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Author(s): Françoise Ozanne-Rivierre

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# THE PROTO-OCEANIC CONSONANTAL SYSTEM AND THE LANGUAGES OF NEW CALEDONIA<sup>1</sup>

FRANÇOISE OZANNE-RIVIERRE

CNRS, PARIS

Although New Caledonian languages are well-known for their phonological innovations, they also have conservative aspects that bear on the organization of the Proto-Oceanic consonant system: the nature of the \*t/\*d contrast, \*q as a uvular stop, and the organization of the obstruents into three series: oral, prenasalized, and nasal. Arguments from New Caledonian evidence are brought to bear on these three matters, and the proposed Proto-Oceanic and Proto-New Caledonian systems are compared. The gemination of the oral and nasal series of the latter is also discussed.

**1. INTRODUCTION.** The languages of New Caledonia are well-known for exhibiting a wide variety of types of phonological change. They also have conservative characteristics, as noted by Haudricourt (1971). In the present article, I will present some conservative aspects of New Caledonian phonology which, I believe, bear directly on the organization of the Proto-Oceanic (POc) consonant system.

The POc consonantal system shows two major structural innovations with respect to Proto-Malayo-Polynesian (PMP):

(1) The disappearance of the voiced/voiceless contrast at all points of articulation with the exception of apical \*t/\*d, suggesting that these two phonemes may have contrasted in pre-POc not only by manner of articulation (voiced vs. voiceless) but also by point of articulation (apicodental /t/ vs. apicoalveolar or retroflex /d/). This articulatory offsetting of the t/d pair found in many Indonesian languages (Henderson 1965:421) could have existed in PMP, and it is entirely plausible that its retention in pre-POc could have prevented a merger (Haudricourt 1965:321, Dahl 1981:91).

(2) The development of prenasalized consonant phonemes in initial position in some lexical items as counterparts to the prenasalized intervocalic consonants found in PMP.

A POc system (Table 1) based on three degrees of nasality (oral, prenasalized, and nasal) therefore replaces the PMP system based on a voicing correlation.

In Table 1, I follow Ross's proposal (1988, 1989) to reconstruct Milke's \*nj as the real prenasalized partner of \*s and to consider the split of \*s into s and z as a post-POc development. The palatal \*-j(-) reconstructed by Blust (which Ross transcribes as \*c), like PMP \*-j(-) from which it descends, never occurs in initial position. It thus has a special place in the POc system, so that the \*s/\*nj pair could reasonably be set up as a "laminal" order in contrast with the "apicals" (dental and retroflex). In New Caledonia, as in most other Oceanic languages, this \*-j(-) has merged with \*s; however, in other areas the languages of New Caledonia seem to be conservative in terms of POc. I will focus on the following points here: in Section 2, the distinction between dental and retroflex points of articulation (< POc \*t/\*d); in Section 3, the preservation of POc \*q (probably uvular); in Section 4, the structural organization into three consonantal series: oral, prenasalized, and nasal.

**2. THE \*t/\*d CONTRAST IN POc.** Ross (1988:31) suggests reconstructing the \*t/\*d contrast in POc as a stop/trill (\*t/\*r) opposition. However, the widely observed \*d to r drift in the Oceanic languages has not occurred in Proto-New Caledonian. POc \*d is still a stop in most languages, reflected by a retroflex /ʈ/ in initial and final position.

This is observable in the languages of the northern subgroup where the Gomen Yuanga dialect (Yua2) has retained a contrast between dental /ʈ/ (< POc \*s) and retroflex /ʈ/ (< POc \*d) while avoiding merger with POc dental \*t, whose reflex is a velar /k/. In other northern languages, the dentals have merged with the retroflexes (cf. Haudricourt 1971:385). The

TABLE 1. THE POc CONSONANT SYSTEM

	VELARIZED BILABIAL	BILABIAL	APICAL DENTAL	LAMINAL RETROFLEX	VELAR	POSTVELAR
ORAL		p	t	d	s	k
PRENASAL	mpw	mp	nt	nd	nj	ŋk
NASAL	mw	m		n	ñ	ŋ
LIQUID	w		l			r
GLIDE			y			
Plus -j(-) (< PMP *-j(-) in intervocalic and final position (Blust 1978))						

reflexes of the POc \*t, \*d, \*s and \*k in these languages are illustrated in Table 2.

The correspondences illustrated in (1) show that, in the northern languages, POc \*d is reflected word-initially by a retroflex stop. In medial position it lenites to either -l- or -r-.<sup>2</sup> In final position, POc \*d remains a stop in all languages which have retained the earlier final consonants (or lost the earlier final vowels) with the exception of a few northern languages where -t > -l or -r (e.g. POc \*tuqud 'to stand up' > *kɔɔl* in Yuanga 1 and *cuur* in Nyēlāyu). See (1).

(1)

POC	YUA2	YUA1	KUM	PAP	CEM
*daqani <sup>3</sup> 'daytime'	tɛɛ	tɛɛn	taan	(mavi)taan	tàn
*donjor 'to hear'	tone	tone	tālā	tena	tēne
*dua 'two'	-tu	-ru	-ru	-luk	-lo
*dupas <sup>4</sup> 'to untie'		tuwa		tua	tūɔ
*daRaq/ndaraq 'blood'	(ku)ta	(ku)ra	ndaa-	(ku)taa-	
*kudon 'cooking pot'			cet, cela-	cit-, cile-	ilà
*tuqud 'to stand up'	koo	kooł	kuut	cuut	cūut

In Iaai (Loyalty Islands), the earlier \*d lenites to /l/ in initial and medial position. It remains a retroflex stop /ʈ/ only in word-final position. The lenition of this final -t towards -r is beginning to take place among younger speakers (POc \*matudu(r) 'sleep' > Iaai *mokut* ~ *mokur*). In any case, the distinction between dental<sup>5</sup> and retroflex points of articulation in Iaai is well attested in the evidence presented in (2).

(2)

POC *t	IAI	POC *d	IAI
*kutu 'louse'	o-uʈo	*pudu 'to run'	üt
*qata 'man'	aʈ	*kudon 'cooking pot'	əʈ
*qutan 'inland'	(ho)oʈ	*qudaŋ 'shrimp, lobster'	oʈ
*mutaq 'vomit'	hmi ʈa	*maqudip 'life'	mweəʈ
		*tuqud 'to stand up'	ʈoot

It should also be noted that prenasalization of initial stops has been an active process in the New Caledonian languages (see (12)), and certain etyma reconstructed with an initial oral stop (e.g. POc \*dapu 'ashes', \*daqe 'forehead', \*daun 'leaf') often have reflexes with a prenasalized retroflex /ɳ-/ . Consequently, they cannot be used as illustrations here, as Ross's hypothesis is precisely that it is the prenasalization of the trill \*r which has brought about the development of the occlusive \*ndr in POc.

In any case, examples (1) and (2) show that \*d probably had an occlusive articulation in POc and that \*t and \*d contrasted rather by their points of articulation (dental vs. retroflex) than by their manners of articulation. Even if it is accepted that \*t developed in Proto-New Caledonian (PNC)<sup>6</sup> by a “strengthening” of POc \*r (Ross’s reconstruction), the fact that it did not merge with POc \*t provides strong evidence that these two phonemes had different points of articulation. As for the “strengthening” hypothesis, it may be noted that the most usual evolution observed today in New Caledonian languages is the weakening of *t* to *r* and not the reverse.

### 3. POC \*q (A UVULAR STOP RATHER THAN A GLOTTAL STOP).

The phonetic nature of Proto-Austronesian (PAn) \*q, written \*h by Dempwolff who did not allow for the languages of Formosa, has been the subject of an extended debate which Sperlich (1989) reviews in detail.

The reflex of PAn \*q in Formosa is either a uvular /q/, or a glottal (stop /ʔ/ or fricative /h/), or zero. Its reflex in Malay is /h/. There now seems to be a consensus for reconstructing this phoneme as a back velar (probably uvular) in PAn.

In the Oceanic languages, PAn \*q is reflected either by a glottal stop, which tends to drop, or by a velar /k/, which can also be lost after developing into a velar spirant /γ/. The second development is attested in a number of languages of western Melanesia (Ross 1988).

In New Caledonia, it seems that both developments (\*q > ʔ > Ø or \*q > k > γ > Ø) are attested. In the northern group, for example, \*q never merges with \*k, since one of this group’s common innovations is the palatalization of \*k to c (Table 2). The reflexes of POc \*q are illustrated in (3).

In Nyelâyu (column 2), \*q becomes zero in all contexts, probably after a glottal phase. There are indeed a few spontaneous nasalizations of /a/ in the Belep variety of Nyelâyu (e.g. POc \*qata ‘man’ reflected by *āc*), which may well attest to the presence of an earlier initial glottal (Ozanne-Rivierre and Rivierre 1989:420). Such spontaneous nasalization of low vowels in

TABLE 2. THE REFLEXES OF POC \*t, \*d, \*s, \*k IN THE NORTHERN LANGUAGES

POC	YUA2	YUA1	KUM	PAP	PAM	NMI	CEM
*t-	k-	k-	k-	c-	c-	t-, c-	c-
*d-	t-	t-	t-	t-	t-	t-	t-
*s-	k-						
*k-	c-	c-	c-	c-	y-	c-	Ø

(3)

	[1] POC	[2] YAL	[3] KUM	[4] PAP	[5] HAV	[6] CEM
(a)	*qadop 'front side'	ara-	ara-	kate-	yate-	ālē
	*qata 'man'	ac/āc	ak	kac	ya- 'agent prefix'	ā-
	*qaso 'sun'	at ~ ar	at	kat	yat	-āt
	*qasawa 'husband'	aroo-	aroo-	kaloo-	yatoo-	
	*qone 'sand'	on	on	kon		wōn
	*qoti 'finished'	onjin	onjin	koin	<u>koin</u> (loanword)	
(b)	*qupi 'yam'	uvi	kovic	kuvuk	yuvu	ū
	*qudaj 'shrimp'	ola	kola	kula		
	*qusan 'rain'	ora	kot	kut	yuta	ūte
	*qunap 'fish-scale'	omba-	kumba-	kumbe-	yumba-	
	*qulu 'head' > 'top'	uu-r	ku-	kuu-n	yun	ūni-

the neighborhood of laryngeal consonants has been observed in a variety of language families (Matisoff 1975).

In Kumak (column 3), \*q has split into zero before low vowels, probably after a glottal phase (3a), and /k/ before high vowels (3b).<sup>7</sup> This conditioned split in Kumak seems to exclude the second type of sound change (\*q > k > γ > Ø) observed in the other northern languages, namely: \*q becomes a velar stop /k/ in all contexts in Pwapwâ (column 4), it lenites to a velar spirant /γ/ in Haveke (column 5) and it is lost entirely in Cèmuhi (column 6).

In the southern group, \*q has generally merged with \*k except in the two extreme southern languages, Numèè and Drubea, where the two phonemes have remained distinct.

Thus, in Numèè, the reflex of \*q is /k/, as in (4a), while the earlier velar \*k has been weakened to a velar spirant /γ/ which becomes a nasal /ŋ/ before nasal vowels, as in (4b).

These examples seem to argue in favor of the reconstruction of a uvular consonant in Proto-New Caledonian, as suggested by Haudricourt (1971). Given the velar reflexes observed in parallel in western Melanesia and in

(4)

(a) POC *q	NME	(b) POC *k	NME
*qadop 'front side'	kare-	*karati 'to bite'	ya
*qudaj 'shrimp'	kure	*kudon 'cooking pot'	yiri
*qumanj 'hermit crab'	kūā	*kurita 'octopus'	yī
*qupi 'yam'	ku	*kutu 'louse'	yii
		*kalo 'crawl'	ŋārē
		*kulit 'skin'	ŋērē-
		*kulur 'breadfruit'	ŋē

New Caledonia, the question is raised as to whether \*q was not uvular in Proto-Oceanic rather than glottal as is generally accepted.

While the development of /k/ into a glottal stop is frequently observed in the Oceanic group, and in the languages of Formosa as well, the opposite development of a glottal stop into a velar stop seems less plausible. In any case, whether the change be towards a velar or towards a glottal, the best starting point would be a uvular stop.

#### **4. THE PRENASALIZED CONSONANTS IN THE LANGUAGES OF NEW CALEDONIA.** The reconstruction of initial prenasalized consonants in POc has posed several problems for comparative linguists, owing to the fact that independent processes of initial nasal accretion have continued in the daughter languages through assimilation of clitics/prefixes containing a nasal (Lynch 1975, Geraghty 1983:72–95, Tryon 1986).

Ross (1988, 1989) considerably clarifies the problem of the oral and prenasal grades of the POc palatals by proposing to reconstruct Milke's palatal \*nj as the 'true' prenasal partner of POc \*s and to consider the splitting of \*s into s/z as independent post-POc developments. He also observes (1988:46) that the prenasalized consonants are generally voiced in the Oceanic languages and suggests that "by the break up of POc, 'voicing' had replaced 'prenasalization' as the distinctive feature in the nasal grade." He therefore proposes writing these consonants without prenasalization as \*bw, \*b, \*d, \*dr, \*j, \*g, in reconstructed POc forms (instead of the traditional \*mpw, \*mp, \*nt, \*nd, \*nj, \*ŋk).

Ross is certainly right in thinking that the prenasalized consonants were phonetically voiced in POc. But I believe that the crucial distinction lies in the prenasalization rather than in the voicing of these consonants in POc and that it is important to transcribe this distinctive "prenasalization" in reconstructed forms (for example, \*mbw, \*mb, \*nd, \*ndr, \*nj, \*ŋg) in order to understand the various models of sound change attested in the Oceanic group.

Two types of sound change are observable in the Oceanic languages:

(1) Prenasalized consonants can denasalize without devoicing (*mb* > *b* etc.), thereby giving rise to a new voiced/voiceless contrast. This type of sound change is attested in certain languages of western Melanesia (for example, in Manam; Lichtenberk 1983).

(2) In the languages outside western Melanesia, there is another more frequent development. Prenasalized consonants can shift to voiceless oral stops (*mb* > *p*, *nd* > *t*, *nd* > *t<sup>8</sup>* (> *r*), *nj* > *c* or *s*, *ŋg* > *k*). This shift is often correlated with lenition of the oral consonants (*p* > *v*, *s* > *z*, *k* > *γ*), while *t* remains stable or shifts to /*?/*. Developments of this kind are attested,

for example, in the Fijian dialects (Haudricourt 1965:317, Geraghty 1983:53–67).

In New Caledonia, where both types of sound change are attested, it is important to retain prenasalization as the distinctive feature in the reconstructed forms in order to understand local phonological developments.

**4.1 THE EXAMPLE OF THE LOYALTY ISLANDS.** In the Loyalties, the earlier oral stops (except POc \*t) have weakened or become lost. Thus, POc \*p has become a voiced spirant  $\beta$  in Iaai or zero in Drehu and Nengone, as in (5).

(5)

POC	*pat 'four'	IAI	βək, DEH eke, eke $\dot{e}$ , NEG ece
	*pari 'stingray'	IAI	βe, DEH e
	*penako 'to steal'	IAI	βenou, DEH enöö, NEG eno
	*puŋa 'flower'	IAI	βəŋon, DEH, NEG eŋen

The bilabial *mb*, inherited from POc \*mp [mb], has become a voiceless stop /p/ in Drehu but has remained voiced /b/ after denasalization in Iaai and /b/ (or /d/ before front vowels) in Nengone, as illustrated in (6).

(6)

POC		DEH	IAI	NEG
*mpune [mbune]	'pigeon'	piñ	biñ	(gu)din
*mputo [mbuto]	'navel'	pit	bibike-	(wa)didi
*mpo-	[mbo-] 'smell'	pun	bon	bo(n)

The asymmetrical evolution of earlier \*mb in the Loyalties can only be explained by contact at some time with a more prestigious language with voiced stops.

In all probability, the contact language could have been English. Pacific Pidgin or Bislama had a great influence in the Loyalties as early as the 1840s, and the London Missionary Society had set up English-language teaching programs on the three islands as early as 1860. It is true that cultural loanwords from English quickly invaded the vocabulary of all three languages. Thus, the voiced bilabial /b/ was reintroduced into Drehu through borrowings from English (*bii* < 'bee', *buut* 'shoe' < 'boot' etc.).

The upshot is simply that prenasalized consonants no longer exist in the languages of the Loyalties today. Nevertheless, these consonants must be reconstructed for Proto-Loyalties. The reflex /-ŋ/ of the POc first person singular possessive \*-ŋku in Drehu, as in (7), shows that this suffix was still prenasalized when the final vowel dropped.

(7)

POc \*-ŋku [-ŋgu] 'my' Deh -ŋ  
Neg -go

#### 4.2 THE EXAMPLE OF THE MAINLAND OF NEW CALEDONIA.

On the mainland, earlier prenasalized consonants never denasalize to voiced oral consonants. The consonantal systems of all languages have three series: oral, prenasalized, and nasal, yet significant structural rearrangements can be discerned in some languages.

In the northern languages, the prenasalized consonants inherited from POc generally have prenasalized reflexes. The observed changes essentially concern points of articulation. The reflexes of the bilabial \*mp, for example, are either bilabial /mb/ or labiovelarized /mbw/ or velar /ŋg/, as in Nemi. See (8).

(8)

POC	KUM	NMI	CEM
*mpara [mbara] 'wall'		mba	mbà
*mpeka [mbeka] 'flying fox'	mbwak	mbwek	
*mpune [mbune] 'pigeon'	mbwon	ŋgun	mbūn
*mpoŋi [mboŋi] 'night'		ŋgen	mbwēn

In the southern languages, change primarily affects the consonantal series. Phonological nasal vowels have appeared by regressive assimilation from earlier intervocalic nasals: CVNV > C᷑V(r᷑V).

Prenasalized consonants followed by nasal vowels tend to become simple nasal consonants in several languages. See the reflex /m/ of POc \*mp in Xârâcùù and Drubea in (9).

(9)

POC	AJE	XAC	DUB
*mpoŋi [mboŋi] 'night'	mbw᷑	m᷑	mw᷑r᷑

Prenasalized consonants followed by oral vowels can only shift to oral stops after the original oral stops are weakened to voiced spirants (\*p > v before \*mb > p). This is the case in Drubea. Compare the reflexes of POc \*p and \*mb in Xârâcùù and Drubea in (10a) and (10b).

Prenasalized consonants nevertheless reappear in Drubea, developing from nasal consonants followed by oral vowels (11b).

These phenomena have already been described in a previous paper (Ozanne-Rivierre and Rivierre 1989). I note simply that while in Drubea

(10)

	POC	XAC	DUB
(a)	*patu 'stone' *patu 'plait'	pε- peti	vÚU vÚU
(b)	*mpeka [mbeka] 'flying fox' *mpuku [mbuku] 'knot' *? 'Fagraea schlechteri'	mbu mbue	pú pú púé (KUM mbuak, NMI ŋguec)

(11)

	POC	XAC	DUB
(a)	*mai 'come' *manuk 'bird'	mẽ mλrã	mẽẽ mẽrũ
(b)	*mate 'die' *maquidip 'life' *mutaq 'vomit'	mε muru mbure	mbe mboru

shifts have affected every consonant series in the original system, we now find ourselves back at our starting point with three consonantal series: oral/prenasalized/nasal. Vowel nasality is only phonological after oral consonants. This situation is illustrated in Table 3.

Thus, new prenasalized consonants can appear in the New Caledonian languages through the regressive oralization of former nasal consonants. This is the case in Drubea, and a parallel development has occurred in Paicî, a language on the border between the northern and southern groups (Ozanne-Rivierre and Rivierre 1989:430), but such innovations are relatively recent.

TABLE 3. CHANGES IN DRUBEA  
CONSONANT SERIES  
(cf. Rivierre 1973)

PNC		DRUBEA
*p	*pV	> vV
	*pṼ	> vṼ
*mb	*mbV	> pV
	*mbṼ	> mV [mṼ]
*m	*mV	> mbV
	*mṼ	> mV [mṼ]

The oldest and most productive source of nonetymological prenasalized consonants in the languages of New Caledonia, as elsewhere in Oceania, has been the prenasalization of oral consonants by progressive assimilation of clitics with an NV shape, particularly the earlier common noun article \*na.

This process must have remained productive after the languages began to separate off, in view of the doublets and irregular correspondences illustrated in (12), where nonetymological prenasals are underlined.

(12)

POc

*qaur 'bamboo'	<i>Md</i> Pij (du)ko, Cem ō, Yal <u>ŋ</u> gao, Kum <u>ŋ</u> gaa, Jaw <u>ŋ</u> go <i>Ly</i> Deh aw
*ka- 'food'	<i>Md</i> Kum, Nmi, Jaw ca-, Mav ya-, Hav ða-, Cem ē- <i>Ly</i> Iai a-, Neg ya-, but Deh a-/ga-
*susu 'suck'	<i>Md</i> Nmi tit (v)/ndit (n), Xac <u>n</u> jii (v) <i>Ly</i> Iai ii, Deh iði
*suri 'bone'	<i>Md</i> Nmi <u>n</u> duu-, Aje <u>n</u> juu-, Xac <u>n</u> yī- <i>Ly</i> Deh ðun, Neg dun
*daun 'leaf'	<i>Md</i> Yal <u>n</u> daa, Nmi, Jaw <u>n</u> do, <u>n</u> doo-n, Xac <u>n</u> ē- <i>Ly</i> Iai laa-n, la-, Deh <u>q</u> ōn(e), Neg <u>q</u> o/rune-
*donjor 'hear'	<i>Md</i> Yua tone, Kum tālā, Nmi tena <i>Ly</i> Iai ləŋ, Deh <u>d</u> əŋ, Neg <u>d</u> ədəŋ
*tali 'cord (n), braid (v)'	<i>Md</i> Nmi <u>n</u> dan (n), Jaw <u>n</u> jan (n), Yal <u>n</u> jan (n) <i>Ly</i> Iai (te)keny (n), ken (v), Neg (wa)cen (n), ceni (v)
*tasik 'sea'	<i>Md</i> Nmi talik 'seaside' (locative), <u>n</u> dalik 'sea' <i>Ly</i> Iai kəiə, Deh keðe
*tupa 'fish poison'	<i>Md</i> Yal cep (v), njep ' <i>Derris trifoliata</i> ', Nmi civa (v)
*pulu 'body hair'	<i>Md</i> Kum pōlē-, Nmi puni-, Xac pū- <i>Ly</i> Iai (le)ün, Deh <u>p</u> en(e), Neg <u>d</u> in

Prenasalization has primarily affected apicals, but, unlike eastern Fijian (Geraghty 1983:74), other points of articulation show traces of this phenomenon. The uvular initial in \*qaur 'bamboo', first example in (12), is prenasalized in Nyélāyu, Kumak and Jawe; it remains oral in Pije, Cemuhî and in the Loyalties. The velar initial in \*ka- 'food', has an oral reflex in all languages, but the doublet *a-/ga-* exists in Drehu (Loyalties). The labial, in \*pulu 'body hair', last example in (12), remains oral in all languages except that Drehu /pen/ and Nengone /din/ reflect an earlier \*mb- as shown in (6).

Consequently, the New Caledonian languages are in no position to provide conclusive proof about fixed prenasalized initials in POc. However, when a prenasalized initial reconstructed in POc has an oral reflex in

languages in which prenasalized consonants have not undergone change, it is possible at least to suggest reconstructing a doublet in POc.

Fossil traces of oral/prenasal alternation in POc are noted by Ross (1988:75) as in \**salan*/\**njalan* 'path'. The oral reflexes in certain items in the languages of New Caledonia suggest that still further doublets could have existed in POc. For example, doublets could well be reconstructed for 'spear', 'bind' and 'blood'. (see (13) where Ross's reconstructions are underlined.)

(13)

POc

* <u>salan</u> /* <u>njalan</u> 'path'	<i>oral</i> : Deh ðε-, goðεñ, Neg len <i>prenasal</i> : Iai ðee-, Yua2 ndε, Yua1 nden, Kum ndaan, ndālā-, Pap ndan
(*sa(q)o)/* <u>nja(q)o</u> 'spear'	<i>oral</i> : Deh ðo, ?(Neg lulu 'large barbed spear') <i>prenasal</i> : Iai ðo, ðɔ-Yua2 nðo, nðoo-, Nmi nda, Aje nje, Xac njo
* <u>njori</u> 'bind' (*sodi/* <u>njodi</u> )	<i>oral</i> : Jaw, Nmi telii 'to tie with a slip knot' cf. also Fijian sori 'to tie reeds together', ðori 'to tether an animal, to string beads, to tie up flowers'
(*daraq)/* <u>ndaraq</u> 'blood'	<i>oral</i> : Yua2 (ku)t̪a, Yua1 (ku)r̪a, Pap (ku)t̪a, Nmi (ku)r̪a, (ku)raa- <i>prenasal</i> : Kum nda, ndaa-, Xac (ma)nda, Nme nða, Iai, Neg q̪a, Deh (ma)q̪a

Another conservative feature of the New Caledonian languages is the fact that the prenasalized partner of POc \*s remains a true prenasalized consonant in the languages of the mainland, a fairly rare situation in the Oceanic group. This is clear from the reflexes of the etymological prenasals in (13): \**njalan* 'path' (Pwapwâ *ndan*, Yuanga 1 *nden*, Yuanga 2 *nðe*), \**nja(q)o* 'spear' (Xârâcùù *njɔ*, Ajie *nje*, Nemi *nda*, Yuanga 2 *nðo*). This is also the case with the prenasalized consonants which result from secondary developments as shown in (12): \**susu* 'suck' with *nji* as reflex in Xârâcùù and *ndit̪* in Cèmuhi.

Thus, the PNC consonantal system is founded on an opposition of the degree of nasality, and this, we believe, reflects the situation in POc. The phonetic voicing of prenasalized consonants was only a secondary feature which has allowed the voiced/voiceless contrast to reappear in some languages, as in western Melanesia. The same development has occurred in the languages of the Loyalties in an irregular way (cf. Drehu in (6)), but we have seen that this innovation is probably fairly recent and can be attributed to language contact.

TABLE 4. THE PNC CONSONANT SYSTEM

	VELARIZED BILABIAL	BILABIAL	APICAL DENTAL	LAMINAL RETROFLEX	VELAR	POSTVELAR
ORAL	pw/pbw	p/pb	t/t̪	t/t̪	s/ss	k/kk
PRENASAL	mbw	mb	nd	nd	nj	ŋg
NASAL	mw/mmw	m/mm		n/n̪		ŋ/ŋŋ
GLIDE	w					

**5. CONCLUSION.** In conclusion, for Proto-New Caledonian (PNC), including the Loyalty Islands and the mainland of New Caledonia (Note 6), we propose a consonantal system organized structurally like the Proto-Oceanic system presented in Table 1: three series of consonants (oral, prenasalized, and nasal) and seven points of articulation (Table 4).

Compared to POc, there have been several innovations in PNC:

- (a) the merger of Blust's \*j with \*s
- (b) the merger of \*ñ with \*n<sup>9</sup>
- (c) the merger of \*l with \*n<sup>10</sup>
- (d) the loss of \*R<sup>11</sup> and \*y
- (e) the development of \*pw<sup>12</sup>

The most important is probably the splitting of oral and nasal consonants into single and geminate consonants.

Haudricourt (1971:384) proposed reconstructing "hard consonants" for Proto-New Caledonian, whose source was earlier syllabic reduplication. Geraghty (1989) proposes the reconstruction of fixed aspirated consonants in the protosystem. But disagreements are evident between the languages of the Loyalties and those of the mainland (14), and the rich verbal morphology of Iaai seems to provide evidence that these reduplicative processes remained productive for a longer time in this language (Ozanne-Rivierre 1986).

(14)

POc

*patu 'weave'	<i>Md</i> Nmi pai, Cem pēi, Xac peti, Dub vúu <i>Ly</i> Iai βεεk/ɸöök, Deh eke, Neg et
*tina 'mother'	<i>Md</i> Nmi tne-n, Jaw cñe-n <i>Ly</i> Iai hinye-n, Deh θin
*tali 'cord (n)' 'to braid (v)'	<i>Md</i> Nmi ndan (n), Jaw, Yal njan (n) <i>Ly</i> Iai (te)keny (n), ken/xin (v), Neg (wa)cen (n), ceni (v)

- |                    |   |
|--------------------|---|
| *kumi ‘to squeeze’ | <i>Md</i> Nem, Jaw cimwi, Hav ðimwi, Cem īmwī<br><i>Ly</i> Iai <u>hom/hum</u> , Deh <u>xom/xomi</u> , Neg <u>khon/khuni</u>   |
| *kani ‘to eat’     | <i>Md</i> Kum, Nmi cani, Cem ēni, Xac kē<br><i>Ly</i> Iai <u>an/han</u> , Deh <u>xen/xeni</u> , Neg <u>khaan</u>  |
| *mata ‘eye’        | <i>Md</i> Nmi (tna)maa-n ‘eye’, maye- ‘bud of’, Aje, Xac -me-<br><i>Ly</i> Iai -mek-a- ‘eye’/hmeka-n ‘bud’, Deh -mek, Neg -nec ‘awake’: Iai <u>hmek</u> , Deh <u>hmek</u> , Neg <u>hnec</u> |
| mutaq ‘vomit’      | <i>Md</i> Yua muŋga, Cac munja, Nmi ūnda<br><i>Ly</i> Iai <u>hmita</u> , Deh <u>hmiṭa</u> , Neg <u>hnija</u>  |

This leads us to reconstruct geminate oral and nasal consonants<sup>13</sup> resulting from the loss of the pretonic vowel in reduplicated syllables. These consonants probably underwent a parallel evolution towards aspirated consonants in the Loyalties and on the mainland as has happened elsewhere in certain of the Polynesian Outliers (Rivierre 1991).

This loss of the pretonic vowel applied also to proclitic morphemes like the former article \*na. Thus both the development of geminate consonants and nonetymological prenasalized consonants are explained, leaving aside the fossilized nature of the processes which produced them in Proto-New Caledonian.

It can be seen in (15), that the word \*susu 'suck, breast' has three different reflexes in Nemi: an initial oral stop in the verbal form 'to suck', an initial prenasalized stop in the nominal form 'suck, mother's milk', and an initial aspirated stop in the suffixed possessive form 'her breast'.

In the present-day languages, the initial consonant of \*susu is reflected sometimes by a high tone (earlier aspirate) and by a prenasalized stop (*Cèmuhî ti* ‘breast’, *ndit* ‘suck’), sometimes only by a prenasalized stop (*Xarâcùu njî-* ‘breast’, *njiî* ‘suck’), sometimes by two oral forms (weak initial/strong initial: *Iaai ii* ‘suck’, *-si-n* ‘breast’).

(15)

POC	NMI
*susu ‘breast, suck’	tit ‘suck (v)’ < *súsú ndit ‘suck (n), mother’s milk’ < *nsúsú < **na súsú
	thi-n ‘her breast’ < *ssú-na < **susú-na (shift of stress onto the last syllable)
CEM tí-(high tone) ‘breast’	ndít (mid tone) ‘suck (v) and (n)’
XAC nji- ‘breast’	njii ‘suck (v)’
IAI -sin ‘breast’	ii ‘suck (v)’

The shift of stress onto the last syllable before a possessive suffix should probably be reconstructed for PNC (cf. (15) and also Note 12). It is noteworthy that Geraghty and Pawley (1981) proposed the reconstruction of an analogous accentual rule for Proto-Central Pacific.

## LANGUAGE ABBREVIATIONS

### PROTOLANGUAGES:

- PAn Proto-Austronesian  
 PEO Proto-Eastern Oceanic  
 PMP Proto-Malayo-Polynesian  
 PNC Proto-New Caledonian (including the Loyalty Islands and the mainland of New Caledonia)  
 POc Proto-Oceanic  
 PSO Proto-Samoic Outliers

### LANGUAGES:

*Loyalty Islands (Ly)*: Deh Drehu, Iai Iaai, Neg Nengone, WUv Fagauvea (Samoic Outlier)

*Mainland of New Caledonia (Md)*: Aje Ajie, Cac Caaac, Cem Cèmuhi, Dub Drubea, Hav Haveke, Jaw Jawe, Kum Kumak, Mav Hmwaveke, Nme Numèè, Nmi Nemi, Pac Paicî, Pam Pwaamei, Pap Pwapwâ, Pij Pije, Xac Xârâcùù, Yal Nyêlâyú, Yua1 Bondé Yuanga, Yua2 Gomen Yuanga.

## NOTES

- This paper was presented at the Symposium on Austronesian Historical Linguistics, 6th International Conference on Austronesian Linguistics, Honolulu, May 20–24, 1991.
- The sole exception is POc \*maqudip 'life' reflected by /matip/ in Pwaamei and Nemi and /motip/ in Pije.
- Ross (1988: 37) suggests a POc \*da(qa)ni 'daytime' < PAn \*daqani. The long vowel found in Yua, Kum and Pap seems to argue for POc \*daqani.
- POc \*(d,r) upas 'to loosen, untie' (Blust's reconstruction from Motu /ruha-ia/, Ulawa /luha/, Sa'a /luhe/, Roviana /rupa-ha/) would seem to be reconstructible as POc \*dupas.
- POc \*t has split into /t/ and /k/ in Iaai. This split seems to have a phonotactic conditioning: \*t generally becomes /k/ unless the original preceding or following consonant was velar or uvular:

POC	IAI	POC	IAI
<i>initial:</i>			
*taji 'younger sibling'	kei-n but	*tanja 'basket'	tan, tan-e-n
*tasik 'sea'	køiø	*tarjis 'sweep'	tene
*tama 'father'	kame-n	*taku 'back'	(ho)tøo-n

*tan(o,u)m 'bury'	kōnōm	*tu(q,k) a 'older sibling'	tuha-n
*tolu 'three'	kun	*tuqud 'to stand up'	toot
*tumpuk 'grandfather'	kibe-n		
<i>noninitial:</i>			
*mata 'eye'	-meka-n	*mataqu 'right'	metɔ
*matudur 'sleep'	mokuŋ	*kutu 'louse'	o-uṭo
*natu 'child'	noko-n	*qata 'man, person'	aṭ
*pat 'four'	βek	*qata 'shadow, mark'	haṭe-n

There are nevertheless two unexplained exceptions: POc \*patu 'stone' > o-βeṭo and POc \*qate 'liver' > aki-n.

6. Geraghty (1989) calls this group (including the Loyalty Islands and the Mainland), Proto-Southern Oceanic (PSO), but we avoid this abbreviation because of possible confusion with the Samoic Outlier group (PSO), one of whose members, Fagauvea (WUV), happens to be spoken on the island of Uvea (Loyalty).
7. There is however an exception in POc \*qate 'liver', whose reflex is an initial /k/ in Yal /kic/ and Kum /kayi/. The regular reflex nevertheless appears in Pap /kec, kei/, Hav /yii/ and Cem /ii/.
8. This is observable in the languages of Central Vanuatu. Capell (1962:383) noted "Nguna and Tongoa differ almost only in pronunciation: /d/ in Tongoa is (nd), in Nguna (t) retroflexed and devoiced." The same evolution was observed by Rivierre in 1965 in the course of a survey of the group. The Nakanamang dialect of Emau differs from that of Tongoa in that the prenasals are denasalized to oral stops, except that Tongoa /nd/ corresponds more often to retroflex /r/ (intermediate between [t] and [ʈ]) than to /t/ in Emau. Geraghty (1983:65) notes the same development in Nabalebale, the only Fijian dialect in which all the prenasalized stops have been denasalized, and in which ndr > tr.
9. As Blust has remarked (1978:151, n. 49), the apparent retention of POc \*ñ in Iaai is the result of secondary developments. Thus, POc \*poñu 'turtle' > Iaai /uñ/, but also POc \*mpune 'pigeon' > /biñ/ and \*qone 'sand' > /əñ/.
10. Haudricourt (1971:391) cast doubt on this merger because of examples in Koné dialects where POc \*l has the palatal reflex ñ, e.g. POc \*laŋo 'fly' > Haveke, Hmaveke /ñin/, but this is due to a secondary palatalization which also affects certain reflexes of \*n (POc \*natu 'child, offspring' > Haveke, Hmaveke /ñaci-/ 'young (of animals)'.
11. Geraghty (1989:149) believes that \*R was sporadically retained in PNC. He cites one good example: POc \*paRu '*Hibiscus tiliaceus*' reflected by /elu/ in Drehu and /eru/ in Nengone while \*R > Ø in Iaai /βeeu/ and in the languages of the mainland (Caac /peuc/, Kumak /püüc/, Pwapwâ /pooc/, Nemi /pook/). However the reflexes of PEO \*tavuri 'conch' and \*sari 'rip, tear' which he also cites in support of his hypothesis are too irregular to be convincing. The hypothesis of sporadic retention of \*R in PNC (or perhaps indirect inheritance?) is still worth exploring.
12. As Geraghty remarks (1989:152), \*pw has developed in PNC by devocalization of /u/ before accented vowels: POc \*puaq 'fruit' > PNC \*pwa-n 'its fruit' (bound noun).
13. Geraghty (1989:151) also proposes to reconstruct prenasalized aspirates in PNC, but it seems clear that no such series developed in PNC, whether from the reduplication of syllables with prenasalized consonants or otherwise.

Thus POc \*mputo 'navel' has the reflex /bibike-n/ in Iaai and /(wa-)didi/ in Nengone. In addition, aspirates have high-tone reflexes in Cèmuhi, but no syllable with a prenasalized consonant has a high-tone reflex in this language.

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