /β̥/; 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 1. Iaa Phonemes

	p		t		t̥	c	k		i	ü	u
bw	b		d		d̥	j	g		e	ø	ə
hw	hw	f	θ	s		ʃ	x	h	æ		a
w	v		ð								ɔ
hmw	hm		hn		hŋ	hñ	hŋ		+ vowel length		
mw	m		n		ŋ	ñ	ŋ				
					hl						
					l						
				r							

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 Iaa ... retains important traces of ancient derivations by reduplication”.² Below I very briefly outline some of the morphophonemics of Iaa (Ozanne-Rivierre 1976:123–30, summarized as Lynch:2002:783–86).

The major phonological changes that are involved in Iaa 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 | | |
| | liṭ | ‘night’ | hliṭ | ‘be black’ | |
| | noko-n | ‘his/her child’ | hnək | ‘be the mother of’ | hnokoo ‘give birth to’ |
| | aeɔɔ-n | ‘his/her spouse’ | həeɔ | ‘be married’ | |

Iaa 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’ |
| | sə | sii | ‘cut’ |
| | aoc | auk | ‘hold in the fist’ |
| | ɔc | həc, hək | ‘break with the teeth’ |
| | ŋooc | hŋuuk | ‘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 | xəp ‘welcome’ |
| | l > hl | lele | hlhli ‘pull, haul in’ |
| | n > hn | nəŋ | hnəŋ ‘brandish’ |
| | ŋ > hŋ | ŋooc | hŋuuk ‘tie’ |

² In the original: “la morphologie du iaa ... conserve les traces importantes d’anciennes dérivations par redoublement”.

t > θ	təət	θəət	‘lift up by the end’
w > hw	wia	hwiaə	‘turn, change’
v > hv	vɛden	hvɛət	‘carry on the shoulder’

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 C_iVC_i-initial forms (as opposed to forms beginning with C_iVC_j). Consider the forms in (4):

(4)	POC	IAAI	DREHU	NENGGONE
a.	*mate ‘die’	m øk	m eci	n eti
b.	*mamasa ‘dry, low tide’	h me	h með	h nede
c.	*mutaq ‘vomit’ (> *mu-mutaq)	h mita	h miṭa	h nija

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 *mmutaq (from *mu-mutaq).³

This distinction between C- initial and C_iVC_i-initial forms, illustrated above by the contrast between *mate and *mamasa, can also be seen in IaaI in the following:⁴

(5)	*patu ‘stone’	veto	cf.	*papa ‘mouth’	h wan-uma ‘door’
	toqa ‘fowl’	xo/to		S(td)otoq ‘mangrove’	θ o ‘ <i>Cerbera manghas</i> ’
	*roŋoR ‘hear’	lɛŋ, liŋ		*raraj ‘warm’	h lɛəŋ ‘warm, warmth’
	*sake ‘go up’	dəə		*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 CVCVC 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:⁵

(6)	*buRat ‘ <i>Fagraea</i> sp.’	poṭ
	*kurat ‘ <i>Morinda</i> sp.’	hulak
	*mapat ‘heavy’	hmææk
	*pukot ‘net’	eet

Final *r is retained in the only example I have: *tuqur ‘stand’ > *teṭ, tooṭ*.

³ When before non-back vowels, POC bilabials became dentals/alveolars in Nengone (cf. Lynch 2003).

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 ^E, ^R, and ^S, respectively. I also occasionally cite Proto-North-Central Vanuatu (PNCV) forms (from Clark 2009), marked with ^N, 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.

⁵ 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’	abo
	*tasik ‘sea’	kəiə ‘water, sea’
	*tusuk ‘flick w. finger’	küü
	*mutaq ‘vomit’	hmita
	*p ^w anaq ‘bow, shoot’	faŋa ‘arrow’
	*Rum ^w aq ‘house’	uma
	^E *(ma)luR ‘shadow’	hmenu
	*niuR ‘coconut’	nu
	*maqurip ‘be alive’	m ^w əət
	*Ruap ‘high tide’	uoü

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’	θəɔn	b.	*qusan ‘rain’	we
	*rarəŋ ‘warm’	hləəŋ ‘warm, warmth’		*manəŋ ‘power’	mæn
	*tanum ‘bury’	kəɔnəm (det.), xənim (indet.)		*saRum ‘needle’	də
	*qipil ‘ <i>Intsia bijuga</i> ’	hveeŋ		*qebal ‘mat’	kubwə

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 Iai. 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’ > *qa* or *kaboRa ‘catfish’ > *wa/aba*, the situation is less clear: does the final vowel of the Iai 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	*aŋin ‘wind’	aŋ
	*tubuq ‘grow’	xibi		*tabu ‘taboo’	kap
	*kutu ‘louse’	uto		^R *matu ‘ <i>Gerres</i> sp.’	o/møk
	*qonos ‘barracuda’	oŋo		*laŋo ‘a fly’	nəŋ
	*mutaq ‘vomit’	hmita		*maputa ‘sleep’	møøk
	^E *b ^w ana ‘mat (worn as clothing)’	beŋo		*baga ‘banyan’	bæk

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 Iaii reflexes of the POC consonants. One theme that crosscuts the discussion of different POC phonemes, and should briefly be mentioned here, is that a number of POC 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 POC. 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^w, *b^w, and *m^w, as well as the semivowel *w.

4.1.1 *p^w

The only Iaii reflexes of this prothophoneme can be found in:

- | | | |
|------|--|--------------|
| (10) | *p ^w anaq ‘bow, shoot’ | faŋa ‘arrow’ |
| | *[p ^w ano]p ^w ano ‘ <i>Guettardia speciosa</i> ’ | hveñi |

4.1.2. *b^w

In Iaii, *b^w merges with *b (see 4.2.2) as *b-*, *-p*, though I have no reflexes in medial position in Iaii:

- | | | |
|------|---|------------------------|
| (11) | E*b ^w ana ‘mat (worn as clothing)’ | beŋo (coconut) |
| | *b ^w aŋo ‘new leaves or shoots’ | ba- ‘end of, shoot of’ |
| | *b ^w atu- ‘head’ | ba- |
| | N*b ^w ea ‘drum, slitgong’ | biɔ ‘dance’ |
| | *b ^w eka ‘bat, flying-fox’ | bü |
| | *tob ^w a ‘bay’ | kop |

4.1.3. *m^w

The regular reflex of *m^w appears to be *m*:

- | | | |
|------|---|---------------------------------|
| (12) | *m ^w aqane- ‘brother of female’ | mañi- ‘sibling of opposite sex’ |
| | *qaram ^w aqi ‘ <i>Pipturus argenteus</i> ’ | arma |
| | *Rum ^w aq ‘house’ | uma |
| | *rakum(u) ‘k.o. land-crab’ | ɖəəm |

In one cases—*m^wala(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 *ɔ*:

- | | | |
|------|--|--------------------|
| (13) | *waga ‘canoe’ | ok |
| | *walasi ‘ <i>Semecarpus</i> sp.’ | ounic |
| | *lawaq ‘spider’ | wahai/hnɔɔ |
| | *mañawa ‘breathe’ | meno |
| | E*pulewa ‘k.o. eel’ | veñɔ |
| | *qasawa ‘spouse’ | aeɔɔ- ⁷ |
| | *qawaq ‘milkfish, <i>Chanos chanos</i> ’ | ɔ |

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

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

⁷ POC *s > medial *i* in Iaii (see 4.3.3): thus the initial *ae* in this form derives from *ai < *qas, and the final *ɔɔ* from *awa.

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 > *ppiql). Iaaï 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 in the way that they are after unreduplicated *p.

(17)	*papa ‘mouth’	hwan-uma ‘door’
	*patuR-i ‘weave’	vææk, hvææk
	*paus ‘weave, plait’	hwaau
	*qipil ‘ <i>Intsia bijuga</i> ’	hveen

4.2.2. *b

In Iaaï, *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’	subɔ?
	*b ^(w) arapu ‘long’	beü		*kaboRa ‘catfish’	wa/aba
	*baRa ‘wall’	bææ		*buli(q) ‘cowries (generic)’	o/biŋa
	*boni ‘smell’	bon		*tubu ‘grandparent’	kibe-
	*boŋi ‘night; day of 24 hrs’	boŋ ‘day’		*tubuq ‘grow’	xibi ‘swell’
	*bune ‘pigeon, dove’	biñ ‘ <i>Ptilinopus greyii</i> ’	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 ‘ <i>Macaranga</i> spp.’	biñwɔ

4.2.3 *m

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

(20)a.	*madraR ‘ripe’	mæt
	*manuk ‘bird’	menɔ
	*mañawa ‘breathe’	menɔ
	*maputa ‘sleep’	møøk
	*mata ‘eye’	ec-mæka-
	*mata- ‘point’	ho-mæka-
	*mataqu ‘right hand’	metɔ (via metathesis: *mataqu > *matuqa)
	*mate ‘die’	møk
	*maturuR ‘sleep, lie down’	mokuŋ
	*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
	*-mu ‘2SG.POSS’	-m
	*ñamuk ‘mosquito’	minɔ (via metathesis: *ñamuk > *muñak)
c.	*tanum ‘bury’	kɔnɔm, xənim

POC *maqurip ‘be alive’ > *m^wəæt* shows the apparently irregular development *m > *m^w*.

¹⁰ There are a couple of possible cases of *b > Iaaï *-b^w-*, though these are irregular in other ways: *makubu- ‘grandchild’ > *əəbwii-*, has unexplained loss of *m among other irregularities; and *qebal ‘(pandanus sleeping) mat’ > *kubwə* shows an irregular reflex of *q-. There are also two cases of *b > *p-*, at least one of which (*bou ‘centre post’ > *pouu* ‘small post’) may be a Polynesian loan: Fagaueva has *pou* ‘central post in house’.

Cases of *m > hm initially (21a) and medially (21b) probably derive from reduplication:

(21)a. *mamasa ‘dry, low tide’	hme
*maya ‘tongue’ > ^S *meme	bo/hme-
*mapat ‘heavy’	hmææk
*mayaq ‘ashamed’	hmehmæ
*mutaq ‘vomit’	hmita
^E *(ma)luR ‘shadow’	hmenu
b. *ka[m]i, *kamami ‘1EXC.PL’	əhmu/n

The sequence *mVm is clear in *mamasa, *meme (< *maya), and *kamami. 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) unreduplicated *t >	(i) k	(ii) t
reduplicated *t >	(i) x	(ii) θ

That *k* is a reflex of unreduplicated *t and *x* a reflex of reduplicated *t can be seen in alternations between determinate (unreduplicated) and indeterminate (reduplicated) forms of verbs: cf. below, and also the discussion in 2.2 and especially the data in (2) and (3).

(23)	Determinate	Indeterminate
*tali ‘plait; rope’	ken	xin
*tanum ‘bury’	kənoʔm	xəʔn
*tau(d,r)a ‘hold’	kəʔt	xəʔt
*tusaR ‘separate into two’	kia	xiəʔ

Ozanne-Rivierre (1986:36) says that the “double treatment” of *t in Iaa (and Drehu)—that is, the difference between the (i) and (ii) reflexes—“poses many problems. The phonetic conditioning (incompatibility between initial and medial consonants, influence of vowels) is difficult to establish. It may be a matter of different layers, but, in this case, the borrowings would be quite ancient”.¹¹ I will show below that the phonological conditioning can in fact be described fairly clearly.

I will start with the unreduplicated reflexes of *t. In each set of examples, reflexes of initial *t are given first (24a, 25a) followed by reflexes of medial *t (24b, 25b), and then final *t in (24c, 25c). As with the bilabials, forms with medial *t are alphabetized on the vowel that follows *t. It can be seen from the data in (24) and (25) that dissimilation is involved: that is, set (i) Iaa *k* is the default reflex, but when the adjacent syllable contained a dorsal consonant (*k, *g, *ŋ, or *q, though not *R),¹² the velar reflex of *t dissimilated to Iaa *t* (set ii). (I give copious examples in each case, to clearly establish the conditioning.)

¹¹ In the original: “Le double traitement (apical et dorsal) de l’ancienne dentale en IAI et DEH pose beaucoup de problèmes. Le conditionnement phonétique (incompatibilité entre consonnes initiales et intervocaliques, influence des voyelles) est difficile à établir. Il peut [sic] s’agir de couches différentes, mais, dans ce cas, les emprunts seraient assez anciens”.

¹² The reason why *R, which was possible uvular in POC, does not condition the dissimilation is that it had been lost by the time the dissimilation process began to operate. All New Caledonian languages lose *R. This loss must have occurred early in the development of Proto-New Caledonian. The emergence of dissimilatory reflexes of *t, however, was much more recent: although Drehu shows the same conditioning of reflexes of *t as Iaa (though with different reflexes—*k* adjacent to a dorsal and *t* elsewhere reflecting *t, *s* adjacent to a dorsal and *x* elsewhere reflecting *tt), Nengone shows a quite different split, with the reflex of *t and *tt determined by the

(24)a. *tabiRa ‘wooden bowl’	kap
*tabu ‘taboo’	kap
*taci ‘younger same-sex sibling’	kei/ñ
*tali ‘rope’	ken (det.), xin (indet.)
*taliŋa- ‘ear’	bara/kəñe-
*tama ‘father’	kame-
*tanaq / *tanoq ‘land’	kənə
*tanum ‘bury’	kənəm (det.), xənim (indet.)
*tapu(n)i ‘placenta’	koü
*taRutu(mŋ) ‘porcupinefish, <i>Diodon</i> sp.’	kaat
*tasik ‘sea’	kəiə ‘water, sea’
*tob ^w a ‘bay’	kop
*tolu ‘three’	kun
*tubu ‘grandparent’	kibe-
*tupa ‘ <i>Derris</i> sp.’	koü
*tusaR ‘separate into two’	kia (det.), xiəə (indet.)
b. *maputa ‘sleep’	møøk
*mata ‘eye’	ec-mæka-
*mata- ‘point’	ho-mæka-
*mate ‘die’	møk
*pati ‘four’	væk
*p ^(w) atoRu ‘cycad’	i/vekə
^R *matu ‘ <i>Gerres</i> sp.’	o/møk
*maturuR ‘sleep, lie down’	mokuŋ
*natu ‘child’	noko-
*patuR-i ‘weave’	vææk (det.), hvææk (indet.)
c. *kurat ‘ <i>Morinda</i> sp.’	hulak
*mapat ‘heavy’	hmææk
(25)a. *takuRu ‘back’	(ho)too-n
*taŋa ‘basket’	taŋ
*taŋis ‘cry’	teŋe
*taqe ‘excrement’	tii-
*toqa ‘domestic fowl’	xo/to
*tuqaka ‘older same-sex sibling’	tuha
b. *katapa ‘frigate bird’	ataü
*mutaq ‘vomit’	hmita
*qata ‘mark, shadow’	hate
*qata ‘person’	at
*qutan ‘inland’	hoot
*butoŋ ‘navel’	bi/bikV-
*katou ‘hermit crab’	otoo
*kutu ‘louse’	uto
*qatop ‘thatch’	ot
*mataqu ‘right hand’ > *matuqa-	meto
c. *pukot ‘net’	eet (also üt- classifier)

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.

(27)a. *qate ‘liver’	ak, aki-	c. *tina- ‘mother’	hiñe- ?
*qatoluR ‘egg’	wa/akuñ	*tokon ‘crutch’	uuci ?
*quta ‘burden’	hook	*toŋoR ‘mangrove’	-cij
		*qutok ‘brain’	haec
b. *patu ‘stone’	veto	*buRat ‘ <i>Fagraea</i> sp.’	poʔ
		*ma(kq)eto ‘a dark fish, poss. <i>Ctenochaetus striatus</i> ’	o/mæhadɔ/n ‘ <i>Acanthurus dussumieri</i> ’

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.

(28)a. Set i: POC *tV(-)t	IAAI x
*tali ‘plait, rope’	te/keñ (n.); ken, xin (v.)
*tapi ‘touch w. hand’	xaü, xäü
*tau(d,r)a ‘hold’	kɔɔʔ (det.), xəəʔ (indet.)
*tunu ‘hot’	xun ‘sweat’
*turu ‘knee’	bo/xulu caa-n
*tusaR ‘separate into two’	kia (det.), xiəə (indet.)
b. Set ii: POC *tV(-)t	IAAI θ
*taqon ‘roast’	θɔɔn
*dotoq, ^S *(td)otoq ‘mangrove, <i>Exoecaria agallocha</i> ¹³	θɔɔ ‘ <i>Cerbera manghas</i> ’

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 protofonemes 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’	-ɖa ~ -ra
*draRaQ ‘blood’	ɖa
*(dr,r)uRi ‘thorns’	ü/dəə ‘sting’, ü/dədəə ‘thorny’
*madraR ‘ripe’	mæʔ
*rodrom ‘dark; night’	hliʔ

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 *l* 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”.

(31) *raraŋ ‘warm’	hləəŋ ‘warm, warmth’
*raun ‘leaf’	hləə- ‘cover w. leaves’ (cf. also <i>laa-</i> ‘leaf’)
*rodrom ‘dark; night’	hliŋ

But as far as unreduplicated *r is concerned, Iaii has both *l* (32a) and *ɖ* (32b) initially and medially, and *t* finally (32c):

(32)a. *raqani ‘daylight’	laaŋ
*raun ‘leaf’	laa- (plus <i>hləə-</i> ‘cover w. leaves’)
*roŋoR ‘hear’	ləŋ, liŋ
*rua ‘two’	lo
*kurat ‘ <i>Morinda</i> sp.’	hulak
*pura(q), *puro ‘bubble up, boil’	bubulu ‘bubble’
*turu ‘knee’	bo/xulu caa-n
b. *rakum(u) ‘k.o. land-crab’	ɖəəm
*rapu(R) ‘ashes’	ɖəu
*ira ‘they’	əɖa
c. *quraŋ ‘prawn’	oŋ
*tau(d,r)a ‘hold’	kəɔŋ, xəɔŋ
*maqurip ‘be alive’	m ^w əɔŋ
*kuron ‘pot’	əŋ
*maturuR ‘sleep, lie down’	mokuŋ
*tuqur ‘stand’	teŋ, toot

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 Iaii reflexes of *r are *l-l-t*.

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

(33) -da ‘our: 1INC.POSS’	-ta
*ŋado ‘gums’	e/ŋəɖi-
*puɖi ‘banana’	o/vic
*qoda ‘raw’	hət
*tau(d,r)a ‘hold’	kəɔŋ (det.), xəɔŋ (indet.)

Although Iaii 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 Iaii. Note that vowels adjacent to the *i* reflex of *s in Iaii 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).

(34)a. *sake ‘go up’	dəə
*salaŋ ‘path’	de-
*saRum ‘needle’	də
*suRuq ‘liquid’	du ‘full of water’
b. *kanase ‘mullet’	enei
*mamasa ‘dry’	hme †
*pica ‘how many?’	ve †
*pisiko ‘flesh’	vii-
*qasawa ‘spouse’	aeəə- †
*qase ‘chin, jaw’	wa/ai-
*qasu ‘smoke’	hai
*qusan ‘rain’	we †

*taci ‘younger same-sex sibling’	keiñ
*tañis ‘cry’	teje †
*tasik ‘sea’	kəiə ‘water, sea’
*tusaR ‘separate into two’	kia (det.), xiəə (indet.)
*tusuk ‘flick w. finger’ ?	küü †

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

(35) *saku ‘needlefish’	wa/saə
*sasa ‘hunt, beat’	saa ‘throw’
*sauq ‘far’	səəkəü ?
*siba ‘cut, slice’	subə
*sinaR ‘shine’	seünə ‘day’ ??
*susu ‘breast’	ba/si-

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

(36) *sai ‘who?’	iaa	<i>i-</i> for expected <i>d-</i>
*sisiq ‘nerite’	wa/jia	<i>j-</i> for expected <i>s-</i>
*suRi ‘bone’	jəə, jeie-	<i>j-</i> for expected <i>d-</i> or <i>s-</i>

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 (*i*) reflexes. Some perspective can be gained here from examining the reflexes in Drehu and Nengone: unreduplicated **s* > Drehu *ð*, Nengone *l* (37a), and reduplicated **s* > *θ* in both (37b).¹⁴

(37)	DREHU	NENGONE
a. *salan ‘path’	ðə, ðəən	la, len
*saRum ‘needle’	ðo	—
*sapa ‘what?’	—	laa
*kasupe ‘rat’	aði	ɣeli
*pica ‘how many?’	iða	el, ele
*qaca(ŋ) ‘name’	eð	yele-
*qasu ‘smoke’	hað	k ^h ali
*tasik ‘sea’	keðə	cele
b. *sasa ‘hunt, beat’	θaan ‘throw’	θa ‘throw to the ground’
*siba ‘cut, slice’	θupa	—
*sinaR ‘shine’	ðina, θina	θena
*sulu ‘burn’	—	θini ‘bushfire’
*susu ‘breast’	θi	—

These data suggest a voicing contrast between PLOY *ð (< POC **s*) and *θ (< POC **ss*). Drehu retains these unchanged, as *ð* and *θ*; Nengone retains *θ*, but shows a fairly natural change *ð > *l*. In Iaa*i*, 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 Iaa*i*,¹⁵ both of which show **j* > *j*:

(38) *jiRi ‘ <i>Cordyline</i> 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 Iaa*i* *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 Iaaï, although the situation is by no means 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 > ŋ in (39a), *n > ŋ in (39b).

(39)a	*m ^w ala(q)u ‘ <i>Glochidion</i> sp.’	hmaŋa
	*buli(q) ‘cowries (generic)’	o/biŋa
	*qipil ‘ <i>Intsia bijuga</i> ’	hveeŋ
b.	^E *b ^w ana ‘mat (worn as clothing)’	beŋo (coconut mat)
	*p ^w anaq ‘bow, shoot’	faŋa ‘arrow’
	*qonos ‘barracuda, <i>Sphyraena</i> sp.’	oŋo

In all but *qipil and ^E*b^wana, 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 *hveeŋ* suggests that there may have been metathesis involved—*qipil > *piqil > *pi-qiŋil—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 > ŋ. However, there are other similar cases where the reflex is not retroflex but alveolar (40a) or palatal (40b):

(40)a.	*qaliliŋ ‘ <i>Turbo</i> sp.’	aen
	*quluŋa ‘headrest’	hunəŋ ‘rest head on’
b.	*m ^w aqane- ‘brother of female’	mañi- ‘sibling of opposite sex’
	*qone ‘sand’	əñ
	*raqani ‘daylight’	laañ

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.	^E *pulewa ‘k.o. eel’	veño
	*lipon ‘tooth’	ñu
	*keli ‘dig’	hiñ
	*tali ‘plait’	te/keñ (n.) ¹⁶
	*taliŋa- ‘ear’	bara/kəñe-
	*bulu ‘ <i>Garcinia</i> sp.’	hviñ
	*pulu ‘rub, wash’	ũña
	*qatoluR ‘egg’	wa/akuñ
b.	*bune ‘pigeon, dove’	biñ ‘ <i>Ptilinopus greyii</i> ’
	*m ^w aqane- ‘brother of female’	mañi- ‘sibling of opposite sex’
	*qone ‘sand’	əñ
	*bani ‘arm, hand, wing’	beñi-
	*raqani ‘daylight’	laañ
	*pinu(q)an ‘ <i>Macaranga</i> spp.’	biñwə
c.	*poñu ‘turtle’	uñ

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 n in this same environment is alveolar rather than palatal:

(42)a.	*alali ‘flatfish’	hnen ‘ <i>Bothus</i> sp.’
	*qaliliŋ ‘ <i>Turbo</i> sp.’	aen
	*kulit ‘skin’	une-
	*kuluR ‘breadfruit’	o/un
	^E *(ma)luR ‘shadow’	hmenu
	*pilu ‘ <i>Caranx</i> sp.’	vinee

¹⁶ But note also *ken* (det.), *xin* (indet.), with *n* rather than *ñ*.

*pulu ‘body hair’	le/üne-
*quluŋa ‘headrest’	hunəŋ ‘rest head on’
*sulu ‘burn’	o/künü ‘torch’ ?
*tolu ‘three’	kun
b. *boni ‘smell’	bon
*kani ‘eat’	an, han
*niuR ‘coconut’	nu
*nunu ‘shadow, spirit’	ha/nu
*manuk ‘bird’	meno
*tanum ‘bury’	kənoŋ (det), xənim (indet.)
*tunu ‘hot’	xun ‘sweat’

Before *a, the reflex is *n*:

(43)a. *laŋo ‘a fly’	nəŋ
*lawaq ‘spider’	wahai/hnə
*kila ‘to know’	xanaa
*qulapi ‘parrotfish’	unea
*walasi ‘ <i>Semecarpus</i> sp.’	ounic ?
b. *kanase ‘mullet’	enei
*manaŋ ‘power’	mæn
*qun(ae)pi ‘scale’	eneü, uneü
*natu ‘child’	noko-
*penako ‘steal’	venəu
*tanaq / *tanoq ‘land’	kəno
*sinaR ‘shine’	seüna ‘day’ ??
c. *mañawa ‘breathe’	meno
*ñamuk ‘mosquito’ > *muñak	minə (met.?)

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

(44) *kona ‘bitter’	hiñ
*tina- ‘mother’	hiñe- ?

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

(45)a. *tanoq ‘land’	kəno
b. *[p ^w ano]p ^w ano ‘ <i>Guettardia speciosa</i> ’	hveñi
*talos ‘ <i>Colocasia esculenta</i> ’	kəñiŋ ?

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).

(46)a. *alali ‘flatfish’	hnen ‘ <i>Bothus</i> sp.’
*ñami ‘taste’	hname-
*lawaq ‘spider’	wahai/hnə
b. ^N *nuŋa ‘ask for’	hñiŋə

4.3.6 *y

There is a tendency for *y to fuse with a preceding *a as a low or mid fronted vowel in Iaaï. The following, though, are all the data I have:

(47)	*bayan ‘bait’	o/bæ
	*maya ‘tongue’ > *meme	bo/hme-
	*mayaq ‘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)	IAAI	DREHU	NENGGONE
	*k	∅	ɣ, ∅
	*q	∅	∅
	*kk	h	k ^h
	*qq	h	k ^h

Thus suggested to her that *k and *q were still distinct in PLOY, though they appeared to have undergone some mergers: in Iaaï, *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 Iaaï of POC 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’	abɔ		*qate- ‘liver’	ak, aki-
	*katapa ‘frigate bird’	ataü		*qone ‘sand’	əñ
	*katou ‘hermit crab’	otoo		*qulapi ‘parrotfish’	unea
	*kulit ‘skin’	une-		*qun(ae)pi ‘scale’	eneü, uneü
	*kuluR ‘breadfruit’	o/un		*qusan ‘rain’	we (< **uia)
	*kuron ‘pot’	əɭ			
	*kutu ‘louse’	uto			
	*b. *penako ‘steal’	venɔu	d.	*raqani ‘daylight’	laañ
	*pisiko ‘flesh’	vii-		*toqa ‘domestic fowl’	xo/to
	*pukot ‘net’	eet		*taqon ‘roast’	θɔni
	*makubu- ‘grandchild’	əəbwii- ¹⁷		*mataqu ‘right hand’ ¹⁸	metɔ
	*takuRu ‘back’	(ho)too-n		*tuqur ‘stand’	toof

I have no examples at all of reflexes of POC forms containing *kVk or *qVq sequences. There are, however, alternations like *qasawa ‘spouse’ > *aeɔɔ*- ‘spouse’, *hɔiɔ* ‘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:¹⁹

(50)a.	*kani ‘eat’	han
	*keli ‘dig’	hiñ
	*kona ‘bitter’	hiñ
	*kumi ‘squeeze’	hum, hom
	*kurat ‘ <i>Morinda</i> sp.’	hulak
	*kuRa ‘bony fish, prob. <i>Albula</i> ’	hu ‘ <i>Albula vulpes</i> (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 ‘ <i>Planchonella</i> sp.’	xəño/ŋ hmæ
*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/mæhadə/n ‘ <i>Acanthurus dussumieri</i> ’
*qota, *qoda ‘raw’	hət
*quluŋa ‘headrest’	hunəŋ ‘rest head on’
*quta ‘burden’	hook
*qutan ‘inland’	hoot
*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 *t. This suggests that one or the other reflex was originally not *x*. Nengone has *c^h* as the reflex of *tt in all environments, and *c^h*, or something like it, may have been the original reflex of reduplicated *t. A possible timeline would be:

(53)	Stage 1	Stage 2	Stage 3
	*tt > c ^h		> x
	*kk > x	some x > h	

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/ŋəɖi-
^N *nuŋa ‘ask for’	hŋiŋə
b. *laŋo ‘a fly’	nəŋ
*puŋa ‘flower’	vəŋo-
*puŋao ‘in-law’	üŋo- ‘parent-in-law’
*quluŋa ‘headrest’	hunəŋ ‘rest head on’
^E *Raŋa ‘wild duck’	eŋ
*Raŋa ‘spider conch, <i>Lambis</i> ’	aŋe/t
*roŋoR ‘hear’	ləŋ, liŋ

*taŋa ‘basket’	taŋ
*toŋoR ‘mangrove, <i>Bruguiera</i> sp.’	-ciŋ
*aŋin ‘wind’	aŋ
*boŋi ‘night; day of 24 hrs’	boŋ ‘day’
*taŋis ‘cry’	teŋe

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

(56)a. *Raŋa ‘spider conch, <i>Lambis</i> sp.’	aŋe/t
^E *Raŋa ‘wild duck’	eŋ
*Ruap ‘high tide’	uoü
*Rum ^w aq ‘house’	uma
b. *draRaŋ ‘blood’	ɖa
*(dr,r)uRi ‘thorns’	ü/dəə ‘sting’, ü/dədəə ‘thorny’
*ma-wiRi ‘left hand’	me
*paRi ‘stingray’	ve
*paRu ‘ <i>Hibiscus tiliaceus</i> ’	vææu
*patuR-i ‘weave’	vææk (det.), hvæk (indet.)
*saRum ‘needle’	də
*tabiRa ‘wooden bowl’	kap
*takuRu ‘back’	(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 2. Iaaï Reflexes of Proto-Oceanic Consonants

POC	*p ^w	*p-	*-p-	*pp	*b ^w	*b	*m ^w	*mm ^w	*m	*mm	*w
Iaaï	ʔ	v, Ø [†]	Ø	hw, hv ?	b-, -p	b-b-p	m	hm?	m	hm	Ø [‡]
POC	*t	*tt	*d	*r	*rr	*dr	*c, *s	*ss	*j	*l, *n, *ñ	*ll, *nn
Iaaï	t, k [#]	θ, x [%]	ʔ	l-l-t	hl	d-d-t	d-i-i	s	j	ŋ, ñ, n ^{††}	hñ, hn ^{‡‡}
POC	*k	*kk	*q	*qq	*g	*ŋ	*R	*y			
Iaaï	Ø	h,x	Ø	h	-k	ŋ	Ø	Ø ^{##}			
†	v / *_i,e,a; > Ø / _ *o,u				†† ŋ / *Vq, *qV_ (incomplete); ñ / *_i,e,u (incomplete); n elsewhere						
‡	*wa > o,ɔ; *awi > e				‡‡ hñ / *_i,e,u ?; hn elsewhere						
#	t / *KV__, *_VK; k elsewhere				### *ay > e, æ						
%	θ / *KV__, *_VK; x elsewhere										

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 Iaaï 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’	*maŋurip ‘be alive’	m ^w əəŋ
*kani ‘eat’	an, han	*qaliliŋ ‘ <i>Turbo</i> 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,r)uRi ‘thorns’	ü/dəə ‘sting’, ü/dədəə ‘thorny’
*qulapi ‘parrotfish’	unea
b. *buli(q) ‘cowries (generic)’	o/biŋa
*taŋis ‘cry’	teŋe
*tasik ‘sea’	kəiə ‘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-
*jiRi ‘ <i>Cordyline</i> sp.’	ji. üji
*paRi ‘stingray’	ve (*ai > e)
*pilu ‘ <i>Caranx</i> sp.’	vinee
*pinu(q)an ‘ <i>Macaranga</i> spp.’	biñwə
*pisiko ‘flesh’	vii-
*sisiq ‘nerite’	wa/jia
*taci ‘younger same-sex sibling’	keiñ ??
b. *kulit ‘skin’	une-
*ñami ‘taste’	hname-
*pica ‘how many?’	ve ?
*qaliliŋ ‘ <i>Turbo</i> sp.’	aen ??
*qipil ‘ <i>Intsia bijuga</i> ’	hveen
*taliŋa- ‘ear’	bara/kəñe-
*taŋis ‘cry’	teŋe
*tina- ‘mother’	hiñe- ?

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), *ə* in (60b), *æ* in (60c), and *u* in (60d):

(60)a. *buli(q) ‘cowries (generic)’	o/biŋa
*kila ‘to know’	xanaa
*qulapi ‘parrotfish’	unea
b. *(dr,r)uRi ‘thorns’	ü/dəə ‘sting’, ü/dədəə ‘thorny’
*ira ‘they’	əɖa
*tasik ‘sea’	kəiə ‘water, sea’
c. *mimiR ‘urine/ate’	hi/mæ-
d. *kamami ‘1EXC.PL’	əhmun
*lipon ‘tooth’	ñu
*niuR ‘coconut’	nu
*siba ‘cut, slice’	subə

5.2 POC *e

Word-final *e is regularly lost:

(61) *bune ‘pigeon, dove’	biñ	*mate ‘die’	møk
*kape ‘k.o. crab’	kop	*qate ‘liver’	ak

*kanase ‘mullet’	enei ²⁰	*qone ‘sand’	əñ
^N *eve ‘count’	aü, əü		

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. ^N *b ^w ea ‘drum, slitgong’	bio ‘dance’	
*keli ‘dig’	hiñ	
*m ^w aqane- ‘brother of female’	mañi- ‘sibling of opposite sex’	
*qate- ‘liver’	aki-	
*taqe ‘excrement’	tii-	
b. *penako ‘steal’	venəu	*e > e
*b ^w eka ‘bat, flying-fox’	bü	*b ^w e > bü
*ma(kq)eto ‘a dark fish, poss. <i>Ctenochaetus striatus</i> ’	o/məhadə/n ‘ <i>Acanthurus dussumieri</i> ’	*e > a
^E *pulewa ‘k.o. eel’	veñə	*ew > ə
^N *eve ‘count’	aü, əü	*e > a? *e > ə?
*sake ‘go up’	dəə	*e > ə?

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. *b ^(w) arapu ‘long’	beü	b. *manuk ‘bird’	menə
*jumu ‘triggerfish’	wa/jimü	*tusuk ‘flick w. finger’	küü
*katou ‘hermit crab’	otoo	*tubuq ‘grow’	xibi
*kutu ‘louse’	uto	^E *(ma)luR ‘shadow’	hmenu
*m ^w ala(q)u <i>Glochidion</i> sp.’	hmaŋa	*niuR ‘coconut’	nu
*nunu ‘shadow, spirit’	ha/nu	*paus ‘weave, plait’	hwaau (pandanus)
*patu ‘stone’	veto		
*pilu ‘ <i>Caranx</i> sp.’	vinee		
*pulu ‘rub, wash’	üña		
*saku ‘needlefish’	wa/saə		

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

(64)a. *bulu ‘ <i>Garcinia</i> sp.’	viñ	b. *kuluR ‘breadfruit’	o/un
*poñu ‘turtle’	uñ	*maturuR ‘sleep, lie down’	mokuŋ
^R *matu ‘ <i>Gerres</i> sp.’	o/mək	*patuR-i ‘weave’	vææk, hvææk
*-mu ‘2SG.POSS’	-m	*qatoluR ‘egg’	wa/akuñ
*qasu ‘smoke’	hai	*taRutu(mŋ) ‘porcupinefish.’	kaat
*tabu ‘taboo’	kap		
*tolu ‘three’	kun		
*tunu ‘hot’	xun ‘sweat’		

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 *ü* (65b):

(65)a. *buli(q) ‘cowries (generic)’	o/biŋa	b. *maputa ‘sleep’	møøk (via meük)
*bulu ‘ <i>Garcinia</i> sp.’	hviñ	*pulu ‘body hair’	le/üne-
*bune ‘pigeon, dove’	biñ ‘ <i>Ptilinopus greyii</i> ’	*pulu ‘rub, wash’	üña
*butoj ‘navel’	bi/bikV-	*puŋao ‘in-law’	üŋə- ‘parent-in-law’
*makubu- ‘grandchild’	əəbwii-	*puru ‘run’	üt

²⁰ The *i* in *enei* ‘mullet’ derives from *s, not *e.

*mutaq ‘vomit’	hmita	*puqun ‘base’	ü- ²¹
*pudi ‘banana’	o/vic	*topu ‘sugarcane’	-küü
*tubuq ‘grow’	xibi		

Note also the metathesized form *ñamuk ‘mosquito’ > **muña > *minɔ*.

There are, however, some exceptions:

- *e* for expected *i* (*tubu ‘grandparent’ > *kibe-*) or *ü* (^E*pulewa ‘k.o. eel’ > *veñɔ*);
- *ü* for expected *i* (*jumu ‘triggerfish’ > *wa/jimü*);
- failure of *u to front as expected (*(bu)bu ‘grandparent (voc.)’ > *buba*, *puro ‘bubble up, boil’ > *bubulu* ‘bubble’, and possibly *buku ‘mound’ > *bucen* ‘mountain’); and
- *ə* for expected *ü* or *i* (*puŋa ‘flower’ > *vəŋo-*)

In the case of *buRat ‘*Fagraea* sp.’ > *pot*, the change is *ua > *o*.

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

(66) *kutu ‘louse’	uto
*mataqu ‘right hand’ > *matuqa-	metɔ
*natu ‘child’	noko-
*patu ‘stone’	veto

The default reflex is *u*:

(67) *kurat ‘ <i>Morinda</i> sp.’	hulak	*qayuyu ‘coconut crab’	eu
*kulit ‘skin’	une-	*qulapi ‘parrotfish’	unea
*kuluR ‘breadfruit’	o/un	*quluŋa ‘headrest’	hunəŋ ‘rest head on’
*kumi ‘squeeze’	hum, hom	*qupi ‘yam, <i>Dioscorea alata</i> ’	u
*kutu ‘louse’	uto	*Rum ^{wa} q ‘house’	uma
*(ma)luR PEOc ‘shadow’	hmenu	*suRuq ‘liquid’	du ‘full of water’
*maturuR ‘sleep, lie down’	mokuŋ	*tunu ‘hot’	xun ‘sweat’
*niuR ‘coconut’	nu	*tuqaka ‘older same-sex sibling’	tuha
*nunu ‘shadow, spirit’	ha/nu	*turu ‘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*, *ə*, *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):

(68)a. *kuron ‘pot’	əŋ	b. *penako ‘steal’	venɔu
*laŋo ‘a fly’	nəŋ	*[p ^w ano]p ^w ano ‘ <i>Guettardia speciosa</i> ’	hveñi
*rodrom ‘dark; night’	hliŋ	*qonos ‘barracuda, <i>Sphyraena</i> sp.’	oŋo
*roŋoR ‘hear’	ləŋ, liŋ		
*toŋoR ‘mangrove’	-ciŋ		

In the cases of *ma(kq)eto ‘a dark fish, poss. *Ctenochaetus striatus*’ > *o/mæhadɔ/n* ‘*Acanthurus dussumieri*’, and *talos ‘*Colocasia esculenta*’ > *kəñiŋ*, 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:²²

(69)a. *boni ‘smell’	bon	b. *qota, *qoda ‘raw’	hɔt
*boŋi ‘night; day of 24 hrs’	boŋ ‘day’	*tanoq ‘land’	kɔnɔ
^E *boRe ‘dream’	boo	*taqon ‘roast’	θɔɔn
*katou ‘hermit crab’	otoo		
*qonos ‘barracuda’	oŋo	c. *penako ‘steal’	venɔu
*to ^w a ‘bay’	kop	*poñu ‘turtle’	uñ

²¹ Classificatory prefix used with trees.

²² Cf. also the reflex of *ma(kq)eto in the previous paragraph.

*toqa ‘domestic fowl’	xo/to	*qatoluR ‘egg’	wa/akuñ
*toRas ‘ <i>Intsia bijuga</i> ’	kohu	*tolu ‘three’	kun

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:	*kona ‘bitter’	hiñ
	*ŋado ‘gums’	e/ŋəɟi-
	*[p ^w ano]p ^w ano ‘ <i>Guettardia speciosa</i> ’	hveñi
	*rodrom ‘dark; night’	hliɿ
	*talos ‘ <i>Colocasia esculenta</i> ’	kəñiŋ ?
	*toŋoR ‘mangrove, <i>Bruguiera</i> sp.’	-ciŋ
*o > i, ə:	*roŋoR ‘hear’	ləŋ, liŋ
*o > ə:	*p ^(w) atoRu ‘cycad’	i/vəkə
	*qone ‘sand’	əñ
*o > a:	*kaboRa ‘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 *aC.

(71)a. *baga ‘banyan’	bæk	b. *bayan ‘bait’	o/bæ
*maputa ‘sleep’	møøk	*manaŋ ‘power’	mæn
*qata ‘person’	at	*qawaq ‘milkfish, <i>Chanos chanos</i> ’	ɔ
*quluŋa ‘headrest’	hunəŋ ‘rest head on’	*qusan ‘rain’	we
*quta ‘burden’	hook	*quraŋ ‘prawn’	oɿ
^E *Raŋa ‘wild duck’	eŋ	*qutan ‘inland’	hoot
*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’	beñi-
*baRa ‘wall’	bææ ‘build wall’	*b ^(w) arapu ‘long’	beü
*bayan ‘bait’	o/bæ	^E *(ma)luR ‘shadow’	hmenu
*madraR ‘ripe’	mæɿ	*mamasa ‘dry, low tide’	hme
*manaŋ ‘power’	mæn	*mamin ‘wrasse’	mem
*mapat ‘heavy’	hmææk	*mañawa ‘breathe’	meno
*mata ‘eye’	ec-mæka-	*manuk ‘bird’	meno
*mata- ‘point’	ho-mæka-	*mataqu ‘right hand’	meto
*paRu ‘ <i>Hibiscus tiliaceus</i> ’	vææu	*ma-wiRi ‘left hand’	me-
*pat, *pati ‘four’	væk	*maya ‘tongue’	bo/hme-
*patuR-i ‘weave’	vææk (tr.)	*paRi ‘stingray’	ve
^N *vara ‘kin group’	væi ‘anciens clans’	*patu ‘stone’	veto

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):

(73)a. *alali ‘flatfish’	hnen ‘ <i>Bothus</i> sp.’	b. *aŋin ‘wind’	aŋ
*qayuyu ‘coconut crab’	eu	*kani ‘eat’	an, han
*qulapi ‘parrotfish’	unea	*ñami ‘taste’	hname-
*taci ‘younger same-sex sibling’	keiñ	*raqani ‘daylight’	laañ
*tali ‘rope’	te/keñ (n.)	*tabiRa ‘wooden bowl’	kap

*taliŋa- ‘ear’	bara/kəñe-	*tapi ‘touch w. hand’	xäü, xəü
*taŋis ‘cry’	teŋe		

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) N*b ^w ana PNCV ‘mat (worn as clothing)’	beŋo (coconut)
*kanase ‘mullet’	enei
*[p ^w ano]p ^w ano ‘ <i>Guettardia speciosa</i> ’	hveñi
*qata ‘mark, shadow’	hate
*Raŋa PEOC ‘wild duck’	eŋ
*Raŋa ‘spider conch, <i>Lambis</i> ’	aŋe/t
*sapa ‘what?’	ieü ?
*tama ‘father’	kame-
*tina- ‘mother’	hiñe- ?

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

(75) *lawaq ‘spider’	wahai/hnəw
*qasawa ‘spouse’	aeəw-
*qawaq ‘milkfish, <i>Chanos chanos</i> ’	ɔ
*waga ‘canoe’	ok
*wakaR ‘root’	wəw-

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’	kənəm (tr.)
*tapu(n)i ‘placenta’	koü
b. *b ^w atu- ‘head’	ba-
*m ^w ala(q)u ‘ <i>Glochidion</i> sp.’	hmaŋa
*paus ‘weave, plait’	hwaau (pandanus)
*qanu-si ‘to spit’	haŋəc
*qasu ‘smoke’	hai
*saku ‘needlefish’	wa/səə
*tabu ‘taboo’	kap
*taRutu(mŋ) ‘porcupinefish, <i>Diodon</i> 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’	-dɔ ~ -ra
*draRaQ ‘blood’	dɔ	*ira ‘they’	ədɔ
*kila ‘to know’	xanaa	*kurat ‘ <i>Morinda</i> sp.’	hulak
*mutaq ‘vomit’	hmita	*papa ‘mouth’	hwan-uma ‘door’
*puaq ‘fruit’	wa-	*p ^w anaq ‘bow, shoot’	faŋa ‘arrow’
*qaram ^w aqi ‘ <i>Pipturus</i> sp.’	arma	*qase ‘chin, jaw’	wa/ai-
*qata ‘person’	at	*qate- ‘liver’	ak, aki-
*qatoluR ‘egg’	wa/akuñ	*taŋa ‘basket’	taŋ

There are, however, unexplained examples of ə, o, ɔ, and ø 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).

(78)a. *laŋo ‘a fly’	nəŋ	b. *lala(k) ‘trochus’	wa/hlo
*rapu(R) ‘ashes’	dəu	N*b ^w ana ‘mat’	beŋo ‘coconut mat’
*raraŋ ‘warm’	hləəŋ	*katou ‘hermit crab’	otoo
*taliŋa- ‘ear’	bara/kəñe-	*maturuR ‘sleep, lie down’	mokut

	*tasik ‘sea’	kəiəʔ		*qatop ‘thatch’	ot
c.	*kapak ‘wing, shoulder’	abɔ		d. *maputa ‘sleep’	møøk
	^N *b ^w ea ‘drum, slitgong’	biɔ ‘dance’		*mate ‘die’	møk
	^N *nuŋa ‘ask for’	hñiiŋɔ		^R *matu ‘ <i>Gerres</i> sp.’	o/møk
	*pinu(q)an ‘ <i>Macaranga</i> spp.’	biñwɔ			
	*siba ‘cut, slice’	subɔ			

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

POC IaaI	*i i, e	*e i	*a a (æ, e, ɔ)†	*o o (ɔ, u, i)‡	*u u (ü, i, o, ɔ)#
	† 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 > ii	tii-
	*qipil ‘ <i>Intsia bijuga</i> ’ > pi-piqil ²³	**iqi > ee	hveen
	*baRa ‘wall’	**æRa > æRa > ææ	bææ ‘build a wall’
	*mapat ‘heavy’	**æpæ > ææ	hmææk
	*paqan ‘thigh’	**æqa > æa > ææ	je/vææ-
	*pituqun ‘star’	**uqu > uu > üü	oxüü
	*maputa ‘sleep’	**æpu > æu > øø	møøk
	*(dr,r)uRi ‘thorns’	**uRi > ui (or ue) > əə	ü/dəə ‘sting’, ü/dədəə ‘thorny’
	*maqurip ‘be alive’	**aqu > au > əə	m ^w əət
	*rakumu ‘k.o. land-crab’	**aku > au > əə	ɖəəm
	*sake ‘go up’	**ake > ai > əə	dəə
	*raqani ‘daylight’	**aqa > aa	laañ
	*raun ‘leaf’	**au > aa	laa-
	*sai ‘who?’	**ai > aa	iaa
	*taRutu(mŋ) ‘porcupinefish’	**aRu > au > aa	kaat
	*katou ‘hermit crab’	**ou > oo	otoo
	*takuRu ‘back’	**akuRu > au(u) > oo	(ho)too-n
	*tuqur ‘stand’	**uqu > oo	toot
	*lawaq ‘spider’	**awa > ɔɔ	wahai/hnɔɔ
	*qasawa ‘spouse’	**awa > ɔɔ	æɔɔ-
	*taqon ‘roast’	**aqo > ao > ɔɔ	θɔɔn
	*tau(d,r)a ‘hold’	**au > ɔɔ / əə	kɔɔt (tr.), xəət (incorp.)
	*wakaR ‘root’	**ɔka > ɔɔ	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_iV-C_iV... > C_iC_iV: (80b).

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

²³ See 4.3.5 for a justification of the metathesis and reduplication involved in *qipil > *piqil > *pi-piqil.

b. ^N *nuŋa ‘ask for’	hñiiŋɔ
*rarəŋ ‘warm (adj. & v.)’	hləəŋ ‘warm, warmth’
*sasa ‘hunt, beat’	saa ‘throw’
*quta ‘burden’	hook
*qutan ‘inland’	hoot

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 ‘ <i>Caranx</i> sp.’	vinee
*salan ‘path’	dee-
*patuR-i ‘weave’	væək (det.), hvæək (indet.)
*tau(d,r)a ‘hold’	kɔɔt̚ (det.), xəət̚ (indet.)
*kila ‘to know’	xanaa

6. CONCLUSION

In this paper, I have tried to outline the development of the POC phonemes in Iaa. 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

- Clark, Ross. 2009. **Leo tuai: A comparative lexical study of North and Central Vanuatu languages*. Canberra: Pacific Linguistics.
- Geraghty, Paul. 1989. The reconstruction of Proto-Southern Oceanic. In *VICAL 1: Oceanic Languages: Papers from the Fifth International Conference on Austronesian Linguistics*, ed. by Ray Harlow and Robin Hooper, 141–56. Auckland: Linguistic Society of New Zealand.
- Haudricourt, André-Georges. 1971. New Caledonia and the Loyalty Islands. In *Current trends in linguistics*, vol. 8: *Linguistics in Oceania*, ed. by Thomas A. Sebeok, 359–96. The Hague: Mouton.
- Lynch, John. 1999. Southern Oceanic linguistic history. In *Le Pacifique de 5000 à 2000 BP: Suppléments à l’histoire d’une colonisation*; ed. by Jean-Christophe Galipaud and Ian Lilley, 423–449. Paris: Institut de recherche pour le développement.
- . 2000. Linguistic subgrouping in Vanuatu and New Caledonia. In *SICOL: Proceedings of the Second International Conference on Oceanic Linguistics*, vol. 2: *Historical and descriptive studies*, ed. by Bill Palmer and Paul Geraghty, 155–84. Canberra: Pacific Linguistics.
- . 2002. Iaa. In *The Oceanic languages*, ed. by John Lynch, Malcolm Ross, and Terry Crowley, 776–91. Richmond, Surrey: Curzon Press.
- . 2003. The bilabials in Proto Loyalties. In *Issues in Austronesian historical phonology*, ed. by John Lynch, 153–73. Canberra: Pacific Linguistics.
- Lynch, John, and Françoise Ozanne-Rivierre. 2001. Some shared developments in pronouns in languages of Southern Oceanic. *Oceanic Linguistics* 40:33–66.
- Lynch, John, Malcolm Ross, and Terry Crowley. 2002. *The Oceanic languages*. Richmond, Surrey: Curzon Press.

- Ozanne-Rivierre, Françoise. 1976. *Le iaai, langue mélanésienne d'Ouvéa (Nouvelle-Calédonie): Phonologie, morphologie, esquisse syntaxique*. Paris: SELAF.
- . 1984. *Dictionnaire iaai-français (Ouvéa, Nouvelle-Calédonie)*. Paris: SELAF.
- . 1986. Redoublement expressif et dédoublement des séries consonantiques dans les langues des Iles Loyauté (Nouvelle-Calédonie). *Te Reo* 29:25–53.
- . 1992. The Proto-Oceanic consonantal system and the languages of New Caledonia. *Oceanic Linguistics* 31:193–207.
- Ross, Malcolm. 2008. Wild plants of the mangrove swamp. In *The lexicon of Proto Oceanic: The culture and environment of ancestral Oceanic society*, vol. 3: *Plants*, ed. by Malcolm Ross, Andrew Pawley, and Meredith Osmond, 173–83. Canberra: Pacific Linguistics.
- Sam, Léonard Drilë. 1995. *Dictionnaire drehu-français*. Nouméa: CTRDP et CPRDP de Iles.
- Tryon, D. T., and M.-J. Dubois. 1969. *Nengone dictionary*. Part I: *Nengone-English*. Canberra: Pacific Linguistics.
- . 1971. *Nengone dictionary*. Part II: *English-Nengone*. Canberra: Pacific Linguistics.