

The Apicolabial Shift in Nese

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Nese is one of a dozen or so languages/dialects spoken in the south Santo–north Malakula area of Vanuatu that reflect original simple bilabials before nonround vowels as apicolabials. In some of these languages, the apicolabials subsequently became dentals/alveolars. Nese is unusual, however, in the inconsistency of its reflexes: the most frequent reflex of Proto-Oceanic *b in this environment is indeed the apicolabial stop *ɸ*, but the most common reflex of *m is alveolar *n*, while with *p both apicolabial *ɸ* and labiodental *v* occur with roughly equal frequency. This paper attempts to explain this variation, and also attempts to explain why *p behaved far less consistently across a range of languages in this area than did *b and *m.

1. INTRODUCTION. There is a small group of languages in southern Santo and northern Malakula in Vanuatu in which original bilabials, when they occurred before nonround vowels, developed as apicolabials (sometimes referred to as linguo-labials). Maddieson (1989) describes the production of apicolabial stops and nasals as involving the movement of the tongue forward “so that the tip contacts the inner surface of the upper lip or the blade contacts the lower surface of the upper lip, with the tip protruding between the lips” (Maddieson 1989:361). Apicolabial fricatives “are also produced with the tongue fully protruded between the lips. In this case, the blade of the tongue is in contact with the lower surface of the upper lip at either side, and air escapes through a very narrow aperture that extends for about one half to two thirds of the width of the lips” (1989:363-364).¹

While some languages in this geographical area retain apicolabial stops, nasals and fricatives, in some others the earlier apicolabials subsequently shifted to dentals or alveolars (Tryon 1976:52-53, Clark 1985:205-206, Maddieson 1989, Lynch 2003). Yet in a number of neighboring and apparently closely related languages, the reflexes of original bilabials are simple bilabials.²

1. I am grateful to Alexandre François and Ken Rehg for comments on some of the issues discussed here, and to Robert Early and Paul Geraghty for assistance of various kinds. The languages for which Maddieson had visual and audio data were Vao, V’enen Taut, and Tangoa (see note 2).
2. Languages that have apicolabial reflexes are as follows (naming follows Lynch and Crowley 2001, with names in parentheses being found in other sources): Mafea, Aore, and Southwest Santo (Tangoa and Araki), all spoken on small islands off the coast of Santo, and Vao, Botovro (Mpotovoro), and V’enen Taut in Malakula. Apicolabials developed further as dentals/alveolars in Sakao, Tolomako, Shark Bay, Mores (Roria), and Southeast Santo (Tambotalo and Butmas-Tur dialects) in Santo and Tirakh (Mae) in Malakula.

In attempting to explain this distribution, Clark (1985:205) first notes that “this shift is phonetically so unusual, and the languages manifesting it so clearly concentrated in a single area, that we can hardly imagine it not to have had a single origin.” He then goes on to say that “the apico-labial shift presumably begins with a shift from labial to apico-labial. This change has two important properties. First, it is reversible (no mergers are involved). Second, it creates a highly-marked type of articulation, very rare in human languages. This means that there will be a high likelihood of subsequent elimination of this series of consonants by further sound change. One possibility is to merge the apico-labials with other apicals (i.e., dentals). A second is to return them to ordinary labials, thus erasing all evidence of the shift.” Although in his view the immediate ancestor of all of these languages originally underwent what I will call the apicolabial shift, the majority of its descendants subsequently reversed it, with only a minority either preserving the apicolabial articulation or merging the apicolabials with the dentals/alveolars.

The shift has not undergone total reversal in Nese, a moribund language or dialect spoken by no more than twenty people living in the Matanvat area on the northwest tip of Malakula where, due to substantial migration from other parts of the island, Bislama is the dominant language.³ Crowley (in press a) notes that “children are no longer learning this speech variety, and most adults in the Matanvat area now seldom use it even when speaking with their own relatives with whom they share a knowledge of Nese.”

Nese is of particular interest because there is evidence to suggest that each of the three Proto-Oceanic (POC) bilabials *b, *p, and *m has bilabial, apicolabial, and alveolar reflexes in the environment of a following nonround vowel. However, the patterning of reflexes of each of these proto-phonemes is different: *m shows the strongest tendency to shift to an alveolar, *p the strongest tendency to be reflected as a bilabial, with *b somewhere in between. A discussion of these different patterns form the substance of the first part of this paper.

The different patterns of behavior of *m and *b can possibly be explained as a result of other sound changes that took place in Nese. However, variation in the reflexes of *p cannot. I examine reflexes of *p in other apicolabializing languages and show that it seems to have been inherently unstable with regard to the apicolabialization process for good phonetic reasons.

2. THE CONDITIONING OF THE SHIFT. The conditions under which labials did or did not undergo the apicolabial shift are basically the same in Nese as they are in the other languages that exhibit this phenomenon. Original labiovelars became bilabials, irrespective of the nature of the following vowel.⁴

(1) *b ^w ilake	ni/bilal	‘banded rail, <i>Gallirallus philippensis</i> ’
*b ^w atu-	na/bat-	‘head’
PNCV *v ^w clu	vel	‘dance’

3. I say “language or dialect” because, although there are a number of named speech varieties—mostly moribund—in this area, it is not clear how linguistically distinct they are. Lynch and Crowley (2001) refer to the speech communities of this area as Matanvat. The available data on this variety consists of a short monograph by Terry Crowley (in press), containing a sketch grammar and a lexicon of about 800 entries.

PNCV *v ^w ara	var	‘say’
PEO *m ^w (a,e)le	noro-mel	‘cycad, <i>Cycas circinalis</i> ’
PNCV *m ^w ala(m ^w ala)	malmal	‘naked’

Similarly, simple bilabials before POC rounded vowels typically remained bilabials:

(2) *boŋi	buŋ	‘night’
*butoŋ	ne/bitō-	‘navel’
*pose	no/vos	‘oar, paddle’
*puaq	no/vo-, nu/vu-	‘fruit’
*molis	na/mul	‘orange, <i>Citrus</i> sp.’
PEO *damu	na/ram	‘hard yam’

The apicolabial shift occurred when a POC bilabial was immediately followed by *i, *e, or *a (which I will refer to as “the apicolabializing environment”). The initial result of the shift was an apicolabial phoneme: *b > *b̥*, *p > *p̥*, and *m > *m̥*, though in keeping with orthographic practice in Malakula languages these will be written instead with following apostrophes: *b'*, *v'*, and *m'*. In some of the examples below, *m has further shifted to *n*, as will be discussed in later sections.

(3) *bi(r,R)i-bi(r,R)i	ne/b'irb'ir	‘sea-hearse tree, <i>Hernandia</i> sp.’
PNCV *belu	b'el	‘crooked’
*baga	na/b'ak	‘banyan, <i>Ficus</i> sp.’
*piRaq	na/v'i	‘kind of taro’
*kape	na/ɣav'	‘crab’
*patu	na/v'at	‘stone’
*-miu	-m'i	‘your PL’
PNCV *meme-	ne/m'em'-	‘tongue’
*kamaliR	na/ɣm'al, ne/ɣm'cl-	‘meeting house’

3. DIFFERENT PATTERNS. While each of the three POC bilabial phonemes underwent this shift, there is a considerable amount of inconsistency between them. I will deal with each in turn.

3.1 POC *m. By far the commonest reflex of *m in the apicolabializing environment is *n*.⁵

(4) PNCV *miala	nial	‘red, sun’
*kamiu	kani	‘you PL’
*kamami	kanan	‘we INCL.PL’

4. This change presumably occurred after the apicolabial shift, because labiovelars before non-round vowels do not normally undergo the shift. Reconstructions are Proto-Oceanic unless preceded by an abbreviation: PEO, Proto-Eastern Oceanic; PSO, Proto-Southern Oceanic; and PNSO, Proto-Nuclear-Southern Oceanic, both from my own unpublished notes; and PNCV, Proto-North-Central Vanuatu, mainly from Clark (in prep.). PNCV *v^w and *v are the regular reflexes of POC *p^w and *p. The Nese forms are glossed, whereas reconstructions are un glossed unless their meaning is somewhat different from that of the Nese reflexes. Most Nese nouns have accreted the original article as *nV-*. In Nese, and also Araki, which is discussed in section 4, there is a phonemic distinction between the flap /r/ and the trill /r̄/.

5. There seems to be some evidence that word-final *Vk underwent metathesis in Nese. Note the reflexes of *manuk and *ma-osak in (4), and also *ñamuk > *namyo* ‘mosquito’.

*lima	line	'five'
*manuk	na/nanyo	'bird'
*ma-osak	nasyo	'cooked'
*tama-	tana-	'father'
*mata-	na/nata-	'eye'
*mamasa	nanas	'dry'

In all, I have identified close to 30 instances of *m > n in Crowley's lexicon. There are, in addition, three instances of *m^w > n, presumably as a result of the nasal losing its labiovelar articulation at some stage:⁶

(5) PEO *m ^w eRa	nc/nernar	'boy'
*Rum ^w aq	na/ine	'house'
PNCV *m ^w asoru	nasor	'hiccup'

However, I have found only three instances of *m > m', all of which are given in (3) above; and these are in fact the only forms containing m' in the whole of Crowley's lexicon. The process seems to have been *m > m' > n, with all but three forms participating in the last change.

On the other hand, there are four instances in which the reflex is unexpectedly a simple bilabial:

(6) *rodrom, PNCV *domi	romromi	'think about'
PNCV *zumi	jum	'kiss'
*saman	na/jam	'outrigger'
*maRi	ma	'come'

Although a couple of these are in final position in Nese (which regularly loses POC final vowels), there are other cases of final n < *m, like *kamami > *kanan* in (4).

In summary, it appears that the change from bilabial to apicolabial to alveolar was virtually complete as far as *m is concerned, with only a couple of forms not going the full distance and a couple of others apparently either undergoing reversal to, or remaining unchanged as, bilabial m. There appear to be no storable phonological conditions that would account for the infrequent reflexes m' or m.

3.2 POC *b. The case of *b is different, because the most common reflex in the apicolabializing environment is the apicolabial b' and not the alveolar d. I have identified about 15 cases of *b > b', which include those in (3) plus others like the following:

(7) *biRapa	nc/b'irav	'striped surgeonfish, <i>Acanthurus lineatus</i> '
PNCV *(v,b)eve	b'ev'e	'mother'
*abe	n/eb'e-	'body'
*bakewa	na/b'ake	'shark'
PSO *kuiba	no/yb'o	'Pacific imperial pigeon, <i>Ducula pacifica</i> '
PEO *bakuRa	na/b'ayro	'tamanu, <i>Calophyllum</i> sp.'

6. In the case of *Rum^waq, there is another reflex, the directly possessed noun *nem-*, which shows regular development of *m^w. Quite a few apparent reflexes of *m^weRa in Vanuatu languages suggest an alternative form *maRa, suggesting quite early loss of labiovelarization.

There is also one case of **p > b'*, **kapak > na/yab'e* 'wing', presumably via an intermediate form **kabak*. In addition, there are two cases where **b* or **p* before **u* became *b'*.

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|-----|---------------------------------------|----------------|--------|
| (8) | <i>*kabu</i> | <i>na/yab'</i> | 'fire' |
| | <i>*lapuat</i> (via <i>*labuat</i> ?) | <i>lab'</i> | 'big' |

Because the following vowel is lost in both of these instances, it is difficult to know what caused this change, but it is possible that **u* changed to **i* before the apicolabial shift began to take place (**u > i* being a relatively common sporadic change).

On the other hand, I have found seven instances of **b > d*. Five of them are in the apicolabializing environment,

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|-----|-----------------------------------|-----------------|---------------------------------|
| (9) | <i>*pitu</i> (via <i>*bitu</i> ?) | <i>yo/dit</i> | 'seven' |
| | <i>*b^(w)arapu</i> | <i>darav</i> | 'long' |
| | PSO <i>*baig(a,e)</i> | <i>na/daike</i> | 'green snail, <i>Turbo</i> sp.' |
| | <i>*siba</i> | <i>side</i> | 'cut' |
| | PNCV <i>*bea</i> | <i>ya/de</i> | 'where?' |

while the other two occur unexpectedly before **u*:

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|------|-----------------|----------------|--------------|
| (10) | <i>*makubu-</i> | <i>nuyudu-</i> | 'grandchild' |
| | <i>*busa</i> | <i>ne/diha</i> | 'foam' |

Although the second form in (10) seems to suggest sporadic **u > i*, there is no evidence of this in the first form.

There seem to be only three instances in the available data where the shift has not taken place:

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|------|---------------------|----------------|---|------------------------|
| (11) | <i>*bebe</i> | <i>na/veb</i> | 'butterfly' | [<i>v</i> unexpected] |
| | PNCV <i>*baraya</i> | <i>bar</i> | 'blind' | |
| | <i>*PNCV *bei</i> | <i>noru-be</i> | 'kind of tree, <i>Polyscias scutellaria</i> ' | |

As with **m*, there are very few instances of a bilabial reflex: the shift seems to have occurred in virtually all words. However, with **b* the shift seems to have largely halted at the apicolabial stage, with only a minority of forms showing the further change to *d*. Once again, I can find no phonological conditioning to explain the three different reflexes.

3.3 POC **p*, PNCV **v*. Unlike **m* and **b*, there is virtually no evidence for an alveolar reflex of **p*.⁷ I have identified in all around fifteen cases of **p > v'* in the apicolabializing environment. In addition to those in (3), note also some others, like (12).

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|------|-----------------------------|-------------------|--------------------------------------|
| (12) | <i>*p^(w)ilak</i> | <i>ne/v' ilay</i> | 'lightning' |
| | <i>*piRaq</i> | <i>na/v' i</i> | 'kind of taro' |
| | PEO <i>*pin(o,u)e</i> | <i>ne/v' ine</i> | 'kind of tree, <i>Macaranga</i> sp.' |

7. The only possibility is *na/ta/-* 'penis', which may derive from a not very secure PNSO reconstruction **(v,p)al(a,u)-*. Paul Geraghty (pers. comm.) referred me to Proto-Central Pacific **g^wala* (Western Fijian *g^wala-*, Eastern Fijian *gala-*, Rotuman, Tikopia *kala*), but noted also Ifira-Mele *p^walao* 'elephantiasis of the testicles' and both Western and Eastern Fijian *bala-* 'penis, of turtle'. Forms like *k^wala-* and *v^wala-* occur in various northern Vanuatu languages. Proto-Southern Vanuatu had **na-valu-* (Sye *nelu-*, Lenakel *-pelaua*, Anejoñ *nhele-*). These all suggest an earlier form **(p^w,b^w)ala-*.

PSO *kave-	nel/yav'e-	'armpit'
*kape	na/yav'	'crab'
*pano	v'an	'go'
*patuR-i	v'ati	'weave'
*panako	v'anay	'steal'
*panua	na/v'anu	'home'
PNCV *vilai	na/v'ila	'New Guinea rosewood, <i>Pterocarpus indicus</i> '

In addition, there are the following three cases of *p > v' before *u:⁸

(13) *pudi	no/v'ij	'banana'
*saŋapuluq	saŋav'il	'ten'
*puko 'morning'	ne/v'ye	'tomorrow'

On the other hand, there are an almost equal number of forms that reflect *p as v and not v', and these occurrences of v are found in exactly the same phonological environments as are the occurrences of v'. (14) is a fairly full listing from the data available.

(14) *piso	na/vse	'Fijian asparagus, <i>Saccharum edule</i> '
PSO *davi	ne/riv/ne	'snot'
PNCV *suvi	suv	'blow'
*Rapi(-Rapi)	revrav	'late afternoon'
PNCV *qasuvi	sov	'scoop up water'
*pican	vise	'how much?'
PNCV *zovi	jov	'fall'
PNCV *(b,v)eve	vave	'paternal aunt'
PNCV *vara-	na/vara-	'arm, hand'
PNCV *tuva	ne/tve	'belt, waistband'
PSO *va-(laka)lakav	ne/vclalay	'yellow white-eye, <i>Zosterops</i> sp.'
*paka-rua	vaya-ru	'twice'
PNCV *vara-si	varasi	'step on'
*si(p,w)iri	ni/jivir	'coconut lory, <i>Trichoglossus haematodes</i> '

It appears that, unlike with *m and *b, many instances of *p either underwent reversal to a labiodental or never underwent the shift in the first place.

3.4 SUMMARY. Table 1 summarizes this discussion so far. When two phonemes appear in the same column, the more common reflex appears first.

A comment also needs to be made about instances where apicolabialization takes place in what is apparently the "wrong" environment. The majority of these involve a POC bilabial followed by *u, which shows sporadic shifting to *i* in many of the languages of northern Vanuatu and, indeed, in many Oceanic languages (Blust 1991). If this shift occurred early enough in particular etyma, it would have triggered the change to an apicolabial.

In the few instances of POC forms with a final bilabial having reflexes in Nese, the reflex is, as might be expected, a plain labial, because there is no following nonrounded vowel.

8. Of these, Clark (in prep.) notes that *pudi seems to have developed an alternative form *vizi, which is reflected in many North-Central Vanuatu languages, while the form for 'ten' also shows a change of *u > *i* in Nese.

(15) *gugu(m)	kum toyon	‘grab hold of’
*m ^w inum	num	‘drink’
*mawap	nanav	‘yawn’

One apparent exception is *rarap > *nalrarav* ‘kind of tree, *Erythrina indica*’. However, Clark (in prep.) reconstructs PNCV *rara-vi ‘*Erythrina indica*’ with a final *i added to POC *rarap, which would account for the apicolabial reflex of *p.

4. DISCUSSION. In the case of *m and *b, the very occasional bilabial reflexes might be due to a couple of possibilities other than reversal of the shift: one is transcription error, and the other is the fact that, in certain individual lexical items, these phonemes might have become labiovelars in some earlier stage of the language (and thus *m* and *b* would be the expected regular reflexes). As far as the former is concerned, Crowley’s Nese monograph indicates that his data were obtained during September 2002 (I do not know how many days he spent there), and he had intended to return to do more data collection and checking before his sudden death; so it is possible that there may be some errors. In the case of the latter, Lynch (2002) shows that there are a number of instances of POC bilabials having labiovelar reflexes in Proto-Southern Oceanic and Proto-North-Central Vanuatu, and in fact this tendency seems to have increased the further down the family tree one goes. So, with these two protophonemes, there is probably no real case to be made for the reverse shift apicolabial > bilabial.

However, these potential explanations do not satisfactorily account for two other facts: the differences between the three protophonemes in the degree to which the apicolabial > alveolar change has been completed, and the significant number of bilabial reflexes of *p in an environment where an apicolabial is expected. I will deal with each of these below.

4.1 POC *m AND *b. The main issue that needs to be resolved here is the fact that, while *m is almost always reflected as the alveolar nasal *n*, the commonest reflex of *b is the apicolabial *b*’, with only about one-quarter of forms reflecting *b having *d* as the reflex.

Why did the apicolabial > alveolar shift take place with nearly every occurrence of *m but far less frequently with *b? The answer to this question may be related to the fate of POC *d in Nese. POC, PNCV *d is reflected as the Nese trilled *r*, not as a stop:

(16) PSO *davi	ne/riv/ne	‘snot’
PNCV *m ^(w) a(t,d)aga	no/murak	‘kind of tree, <i>Kleinhovia hospita</i> ’
PEO *damu	naram	‘hard yam’
*rodrom, PNCV *domi	romromi	‘think about’

TABLE 1. NESE REFLEXES OF POC BILABIALS

	/ _ *o, *u	/ _ *i, *e, *a	
		COMMONEST REFLEX(ES)	LESS COMMON REFLEX(ES)
*m	m	n	m, m’
*b	b	b’	d, b
*p	v	v’, v	(t)

PNCV *daweRu	na/rau	'coconut crab'
PNCV *daleqo	ralo-	'voice'

If this change predated the second part of the apicolabial shift (apicolabial > alveolar), then the original set of proto-phonemes on the left would have developed as follows:

(17) *b	*d	→	b		→	b	b'
*m	*n		m	n		m	m' n
				r			r

In Crowley's lexicon there are just eighteen items that contain *d* (including some compound forms, such that some roots occur more than once in his list). In at least seven, possibly eight of these, *d* derives from an earlier bilabial stop in POC or PNCV. With some of the remainder, cognates in Uripiv have a bilabial stop corresponding to Nese *d*:

(18) NESE		URIPIV	
tider	'chop'	e-sipri	'cut down at a single stroke'
jidar	'touch'	e-jpari	
jidernas	'sensitive grass,	jiber mij	
	<i>Mimosa pudica</i> '		

Of the remaining half dozen or so, *dan* 'to the ground' is clearly related to *natan* 'ground' (< *tanoq), and the others I cannot find sources for at this stage. It seems clear, then, that earlier **d* had changed to *r*, and that there was probably no phoneme /*d*/ in Nese until the apicolabial > alveolar shift began to occur.

Thus it is quite likely that, while earlier *m'* had a corresponding alveolar nasal with which to merge, earlier *b'* did not have a corresponding stop. The change *m' > n* involved a simple merger with an already existing and perceptually very similar phoneme; the change *b' > d* did not, but rather involved the creation of a new phoneme. (Note here that the change *b' > r* would be quite unlikely, as the two sounds are by no means perceptually similar.) It is probable, therefore, that *b' > d* is a much more recent change than *m' > n*, possibly as a result of Nese speakers learning other languages (including Bislama) and through them acquiring the phoneme /*d*/, and possibly also motivated by the need to fill a gap in the phonemic inventory.

4.2 POC *p, PNCV *v. In discussing the case of POC **p*, it will be useful to examine its reflexes in other apicolabializing languages to see whether they exhibit similar variability. There is, however, very little published information on almost all of these other languages apart from the wordlists in Tryon (1976), and some of what is published does not give us a very clear picture of how thoroughgoing these processes were in these languages. However, there are some data that can be brought to bear on this problem.

4.2.1 V'änen Taut. The V'änen Taut (or Big Nambas) language is a close neighbor of Nese in northwest Malakula. Despite a reasonably comprehensive grammar (Fox 1979), there is no published lexical material. However, Crowley (n.d.) assembled a list of about 700 words derived from a cull of Fox's grammar, with supplementary items from Tryon (1976).⁹

The labiovelars and the bilabials before rounded vowels became the simple bilabials *p*, *v*, and *m*. In the apicolabializing environment, V'ënen Taut regularly reflects **b* and **m* as *p'* and *m'*, respectively.

(19) *barapu	p'arei	'long'
PSO *baig(a,e)	n/p'ik	'green snail, <i>Turbo</i> sp.'
PNCV *batavu	p'atei	'breadfruit'
*pekas (via *bekas?)	ta/p'eŷ	'defecate'
PNCV *maloku	m'aləŷ	'kava'
*miala	m'iel	'red'
*kamaliR	n/am'el	'meeting-house'
*kamami	kam'em'	'we INCL.PL'

As far as **p* is concerned, V'ënen Taut seems to behave somewhat more regularly than Nese. The most common reflex in the apicolabializing environment is *v'*.

(20) *pati	v'a	'four'
*pa-, *papa-	ne/v'-	'underneath'
*panua	v'anu	'island, village'
*panako	v'anəŷ	'steal'
PNCV *vai	v'i	'be'
*[pa]pine	v'an-	'man's sister' (but see below)
PNCV *vani	v'en	'burn'
PNCV *taval(a,u)	təv'eli/el	'side'
PNCV *leba (via *lepa)	na/lev'	'mud'
PNCV *rave	rv'	'pull' (also <i>rarəv'</i> 'flow')
*Rapi	kəna/rəv'	'evening'
PNCV *lavi	lev'	'take'
*p ^(w) ilak	na/v'əl	'lightning'

However, there is a small residue where **p* is unexpectedly reflected as *v*.

(21) *qapaRa, PNCV *vaRa-	və-	'shoulder'
*[pa]pine	vən	'daughter' (but see above)
*paRo-	va	'to spear'
PNCV *veti	ve	'say'

It appears that most instances of **p* became *v'* in the relevant environment, but there are some where this did not happen, or where the change was later reversed.

4.2.2 Araki. The Araki dialect of the South Santo language is another apicolabializing language for which we do have some data: a lexicon of over 900 items forms part of a broader description of the language (François 2002). In Araki as in Nese, POC labiovelars became bilabials, and POC bilabials before rounded vowels remained bilabials. Generally, Araki is consistent in reflecting **b* and **m* as apicolabials when they were followed by **i*, **e*, and **a*, as (22) illustrates.¹⁰

9. Given the way this list was compiled, there are a number of meanings that one might expect to find in a list of this length that are not represented, and a number of others that one might expect to find only in a much longer lexicon. Thus searching for cognates is a somewhat haphazard exercise.

10. François uses the orthographic symbols *ḃ*, *ḅ* and *ḇ* for the apicolabials, but for consistency of presentation I will continue to use the consonant followed by an apostrophe.

(22) PNCV *bisu	p'isu	'finger'
PNCV *bile	p'ile	'female genitals'
*bebe	p'ep'e	'butterfly'
*abe	ep'e	'body'
*bakewa	p'aheu	'shark'
*kabani	hap'ani	'a sail'
PNCV *domi	tsom'itsom'i	'think'
*kamiu	kam'i/m	'you pl.'
PNCV *meme	m'em'e	'tongue'
PNCV *meme-re	m'ere	'urinate'
*mata-	m'ara-	'eye'
*kamaliR	ham'ali	'meeting-house'

There are a few exceptions where the bilabial articulation is retained, but only a few; and it is possible that these may derive from forms that developed labiovelar articulation at some earlier stage.

In the case of POC *p (> PNCV *v), however, we find a different situation. Before *e, there seem to be four instances of *p > apicolabial v':

(23) PSO *kave-	hav'chav'e	'armpit'
PNCV *vetali	v'erali	'banana'
*kape	hav'e	'crab'
PNCV *rave	rev'e	'pull'

but there are at least two exceptions: PNCV *veti 'speak, say' > vere 'sing', and PNCV *rave > rave 'hermaphrodite pig'. With a following *a, the majority of forms show the expected apicolabial reflex:

(24) PSO *[(k,g)a]qova	ov'a	'reef heron, <i>Ardea sacra</i> '
PNCV *tavalu	rav'alu	'other side'
*paRu	vi-v'a	' <i>Hibiscus tiliaceus</i> '
*paRoŋ	v'arav'ara	'twin apple, <i>Ochrosia oppositifolia</i> '
*paka-	v'aha-	'causative'
*pano	v'ano	'go'
*pati	v'ari	'four'
PNCV *vasusu	v'asusu	'give birth'
*pai	v'e	'where?'
PNCV *vai	v'ei	'make, do'
PSO *vai-va(i)	v'ev'e	'kind of pandanus'

but there are some instances in which *p in the same environment does not undergo the change:

(25) *paRi	a/vai	'stingray'
PNCV *tuva	ruva	'belt, waistband'
*sapa	sava	'which?'
PNCV *vaRa	'hand'	vara/ŋo'finger'
*papa	vava	'mouth'

Finally, and somewhat surprisingly (given its behavior in this environment in other languages), POC *p has *only* bilabial reflexes when it occurred before *i; François (2002:16) notes that there are *no* syllables in Araki of the shape / γ i/. So:

(26)	*kapika	haviha	‘Malay apple, <i>Syzygium malaccense</i> ’
	*pican	visa	‘how much?’
	*piRaq	via	‘kind of taro, <i>Alocasia</i> sp.’
	*pisiko	visiho	‘meat, flesh’
	*piso	viso	‘Fijian asparagus, <i>Saccharum edule</i> ’
	*pituqun	viru	‘star’
	PNCV *zovi	tsovi	‘fall’

4.2.3 Tolomako and other Santo languages. Guy (1978) briefly discusses the historical phonology of a number of Santo languages, three of which show the apicolabial shift. In the case of Sakao and Shark Bay, all three bilabial protophonemes have become dentals (with one instance of a palatal reflex) in the apicolabializing environment. In Tolomako, however, although *m and *b undergo apicolabialization, *p does not.¹¹ This is shown in table 2

There is not much information available on any of these languages. However, it is clear from the examples in (27) that Tolomako is a regular apicolabializing language as far as *m and *b are concerned:

(27)	*manuk	nanu	‘bird’
	*mata-	nata-	‘eye’
	*mate	nate	‘die’
	PNCV *meme-	nene-	‘tongue’
	*kamaliR	yanali	‘meeting-house’
	*baReko	teyo	‘breadfruit’
	*barapu	taravu	‘long’
	*kabani	yatani	‘a sail’

Nevertheless, *p shows no evidence of apicolabialization at all in Tolomako, but is reflected as *v* in all environments.

(28)	*pano	vano	‘go’
	PNCV *vetali	vetali	‘banana’
	*piRaq	via/ruru	‘k.o. taro’

TABLE 2. REFLEXES OF POC BILABIALS IN THREE SANTO LANGUAGES

	Sakao [†]		Shark Bay		Tolomako	
	/_ *i,e,a	ELSEWHERE	/_ *i,e,a	ELSEWHERE	/_ *i,e,a	ELSEWHERE
*m	n	m	n	m	n	m
*b	ð, (t)	v, (p)	t	p	t	p
*p	y	w	T	f, -p	v	v

[†] Sakao ð and v are the regular reflexes of *b, with t and p being quite rare and apparently restricted to initial position in verb roots.

11. The situation is more complex, and interesting, than this. Guy (1978:783) says that there are two dialects of this language: apicolabialization occurs in the Tolomako dialect, but there is no evidence of it at all in the Tsureviu dialect, where *m, *b and *p are reflected as *m*, *p* and *v* in all environments.

*pisiko	visiʎo	‘flesh’
*pituqun	vituu	‘star’
*upi	s/uvi	‘blow’
*Rapi	raviravi	‘evening’
*pulu	vulu-	‘hair’
*barapu	taravu	‘long’
*tapuRiq	tavua	‘conch’
*topu	tovu	‘sugarcane’

From the above data we can conclude that *m, *b, and *p have dental (or palatal) reflexes in Sakao and Shark Bay, but this is true only of *m and *b in Tolomako.

4.2.4 Some tentative conclusions. Table 3 summarizes the data presented above (along with additional data not specifically illustrated for some of the Santo languages). With the first (“default”) set of reflexes, it appears that Sakao lenited *b as *v*, and all other languages except Nese devoiced *b as *p*. This rule presumably followed the rule leniting *p in all languages: this lenition was presumably *p > f[ϕ] > v [β],¹² with Shark Bay not participating in the second step of the change and Sakao going even further, changing *v* > *w*.

In the apicolabializing environment, the following changes seem to have taken place:

- With *m, the default reflex *m* initially underwent apicolabialization to *m'*, and then subsequently developed as *n* in Nese, Sakao, Shark Bay, and Tolomako.
- In the case of *b, the default reflex also initially underwent apicolabialization (to *b'* in Nese, *v'* in Sakao, and *p'* in the other languages). Subsequently, this phoneme developed further as the corresponding dental/alveolar: as *ð* in Sakao, as *t* in Shark Bay and Tolomako, and as *d* in a few instances in Nese.
- With *p, the default reflex also underwent apicolabialization (and subsequent dentalization in Sakao and Shark Bay): *w* > what Guy writes as *w'* > *y* in Sakao, *f* > *f'* > *θ* in Shark Bay, *v* > *v'* in the remainder.¹³

TABLE 3. BILABIAL REFLEXES IN SIX SANTO-MALAKULA LANGUAGES

	Nese	V'ënen Taut	Araki	Sakao	Shark Bay	Tolomako
IN NONAPICOLABIALIZING ENVIRONMENTS						
*m	m	m	m	m	m	m
*b	b	p	p	v, (p)	p	p
*p	v	v	v	w	f, (-p?)	v
IN APICOLABIALIZING ENVIRONMENTS						
*m	(m'), n	m'	m'	n	n	n
*b	b', (d)	p'	p'	ð, (t)	t	t
*p	v', v (t)	v' (v)	v', v	y	θ, -p	v

12. Nese *v* is described as labiodental, but as far as I am aware *v* is bilabial in all of the other languages discussed here. I suspect that Nese *v* may have originally been bilabial, and—as seems to have happened in a number of Oceanic languages—may have changed fairly recently to a labiodental under the influence of languages like English, French, and Bislama. Ken Rehg (pers. comm.) reports this as having happened in Hawaiian, and I have observed the same phenomenon among speakers of a number of Central Papuan languages.

13. Guy (1978:790) describes *w'* simply as “a labial.” Presumably, this must have been some kind of apicolabial glide.

In examining the languages discussed here—remembering, of course, that the data for all of them are limited—we can discern a cline of regularity as far as the reflexes of POC *p are concerned. Sakao and Shark Bay seem to be at one end, with *p undergoing exactly the same processes, mutatis mutandis, as *b and *m; in V'ënen Taut, *p > v' is fairly regular, but there are some exceptions; Nese and Araki are further along the cline, with some instances of *p > v' but also a considerable number of instances of *p > v; while Tolomako is at the other end, with no evidence at all in the modern language of apicolabialization of *p. Further, while Nese and Araki are similar insofar as their position on this cline is concerned, the two languages differ in one marked respect, in that Nese shows evidence of apicolabialization before *i whereas Araki does not.

I mentioned earlier that some unexpected bilabial reflexes of bilabial phonemes in the apicolabializing environment might be due to random labiovelarization. (For example, Nese *bar* 'blind' derives from PSO *ba(r,l)e = Clark's PNCV *baraya 'blind', but Lewo *p'ala* suggests random labiovelarization in at least that language, and the Nese form might derive from an earlier *b'are.) In the cases of Nese, Araki, and Tolomako, however, we almost certainly cannot appeal to random labiovelarization as being the origin of the unexpected bilabial reflexes of *p, partly because there are so many of them and partly because *p'w seems to be far rarer than *b'w and *m'w (Lynch 2002).¹⁴

What distinguishes *p from the other bilabials in Nese—as in virtually all North-Central Vanuatu languages—is that there has been a change in manner of articulation. While *b is still reflected as a stop and *m as a nasal, the stop *p is reflected as a fricative (and indeed has further lenited to a glide in Sakao). I assume that this change predated the apicolabial shift, because it is widespread in other areas of northern and central Vanuatu where this shift has not taken place; indeed, it probably happened at a very early stage in the history of Proto-Southern Oceanic.

Now apicolabial *b'* and *m'* are fully stopped, and are clearly distinguishable from their bilabial equivalents. However, with *v* and *v'* we do not have total closure; rather, the lips approximate each other with *v*, and the tongue approximates the top lip with *v'*. It would seem to me that there is rather more perceptual similarity between *v* and *v'* than there is between *b* and *b'* or *m* and *m'*, and thus more potential for random merger of these two phonemes. Let us consider other potential "candidates" for a merger. The change of voiced fricative *v'* > voiceless stop *t* would be quite unnatural. In addition, the only alveolar fricative in Nese is *s*, and *v'* > *s* is also somewhat unnatural, because this involves a change not only in place of articulation but also in voicing. So this probably explains why *p did not shift to an alveolar in Nese. Thus it seems likely that the instances of *p > v are examples of reversal (*v'* > *v*), quite possibly fairly recent as a result of influence from Bislama or other languages; and the random nature of the reflexes may reflect both this recentness and also the fact that the language is moribund and not very actively spoken.

None of this, however, explains why there are no instances of *p > v' before *i in Araki. A following *i conditions the shift with other bilabials in Araki and, as far as I

14. To illustrate this, in Clark (in prep.) there are 26 PNCV reconstructions with initial *b'w, 25 with initial *m'w, but only eight with initial *v'w.

am aware, with *p in all languages that have undergone the shift. (However, I should also mention here that over half the instances of unexpected *p > v in Nese occur when *p was followed by *i.) I can find no explanation for the fact that the shift has been reversed in Araki in apparently all cases in this environment.

The Tolomako situation is slightly different again (but reminiscent of the situation with Nese *b, which only occasionally became *d*). In Tolomako, *n* and *t* were pre-existing phonemes, deriving from *n and *t respectively; therefore, the apicolabials *m*' from *m and *p*' from *b had an existing dental/alveolar target to merge with. These mergers would have removed two of the three highly marked apicolabials from the phonemic inventory, leaving only *v*'. However, there was no logical alveolar for *v*' to merge with, the only potential candidate being the perceptually dissimilar voiceless sibilant *s*. It would seem, therefore, that this single highly marked phoneme was removed from the inventory by merging with the phonetically closest phoneme *v*.

4.3 WIDER IMPLICATIONS. The Nese case, and some of the others discussed in association with it, are interesting from a wider perspective. The data discussed here seem to provide fairly clear confirmation of two of Clark's (1985) speculations, which can be summarized as follows: (a) in those languages with dental/alveolar reflexes of bilabials, the *initial* shift was bilabial > apicolabial (and not bilabial directly > dental/alveolar); and (b) in a number of adjacent and closely related languages, the shift was reversed (apicolabial > bilabial).

As far as the direction of the shift is concerned, Maddieson (pers. comm., quoted in Lynch 2003:168), while acknowledging that the process was probably bilabial > apicolabial > dental/alveolar, referred to the "possibility of direct passage from (palatalized) bilabial to dental or alveolar without passing through the linguo-labial stage". However, the fact that Nese has both apicolabial and alveolar reflexes of the same bilabial proto-phonemes (*m and *b) seems to confirm Clark's view that dental/alveolar reflexes of bilabials developed via apicolabials.

Clark also speculated that the apicolabial shift took place just once, in a language ancestral to both the apicolabializing languages and a number of other languages closely related to them, and that in these latter languages the shift was subsequently reversed. Reversal of the shift cannot be proved: if, in some language, *b > b, then we do not know whether this is simple retention or whether there was a change *b > b' followed by a later change b' > b. However, the reflexes of *p in Nese, Tolomako, and, to some extent, Araki provide a fairly strong indication that this reversal has taken place, and Clark's reversal hypothesis therefore seems justified. This will have implications for the lower-level subgrouping of Vanuatu languages.

5. CONCLUSION. The apicolabial shift in Nese is partly different from that found in most of its neighbors in that the reflexes are less consistent. From what little we know of other languages, the bilabials consistently became either apicolabials or dentals/alveolars, or else reverted to being bilabials. But it is this very inconsistency that gives us some insights into how the various processes took place in other languages, especially those with dental or bilabial reflexes; and most of the apparent inconsistencies have been explained as being due to a number of other natural phonological processes.

However, there are still some unanswered questions. Apicolabial consonants are extremely rare in the world's languages—the Santo/Malakula languages cited above apparently being the only ones in the world in which they occur as distinct phonemes. And they are also highly marked, both visually and in terms of general linguistic theory. It is therefore not at all unusual to find that, in many of the languages that originally had them, they have merged with some other more “conventional” phoneme—either a bilabial or a dental/alveolar. Two questions arise from this, however: why did some languages merge the apicolabials with bilabials while others merged them with dentals/alveolars, and why did still other languages maintain them as distinct from both bilabials and dentals/alveolars? At this stage of research, I have no answers to these questions.

But perhaps an even more fundamental question is this: why did the apicolabials develop in the first place? Maddieson was unable to answer this question: “Linguolabials are not ‘easy’ sounds in either articulatory or acoustic/auditory terms and their rarity is understandable on general phonetic grounds” (1989:369). Maddieson (pers. comm., quoted in Lynch 2002:167–68) believes that the bilabial to apicolabial shift “should be traced to a prior development of a fairly marked palatalization accompanying plain ... bilabials before unrounded vowels. ... [This] entails a high and forward position of the tongue blade, which if somewhat over-vigorously articulated can lead to the tip coming out between the lips.” Now in parts of Malakula, tooth avulsion was part of women's initiation, with one or both front teeth being knocked out. This would certainly make it easier for the tongue to protrude between the lips!¹⁵ It is not clear, from the limited data available, whether tooth avulsion is or was practiced in areas where apicolabials have developed. Crowley (in press b) provides a survey of various cultural practices in central Malakula, but this does not stretch to the northern apicolabializing areas. A possible link, however, is certainly worth investigating.

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15. I am grateful to Jackie Fa'anunu for pointing out a possible connection between tooth avulsion and the development of apicolabials.

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