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Final Syllables in Northern Malakula

John Lynch

UNIVERSITY OF THE SOUTH PACIFIC

Although nearly all languages of Malakula in central Vanuatu regularly lose Proto-Oceanic (POC) word-final vowels, there is a group of four languages spoken along the north coast—Nese, Vovo, Botovro, and Vao—in which final vowels are retained if the vowel in the preceding syllable was high. These languages also show a paragogic vowel added after a POC word-final consonant, but again only if the preceding vowel was high. I suggest in this short paper that paragogic vowels were added after all retained final consonants, that a sonority-driven stress shift moved stress from a high penult to a more sonorous nonhigh final vowel, and that only then were final unstressed vowels deleted.

1. INTRODUCTION.[1] The vast majority of the 32 or so languages of the island of Malakula in central Vanuatu lose all word-final Proto-Oceanic (POC) or Proto–North-Central Vanuatu (PNCV) vowels, including the vowel preceding a lost final consonant. Some Malakula languages retain POC final consonants more frequently than do others, though all show some degree of final consonant loss. The northern/western languages Tirax and Malua Bay, for example, retain over 50 percent of final nonnasal consonants in individual etyma, and V'ënen Taut, Tape, and Nese retain between 35 to 50 percent; compare this with more southerly/easterly languages like Uripiv and Neverver (around 20 percent), Neve'ei and Nahavaq (around 10 percent), and Navwien and Nāti (virtually none). However, there is no consistent pattern of retention or loss: Tape, for example, retains final *p in the reflex of *rarap '*Erythrina variegata*' (*darəp*) but loses it in the reflex of *qatop 'thatch' (*n/iet*); it retains the final *t of *saqat 'bad' (*set*) but not of *nikut 'nest' (*ni/nəx*); it retains the final *k of *ñamuk 'mosquito' (*nəxmax*) but not that of *manuk 'bird' (*nə/mən*); and so on. (See Lynch 2005 for details of this in some Malakula languages.)

In the examples below, I give data from V'ënen Taut (abbreviated VT in examples), Tape, and Tirax—three languages that have a fairly high final consonant retention rate—and occasionally supplement those data with data from one or two other Malakula languages. A dash indicates no reflex in the data. Basically, the situation is as follows. If the POC final consonant is retained, it occurs word-finally in the language that retains it. In the data discussed here, I obviously exclude directly possessed nouns and other forms that take suffixes, since the final vowel of the root is not word-final.[2]

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(1) POC/PNCV   VT   TAPE   TIRAX OTHER
     *rarap '*Erythrina* sp.'   darev   darəp   drav
     *masakit 'sick'   m'at   məsit   —   Uripiv e-msemsaet
     *ñamuk 'mosquito'   namax   nəxmax —   Malua Bay næmux
     *mataq 'new; raw'   m'ədax mədax   mdrax Neverver mrex
     *molis 'citrus'   məli³   mʷələs molih

Word-final vowels were regularly lost, irrespective of the nature of the final vowel or the nature of the penult (which latter feature is germane to the discussion in sections 2 and 3):[4]

(2) POC/PNCV   VT   TAPE   TIRAX OTHER
     *mate 'dead'   m'a   mes   nɛh   Malua Bay mas
     *bokasi 'pig'   pua   buos   bxɔh   Malua Bay bukəs
     *mʷata 'snake'   nə/mat   nə/mot   nə/mat Neve'ei ne/mʷat
     *boŋi 'night'   na/pən⁵ nə/bəŋ   buŋ   Naman buŋ
     *taŋa 'basket'   na/ten   taŋ   n/taŋ Neverver ne/taŋ
     *lima 'five'   i-ləm'   i/ləm   lin   Malua Bay i/ləm
     *bakuRa '*Calophyllum* sp.'   p'axər   par   —   Neverver ne/baxur

And when a final consonant was lost, the vowel preceding it was also lost, again irrespective of the nature of the vowel in the preceding syllable:

(3) POC/PNCV   VT   TAPE   TIRAX OTHER
     *qatop 'thatch'   ne/iet   n/iet   —   Neve'ei n/iat, Avok n/iar
     *laŋit 'sky; wind'   na/len   —   n/laŋ Malua Bay laŋ
     *tasik 'sea'   na/ta   tes   n/tah Malua Bay das
     *quraŋ 'crustacean'   n/ur   n/uir   na/ur Malua Bay n/or
     *qutan 'inland; place'   n/ut   n/it   na/ut Naman no/ut

There is, however, a group of four languages spoken along the north coast of the island that do not behave in exactly the same way as the remaining languages of Malakula in terms of final vowel loss, and these form the subject matter of this short paper.

2. THE NORTH COAST GROUP. Lynch and Brotchie (2010:382) presented evidence linking five languages of the extreme north of Malakula— Malua Bay, Nese, Vovo, Botovro, and Vao—into a subgroup that was referred to there as "Northern Malakula." Two of those pieces of evidence were:

(a) All five languages merge POc *d, *dr, *r, and *R; other Malakula languages often merge *d and *dr, but keep this merged phoneme distinct from the reflex of *r (and *R).

(b) All except Malua Bay exhibit paragogic vowels after a retained final consonant, at least in certain environments; this is not found elsewhere in Malakula.

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2. I represent the velar fricative in all Malakula data as *x*, no matter how it is represented in the various sources (*x, γ, kh, h,* and so on). Bilabial symbols followed by an apostrophe (like *b'* and *m'*) represent apicolabials. In Nese (and Uripiv), *rr* is a trill, *r* a flap. Reconstructions are Proto-Oceanic unless preceded by ᴺ, which marks them as being Proto–North-Central Vanuatu.

3. Note that *s (and the palatalized reflex of *t) is regularly lost in V'ënen Taut except word-initially and before final *i: this also applies to *mate and, exceptionally, *bokasi in (2), and to *tasik in (3).

4. This is not true of every Malakula language: see the discussion on Ninde in 3.2 below.

5. The V'ënen Taut form means 'day'.

The four languages in (b) form the North Coast subgroup of Northern Malakula. Table 1 lists the reflexes of the Proto-Oceanic (POC) consonants in these four languages, while the vowel correspondences are given in table 2. Conditioned reflexes are separated by a slash, reflexes whose conditioning has not as yet been established occur after a comma, and sporadic reflexes are enclosed within parentheses. With the vowels, the "default" reflex is given first.

The situation with the second piece of evidence (b) cited above, concerning paragogic vowels, is somewhat more complex than was mentioned in Lynch and Brotchie (2010): not only do the four languages of the North Coast subgroup add paragogic vowels in certain environments, they also show unexpected retention of final vowels in roughly the same environments: following a syllable containing a high vowel.[6]

A brief discussion of stress and phonotactics is a necessary preliminary to the discussion that follows. We don't know much about stress in any of these languages, though Crowley (2006:42) says of Nese that "the basic pattern seems to be little different from what we expect of a language of central Vanuatu in that stress is primarily assigned to the penultimate syllable," and there is little reason—given the situation in most neighboring languages for which we have descriptions of any kind—to assume that the other languages have any different patterns. As far as phonotactics is concerned, Crowley (2006:42–43) says that there are no word-final consonant clusters in Nese, and virtually no word-initial clusters either, apart from four or five words that begin with a stop + a liquid: cf. *trro* 'stand' in (11). Syllable structure thus appears to be of the form (C)V(V)(C), except for the handful of forms that allow syllable-initial stop + liquid. There is no evidence that Vovo, Botovro, and Vao were any different from Nese in this regard.

2.1 FINAL *CV. When the penult was high, and the final vowel mid or low, the final vowel was retained. The data are organized around the behavior of the Nese forms. In

TABLE 1. CONSONANT CORRESPONDENCES

POC	*pʷ	*p	*t	*s,*c	*k	*q	*bʷ	*b	*j	*g	*w
Nese	v	v/v'	t/s	s	x	Ø,i	b	b/b',d	j	k	u/w/v,v'
Vovo	v	v	t/h	h	x (Ø)	Ø (i)	b	b/d	s	k	v, Ø
Botovro	v/v'	v,w/v',(δ)	t/h,(x)	h,(x)	x/h/k/ Ø	Ø (i)	b	b/b',p',(d)	ts, s	k	v, Ø
Vao	v/v'	v/v'	t/h	h	x (Ø)	Ø (i)	b	b/p'	s	k	v, Ø

POC	*mʷ	*m	*n,*ñ	*ŋ	*d	*r	*R	*dr	*l	*y	
Nese	m	m/m',n	n	ŋ	rr/j	rr/r	Ø, rr/r	rr	l	i	
Vovo	m	m,n	n	ŋ	r/c	r	Ø, r	r	l	i?	
Botovro	m	m/m',n	n	ŋ	r/s	r	Ø, r	r	l	i?	
Vao	m	m/m'	n	ŋ	r/t	r	Ø, r	r	l	i?	

TABLE 2. VOWEL CORRESPONDENCES

POC	*i	*e	*a	*o	*u
Nese	i/u	e,i	a/e	o/u	u/o,i
Vovo	i/u	e,o,i	a/e/o	o/u	u/i
Botovro	i/u	e/a,o,i	a/e/o,i	o/u	u/i
Vao	i/u	e,o	a/e/o	o/u	u/i

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6. Note that a number of Malua Bay examples were given in (1)–(3) to show that, in this respect, it behaves in the same way as other Malakula languages.

(4a), there is no phonotactic change: *CV(V)CV > CV(V)CV. In (4b), where the final vowel is reflected as *e*, and (4c), where it is *o*, however, there is a phonotactic change, or rather, there are two such changes: first, the protoform has an accretion (originally a preceding article or numeral prefix); and second, the high penult has been lost in Nese. (The effect of the prefix can be seen in the Nese reflexes of *siba 'cut': *side* 'cut', with no accretion; *ne/sde* 'knife', with the accreted article.) The other languages behave similarly, though with some variation.[7]

(4)   POC/PNCV   NESE   VOVO   BOTOVRO VAO

a.   ᴺ*baig(ae) 'green snail'   na/daike   —   —   —
     *siba 'cut'   side   hibe   —   —
     *lima 'five'   line   lime   lim'e   xe/lim'e
     *pica 'how much/many?'   vise   xe/vihe   v'ihe   xe/v'ihe

b.   *piso 'sugarcane'   na/vse   —   —   —
     *siko 'kingfisher'   na/sxe   —   —   —
     *kuRita 'octopus'   ne/xte   xute   —   xute
     *siba 'cut, knife'[8]   ne/sde   ne/hibe   ne/hib'e ne/hib'e
     *siwa 'nine'   xe/sve   xe/hive   xe/xve   xe/hive
     *puko 'morning'   ne/v'xe   ne/vxo   ni/v'ko —
     ᴺ*tuva 'belt'   ne/tve   —   —   —

c.   *bakuRa 'Calophyllum sp.'   na/b'axrro —   —   —
     ᴺ*kuiba 'imperial pigeon'   no/xb'o   —   —   —

The main differences between Nese and the other three languages are some variation in the nature of the final vowel, some variation as to whether there is a prefixed article or numeral marker, and especially the fact that deletion of the high penult occurs in all Nese forms in (4b,c), but only in the Vovo and Botovro reflexes of *puko and the Botovro reflex of *siwa, both in (4b).

The final vowel is lost, however, when both the penult and the final were high, as in (5a), or when the penult was nonhigh, as in (5b).[9] Exceptions are in square brackets.

(5)   POC/PNCV   NESE   VOVO   BOTOVRO VAO

a.   ᴺ*b(ʷ)iji 'anus'   bis   —   —   —
     *sipiri 'coconut lory'   ni/jivirr —   —   —
     *bi(rR)ibi(rR)i   ne/b'irrb'irr —   —   —
       'Hernandia sp.'
     *pitu 'seven' > ᴺ*bitu   xo/dit   xo/dit   huo/dit xe/büt
     *pudi 'banana'   no/v'ij   na/vits   na/vis   [vete]
     *tuk-i 'break open'   tux   —   —   —
     *tuRi 'sew'   rrurr   —   —   —
     *susu 'breast'   na/sus   —   —   —[10]

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7. Nese data are from Crowley (2006); data for Vovo, Botovro, and Vao are from Tryon (1976), with slight orthographic changes. The number of blanks in the Vovo, Botovro, and Vao columns in the data sets in this section are due to the fact that, while the Nese vocabulary in Crowley (2006) contains about 800 items, the data for the other languages consist of fewer than 300 items.

8. All reflexes mean 'knife'.

9. The one exception I have is *tuli (> ᴺ*duli) 'earwax' > Nese *na/rrlo*. However, this may once have been a directly possessed form, which might explain the retention of the final vowel.

10. Directly possessed in Vovo, Botovro, and Vao.

	POC/PNCV	NESE	VOVO	BOTOVRO	VAO
	*kutu 'louse	na/xut	na/xut	na/hut	na/xut
	ᴺ*tukunu 'tell story'	tux/tuxun	tuk/tuxun	—	—
b.	*leba 'mud'	na/lev	na/lep	na/lev	na/lev
	*mate 'dead'	nas	nat	m'ah	mat
	*mʷata 'snake'	na/mat	na/mʷat	na/mat	na/mʷat
	*laŋo 'a fly'	na/laŋ	na/laŋ	na/laŋ	na/laŋ
	*topu 'sugarcane'	nebe/tev	na/tov	pe/p'iv ?	na/tov'
	*qone 'sand'	na/on	na/on	na/un	tabaŋ-na/on
	*tolu 'three'	til	til	til	xe/tol

2.2 LOST FINAL CONSONANTS.

When final consonants were lost, a pattern similar to that discussed in 2.1 emerges. That is, if the penult and the final vowel were both high, as in (6a), or if the penult was nonhigh, as in (6b), then the vowel preceding the final consonant is also lost:

(6)		POC/PNCV	NESE	VOVO	BOTOVRO	VAO
	a.	*niuR 'coconut'	na/ni	na/ni	na/ni	[na/nu]
		*limut 'algae'	na/lum	—	—	—
		*Runut 'coconut sheath'	na/un[11]	—	—	—
		*sisiq 'shellfish'	neve/sis	—	—	—
		*saŋapuluq 'ten'	saŋav'il	haŋavil	haŋav'il	haŋavul
	b.	*p⁽ʷ⁾anaq 'arrow'	ne/v'in	—	ne/vin	—
		*tanoq 'earth'	na/tan	na/tan	na/tan	na/tan
		*salan 'path'	na/sal	na/hal	na/hal	na/hal
		*saman 'outrigger'	na/jam	na/sam	na/sam	na/sam
		*onom 'six'	x/on	on	h/on	xe-y/on
		*molis 'citrus'	na/mul	—	—	—
		*qatop 'thatch'	n/iat	—	—	—
		*laŋit 'sky; > wind'	na/laŋ	na/laŋ	na/laŋ	na/laŋ
		*matakut 'fear'	—	matax	—	m'atax
		*tasik 'sea'	na/tas	na/tah	na/tah	ne/teh
		*ponuq 'full'	vun	—	—	—

But when the penult was high and the final vowel nonhigh, then the final was retained:

(7)	POC/PNCV	NESE	VOVO	BOTOVRO	VAO
	*luaq 'vomit'	[lu=lu]	lu=lue	lu=lue	[lu=lu]
	*pulan 'moon'	na/vle	na/vule	na/vile	na/vule
	*quraŋ 'crustacean'	na/urre	na/ure	na/uro	na/ure
	*qusan 'rain'	na/use	na/uhe	na/uxo	na/uhe
	*qutan 'inland'	a/ute	—	—	—
	*Rumʷaq 'house'	na/ine	ne/ime	ne/ime	ne/ime

Nese again shows loss of the penultimate high vowel in the reflex of *pulan; this does not occur in the other three languages. The other prefixed forms in (7) have roots that, due to the loss of *R or *q, were vowel-initial, and thus there is no consonant preceding the penult that would allow for its deletion.

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11. Means 'coconut fiber'.

Two exceptions to these generalizations are the examples in (8), in which both vowels are high, but nevertheless the final vowel is retained (except in Vao):

(8)	POC/PNCV	NESE	VOVO	BOTOVRO	VAO
	*pusuR 'bow'	no/vso	—	ne/huvo (met.)	na/vuh
	*qumun 'oven'	noul-amu	—	—	—

2.3 PATTERNS OF VOWEL RETENTION AND LOSS.
The patterns that were described above are summarized in (9), in which H symbolizes a high vowel, L a nonhigh vowel, V any vowel, and NA- a prefix of some kind to the root (usually an article or numeral marker). The vowel-final forms in the POC column represent both vowel-final roots and consonant-final roots where that consonant has been lost. Final vowel loss is dealt with in (9a), final vowel retention in (9b).

(9)	POC/PNCV	NESE	VOVO, BOTOVRO	VAO
a.	*(NA)-CLCV#	(NA)-CLC#	(NA)-CLC#	(NA)-CLC#
	*(NA)-CHCH#	(NA)-CHC#	(NA)-CHC#	(NA)-CHC#
b.	*CHCL#	CHCL#	CHCL#	CHCL#
	*NA-CHCL#	NA-CCL#	NA-CCL# ~ NA-CHCL#	NA-CHCL#

The data in (9a) show that a final vowel was lost in all four languages if the penult was nonhigh or if both the penult and the final were high; this is the regular pattern in the rest of Malakula for *any* combination of vowels. What is unique to these four languages is illustrated in (9b): a final nonhigh vowel is retained if the penult was high; and in Nese (and sometimes Vovo and Botovro), that penult was deleted so long as it did not violate any syllable structure constraints (that is, a two-consonant onset is disallowed).

Where a final vowel has been retained—as in (4) and (7)—that vowel is reflected only as *e* or *o*, irrespective of the nature of the vowel itself. (The only exception to this is *qumun 'oven' > Nese *noul-amu* in [8].) Where a POC form is reflected in two or more of these languages, they generally have the same final vowel, though there are occasional disagreements: the reflexes of *puko in (4), where Nese has final *e* but Vovo and Botovro final *o*; and the reflexes of *quraŋ and *qusan in (7), where Botovro has final *o* but the other languages final *e*.

We really need more data to gain a better idea of how the final vowel was conditioned. My hypothesis at present is that retained final vowels surfaced as *e,* but that often, when the penult was *u, the reflex *o* is found instead: the vowel *o* is only found when the preceding vowel was *u, though *e* is also found after *uC. This suggests that the paragogic vowel may well have been *a,* or possibly *ə*.

2.4 RETAINED FINAL CONSONANTS.
The languages under consideration here are similar to other languages of northern and western Malakula in that final nasals are almost always lost, but a reasonably high proportion of final nonnasal consonants are retained.

When a final consonant was retained, again there seem to be two patterns. When the vowel in the final syllable was *a (or perhaps nonhigh, although I have no examples of final *eC or *oC), then final *VC was retained as VC:

(10) POC/PNCV   NESE   VOVO   BOTOVRO VAO
      *rarap 'coral tree'   na/rrarrav'   —   —   —
      *saqat 'bad'   sat   hat   hat   hat
      *pat 'four'   v'at   vat   v'at   xe/v'at
      *pwilak 'lightning'   ne/v'ilax   —   i-vilax [na/v'ile]

On the other hand, when the vowel in the final syllable was high, the retained final consonant is followed by another vowel; and in Nese, and sometimes in Botovro, the high vowel of the final syllable of the POC root was lost:

(11) POC/PNCV   NESE   VOVO   BOTOVRO   VAO
      *maqurip 'alive'   norrwo   [naur]   nerve   [m'aur]
      *manuk 'bird'   na/nanxo   [na/man]   na/m'anuho   [na/m'an]
      *ñamuk 'mosquito'   namxo   namxo   namuho   namuxe
      *kadik 'fire ant'   na/xajxe   —   —   —
      *tuqur 'stand'   trro, tutrro turo/maro turo   tura/un

It appears that the paragogic vowel is *o* if the final vowel was back, and *e* if the final vowel was nonback (though Nese *norrwo* 'alive' < *maqurip and Vao *namuxe* 'mosquito' < *ñamuk do not fit this pattern). This is an identical pattern to that which was found in 2.3 regarding retention of final vowels.

I assume that the loss of the high vowel that preceded the final consonant in Nese and, in some etyma, Botovro occurred after the addition of the paragogic vowel. This is because a final paragogic *o* occurs only if the preceding vowel was *u, and therefore that *u must have been present when the *o* was added. That is, the development of Nese *namxo* from *ñamuk would have been something like *ñamuk > *namuka* > *namuko* > *namko* > *namxo*.[12] The Botovro reflexes of *manuk and *ñamuk tend to confirm this: *manuk > *na/m'anuho* and *ñamuk > *namuho* show retention of both vowels of the root plus an additional vowel following the final consonant.

In the case of Nese at least, we thus find the same situation that obtained with vowel-final roots. Once the paragogic vowel had been added, the vowel of the original final syllable became penultimate, and high vowels in this environment were regularly lost in Nese (and less regularly in the other languages), as discussed in 2.1–2.3.

3. STRESS SHIFT AND PARAGOGIC VOWELS. The phonological developments I have described share a number of similarities:
(a) A final vowel appears unexpectedly. In the case of vowel-final forms, the unexpectedness is due to its failure to delete. In the case of consonant-final forms, the vowel was never part of the original root.
(b) The conditioning factor for the appearance of this unexpected vowel is a high vowel in the preceding syllable.

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12. Since *n and *ñ merge in all Malakula languages, and indeed in almost all North-Central Vanuatu languages, I assume that the change from *ñ to *n must have been very early, and that the Malakula languages inherited forms with initial *n. Thus the first stage of this development has initial *n*, not *ñ*.

(c) The high vowel is then deleted regularly in Nese, and sometimes in the other languages, as long as it does not violate syllable structure constraints (that is, no two-consonant onsets are permitted).

(d) The final vowel—whether paragogic or the reflex of a POc final vowel— can only be *e* or *o*, whose conditioning seems to be due to whether the preceding high vowel is front or back.

I now turn to examine a possible explanation for these facts.

3.1 FINAL VOWEL RETENTION. I assume here that, apart from the "exceptional" cases I am discussing, primary stress normally applied to the penultimate syllable of vowel-final forms (including forms that came to be vowel-final after the loss of a final consonant). The final vowel, being unstressed, was thus a good candidate for deletion, as illustrated in (5) and (6) above.

Paul de Lacy (2007) investigates the relationship between various suprasegmental phenomena, and "shows how sonority and tone can both influence and be influenced by prosodic structure," and in particular focuses "on the influence that sonority can have on foot structure, often called 'sonority-driven stress'" (2007:281).[13] His initial example is from the Takia language of Madang Province in Papua New Guinea, based on Ross (2002b). In Takia , the default position for primary stress is the final syllable, but stress "occurs on an earlier syllable if that syllable's vowel is lower than the vowel(s) of any succeeding syllable" (Ross 2002b:218); for example:

(12) TAKIA
tamán 'his/her father'   nánu-n 'his/her child'
u-sól 'you fled'   kanáorig 'earthquake'

In other words, stress is assigned to the rightmost most sonorous vowel, with high vowels being less sonorous than mid vowels and mid vowels less sonorous than the low vowel *a*.

Closer to home, the language of the Maskelyne Islands (off the southeast coast of Malakula) show something similar. The penult is stressed if the final two vowels are of the same height and sonority. However, if the final two vowels differ in sonority, then the more sonorous vowel receives primary stress irrespective of its position in the word (Healey n.d.):

(13) MASKELYNES
sárex 'deep'   but   pelán 'tomorrow'
ákis 'always'   sipá 'thanks'
béki 'shark'   vʷité 'fruit of it'
vʷéxux 'hill'   busé 'grass skirt'
lótu 'worship'   luvʷóx 'crowd'

It is highly likely that something similar may have taken place in Proto-North Coast. That is, a sonority-driven stress shift moved primary stress from a high penult to a more sonorous nonhigh final vowel, thus protecting that final vowel from deletion:[14] thus *píca 'how many?' > **picá, *puko 'morning' > **pukó, and so on. This stress shift only took

13. I am grateful to Malcolm Ross for drawing this topic, and de Lacy's paper, to my attention.
14. A couple of reviewers have suggested that the stress shift may have been leftward, to a nonhigh vowel preceding the high vowel. But if this were so, the final vowel would have been unstressed, and thus liable to deletion.

place if the penult was high and the final nonhigh: there was apparently no stress shift when the penult was mid and the final was low, since final vowels were deleted in this environment: *leba 'mud' > Nese *na/lev* (not **na/leve* or **na/lve*), ᴺ*ŋora 'snore' > Nese *ŋorr* (not **ŋorro*). Nor was there any shift when both vowels were high: the penult remained stressed, and an unstressed final vowel was deleted, as in *pudi 'banana' > Nese *no/v'ij*, *pitu 'seven' > ᴺ*bitu > Nese *xo/dit*.

After the rule deleting unstressed final vowels had finished operating, it seems likely that the stress assignment rules changed such that penultimate stress once again became the norm.

3.2 ADDITION OF A PARAGOGIC VOWEL. Quite a number of Oceanic languages have developed paragogic vowels—either an echo-vowel copying the last vowel of the root, or a (relatively) invariable vowel. In both cases, the vowel follows a retained final consonant, allowing for an open final syllable.

The Bali dialect of Bali-Vitu is an example of the former type. Consider the following (Ross 2002b:365), showing the addition of a paragogic vowel that is a copy of the final vowel of the root:

(14) POC   BALI
     *Rumʷaq 'house'   rumak/a
     *boRok 'pig'   borok/o
     *inum 'drink'   ɣ/inum/u
     *qusan 'rain'   ɣuzaŋ/a
     *maqurip 'be alive'   maɣurip/i

Dobu (or Dobuan) (Lithgow and Lithgow 2007) is an example of the latter type. Examine these reflexes:[15]

(15) POC   DOBUAN
     *matakut 'afraid'   mataut/a
     *inum 'drink'   num/a
     *ikan 'fish'   iyan/a
     *sinaR 'shine'   sinal/a 'sun'
     *qatop 'thatch'   ʔatow/a

There is some evidence that the North Coast languages may be more similar to these languages than first appears.[16] If stress fell on a final closed syllable (as it did in Proto-Oceanic), then I cannot see any motivation for adding a paragogic vowel after *íC and *úC, but not after *éC, *óC, or *áC. A plausible hypothesis, however, is that a paragogic vowel was added to *all* final consonants, irrespective of the nature of the vowel in the final syllable of the root, and that this vowel was later lost except in the cases described in 2.4.

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15. Malcolm Ross (pers. comm.) points out that Dobuan lexicon bifurcates into items that add *a and those that lose the final consonant, but believes that this is due to borrowing, not to conditioning.

16. Indeed, Clark (2009:17) says of Proto–North-Central Vanuatu (PNCV) that "POC final consonants are regularly lost in PNCV. However, in a dozen or so words the expected CVCV form exists alongside an extended form CVCVCV, representing the full POC form with an added vowel," that vowel probably being *-i. In my review of Clark's volume on PNCV, however, I queried whether this was reconstructible to the PNCV level, or whether it was an independent development in individual languages or subgroups (Lynch 2009:513).

There are a couple of small pieces of evidence that seem to show relics of this process in forms in which the vowel in the final closed syllable was nonhigh. Consider first the apparent exception given in (16) in which a paragogic vowel was added after final *aC:

(16) POC/PNCV   NESE   VOVO   BOTOVRO   VAO
      *ma-osak 'cooked'   nasxe   [nox] m'ahke   —

Note also the Nese reflex *na/rrarrav'* of *rarap '*Erythrina* sp., coral tree'. The final apicolabial can only be accounted for by a following nonback vowel, which is the sole conditioning factor of the apicolabial shift in these languages.

If this was the case, and assuming for the moment that the paragogic vowel was originally *a, then the difference between the development of, say, *na-manuk 'bird' > Nese *na/nanxo* and *na-pʷilak 'lightning' > Nese *ne/v'ilax* would have been as follows:

(17)   *na-manúk   *na-pʷilák
      Addition of paragogic vowel   namanúka   napʷiláka
      Sonority-driven stress shift   namanuká   —
      Deletion of unstressed final V   —   napʷílak
      Deletion of unstressed medial high V[17]   namanká   —
      Reversion to penultimate stress   namánka   napʷílak
      Final output   nanánxo   nev'ílax

As noted above, when the preceding vowel was *i, the final vowel (retained or paragogic) is *e*; when the preceding vowel was *u, the final vowel is sometimes *e*, sometimes *o*. A similar situation obtains (at least as far as retained final vowels are concerned) in at least two Central Vanuatu languages.

In Ninde, spoken in the southwest of Malakula, final high vowels are lost: *laki 'marry' > *laʔ*, *barapu 'long' > *paxap*. Clark (2009:41) says that final nonhigh vowels are retained, and merge, most frequently as *e* (ᴺ*laba 'big' > *t-lepe*, *na-tanoq 'earth' > *netene*), but that *o* occurs directly following *u, as in *rua 'two' > *o-xuo*, or following (modern) velars, as in *na-waga 'canoe' > *nowoᵑgo*, ᴺ*na-ure 'island' > *nuoxo=uoxo*.

In Paamese, Clark (2009:46) says that all cases of final *a are raised to *e* (as in *baga 'banyan' > *a/veke* or *paŋoda 'forage on reef' > *haŋore*, but that this vowel, "along with etymological *e,* becomes *o* somewhat inconsistently after *o* and *u*": thus *kurat '*Morinda* sp.' > *o/ulo* but *quraŋ 'crustacean' > *o/ule*.

Retained or paragogic vowels in the North Coast languages follow a similar pattern, which is why, in the discussion preceding (17), I assumed that the paragogic vowel was *a. Whether there is any historical unity in the processes in the North Coast languages, Ninde, and Paamese is beyond the scope of this paper.

3.3 LOSS OF THE HIGH PENULT. The rule deleting the high unstressed penult must have begun to operate about the time that Proto-North Coast was diverging into the modern languages: it is almost universal in Nese, occasional in Vovo and Botovro, and seems not to have occurred in Vao.

High vowels, being less sonorous than other vowels, are more prone to deletion: note, for example, the case of Ninde mentioned above, in which final (unstressed) high vowels are lost, though final (unstressed) nonhigh vowels are not.

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17. This rule applied to all forms in Nese, some in Vovo and Botovro, but did not apply in Vao.

Alexandre François (pers. comm.) has drawn my attention to what appears to be a recent change in Mota, spoken in the Banks Islands: a pretonic high vowel has been deleted (as in *kilala 'know' > *ɣlala*; ᴺ*sinaka '(vegetable) food' > *snaɣa*); in addition, when the penultimate (stressed) vowel was high and the final (posttonic) vowel was non-high, then stress was attracted to the following, more sonorous vowel, in this case the final vowel. As a result, the high vowel became unstressed and was deleted: for example, *kíRe 'pandanus' > *ɣré* 'pandanus', *talise '*Terminalia* sp.' > *salíte > *salté*. This is remarkably similar to what has happened in the North Coast languages, especially Nese.

4. CONCLUSION. The apparently exceptional (in the Malakula context) retention of final vowels and the addition of paragogic vowels in the North Coast languages, in both cases following a syllable containing a high vowel, can be explained by the regular addition of paragogic vowels to all consonant-final roots, a sonority-driven stress shift moving stress from a high penult to a nonhigh final vowel, and subsequent deletion of all unstressed final vowels.

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johnlynch123@gmail.com