Unraveling the History of the Vowels of Seventeen Northern Vanuatu Languages

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Data collected on the 17 languages spoken in the Banks and Torres Islands (northern Vanuatu) reveal strikingly diverse vowel systems, differing both in the quality and the quantity of their phonemes. Except for Mota, which still perpetuates the five vowels of Proto-Oceanic, the languages of this area have historically increased their inventories to as many as 13 and even 16 vowels. The aim of this paper is to track the systematic correspondences between modern languages and their common ancestor, and to reconstruct the processes that led to the present-day phonemic diversity. The phonemicization of new vowels, including diphthongs and long vowels, is shown to result from stress-induced vowel reduction and metaphony. This general process of "vowel hybridization" yielded results that differed from one language to another, and sometimes within the same language. After describing and classifying the various patterns of sound changes attested, this paper shows how a proper understanding of vowel hybridization proves indispensable for the reconstruction of both the lexicon and the historical morphology of these northern Vanuatu languages.

1. INTRODUCTION

1.1 HISTORICAL EXPANSION OF VOWEL INVENTORIES. In comparison with the five-vowel system that has been reconstructed for Proto-Oceanic (POc) or for the putative Proto–North-Central Vanuatu (PNCV), the modern languages spoken in northern Vanuatu possess much richer inventories.[1] With the notable exception of Mota, which remains conservative in this respect as in many others, the remaining 16 languages of the Banks and Torres groups have historically expanded their vowel inventories from five to as many as 13 phonological vowel qualities.[2] Furthermore, in two languages, the

1. This study originates in a presentation I gave at the *6th International Conference on Oceanic Linguistics* (COOL6), Port Vila, Vanuatu, in July 2004. I would like to thank Françoise and Jean-Claude Rivierre, Martine Mazaudon, Boyd Michailovsky, Meredith Osmond, Malcolm Ross, and two anonymous reviewers for useful comments on earlier drafts of this paper.

2. The data cited in the present paper were collected by the author during three field surveys: May–July 1998 for the languages of Mwotlap, Vurës, and Mwesen; July–September 2003 for Volow, Vera'a, Lemerig, Nume, Dorig, Koro, Olrat, Lakon, and Mwerlap; July–August 2004 for Mota, Lehali, Lo-Toga, and Hiu. Data for Lehalurup come from Codrington (1885) and Tryon (1976). I completed my data on Mota with Codrington and Palmer (1896), those on Vera'a and Vurës with Hyslop (n.d. a; n.d. b).

Oceanic Linguistics, Volume 44, no. 2 (December 2005)

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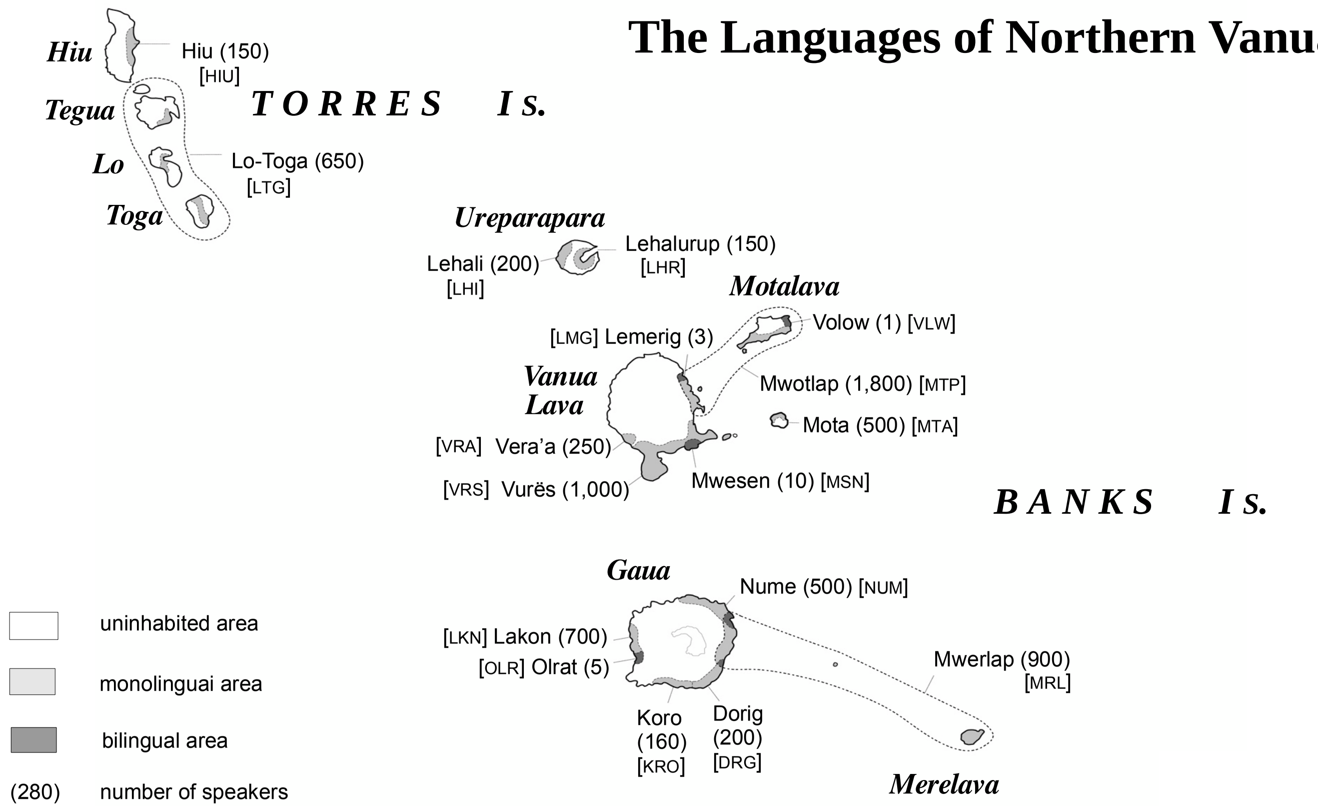

phonemicization of vowel length combined with each vowel quality has led to inventories of 14 (2×7) and even 16 (2×8) vowel phonemes. On the opposite page is a map of the 17 languages spoken in the area, indicating for each language a three-letter abbreviation and the approximate number of speakers. This information is reproduced in table 1, together with the number and quality of each language's vowel phonemes.

Although expansion of vowel inventories is a common feature among the languages of the Torres and Banks Islands, it has, in fact, led to quite diverse results from one language to another in such a way that it appears impossible to provide a simple, unique analysis for the whole phenomenon. What I propose here is to first outline the general principle(s) common to all the languages, and then to review in some detail the particular innovations that characterize each language separately.

Throughout this paper, I refer to the 17 languages spoken in the Torres and Banks groups using shortcut phrases such as "northern Vanuatu languages." Note that this designation must be understood as purely geographic, with no claim as to the existence of a

TABLE 1. THE SEVENTEEN LANGUAGES AND THEIR VOWEL SYSTEMS†

LGG	NAME	NO. SPKRS	LOCATION	CODE	NO. *V*S	VOWEL INVENTORY
HIU	Hiu	150	Hiu	HIW	8	i e a ə ɵ ɔ o ʉ
LTG	Lo-Toga	650	Lo, Toga	LHT	8 + 5	i e ɛ a ə ɔ o ʉ + i͡e i͡ɛ i͡a o͡ə o͡ɔ
LHI	Lehali	300	E. Ureparapara	TQL	8	i e ɛ æ a ɔ o u
LHR	Lehalurup	200	W. Ureparapara	URR	8 + 1	i e ɛ a œ ɔ o u + i͡e
VLW	Volow	1	Motalava	MLV	7	i ɪ ɛ a ɔ ʊ u
MTP	Mwotlap	1,800	Motalava	MLV	7	i ɪ ɛ a ɔ ʊ u
LMG	Lemerig	3	N. Vanua Lava	VLR	10	i ɪ ɛ a ɒ œ ø ɔ ʊ u
VRA	Vera'a	250	W. Vanua Lava	VLR	7	i ɪ ɛ a ɔ ʊ u
VRS	Vurës	1,000	S. Vanua Lava	MSN	9 + 1	i ɪ ɛ a œ ø ü ɔ ʊ + i͡a
MSN	Mwesen	10	E. Vanua Lava	MSN	7	i ɪ ɛ a ɔ ʊ u
MTA	Mota	500	Mota	MTT	5	i e a o u
NUM	Nume	500	NE Gaua	TGS	7	i ɪ ɛ a ɔ ʊ u
DRG	Dorig	200	SE Gaua	WWO	7 + 1	i ɪ ɛ a ɔ ʊ u + aː
KRO	Koro	160	S. Gaua	KRF	7 + 1	i ɪ ɛ a ɔ ʊ u + ɛ͡a
OLR	Olrat	5	W. Gaua	—	2 × 7	i ɪ ɛ a ɔ ʊ u + iː ɪː ɛː aː ɔː ʊː uː
LKN	Lakon	700	W. Gaua	LKN	2 × 8	i ɪ ɛ æ a ɔ ʊ u + iː ɪː ɛː æː aː ɔː ʊː uː
MRL	Mwerlap	900	Merelava, E. Gaua	MRM	9 + 3	i ɪ ɛ a ɞ ɵ ʉ ɔ ʊ + ɛ͡a ɔ͡ɞ ʊ͡ɵ

† Given for each language are: (1) the three-letter abbreviation I use in this paper; (2) the language's full name; (3) the number of its speakers; (4) its geographical location; (5) its international (ISO 639-3) code as given in *Ethnologue* (Gordon 2005), where the reader can find alternate names; (6) the number of its vowel phonemes, including diphthongs and long vowels; and (7) the inventory of these phonemes.

specific Northern Vanuatu subgroup of languages that would encompass these languages exclusively (see the discussion in 3.4). This paper therefore intends neither to confirm nor challenge the subgrouping hypotheses set forth by Clark (1985), which defines a "Northern Vanuatu" branch within his "North and Central Vanuatu." In Clark's terms, the Torres and Banks languages would form just a subset of the Northern Vanuatu group, along with languages from several islands further south. However, even if the present study is not directly concerned with subgrouping matters, the methodological and historical issues it addresses should constitute a preliminary step in any future attempt toward classifying the Torres and Banks languages genetically (see 6.1.2).

1.2 EMERGENCE OF NEW VOWEL QUALITIES. The historical process described here is, first and foremost, an issue of qualitative phonetic change. If we take the example of Vurës, how can we explain the shift from a five-vowel protosystem to a modern inventory of nine vowel qualities (figure 1)? The change from one system to the other is both a matter of quantity (shift from five to nine vowels)[3] and of quality: some vowels have appeared that did not exist formerly, and certain vowels can be said to have disappeared from the system, at least in their original form. One objective of the present study will be to track for each language the regular correspondences that might exist between the initial inventory and the modern attested system.

A second aspect of our investigation will be to describe the impressive diversity of situations among the languages of the area, including between languages situated close to each other. For example, the vowel system of Vurës (figure 1) differs strikingly from that of Mwesen (figure 2), although in other respects these two varieties may be considered just dialects of the same language.[4]

FIGURE 1. FROM FIVE TO NINE VOWELS IN VURËS

POC (5 VOWELS)			>	MODERN VURËS (9 VOWELS)		
i		u		i	ü	
e		o		ɪ	ø	ʊ
	a			ɛ	œ	ɔ
					a	

FIGURE 2. FROM FIVE TO SEVEN VOWELS IN MWESEN

POC (5 VOWELS)			>	MODERN MWESEN (7 VOWELS)		
i		u		i		u
e		o		ɪ		ʊ
	a			ɛ		ɔ
					a	

3. Vurës can even be said to possess 10 vowels if the diphthong /i͡a/ is counted as a genuine phoneme (4.3.1).

4. Vurës and Mwesen are listed together under the single language name "Mosina" in Grimes et al. (1995) or Gordon (2005). This follows Tryon (1976:89), who on lexicostatistical evidence treated Vetumboso and Mosina—respectively, Vurës and Mwesen—as two dialects of the same language.

2. DEFINING REGULARITIES

2.1 MANY REFLEXES FOR A SINGLE PROTOVOWEL. My first attempt will be to figure out the phonetic correspondences between the vowels of the protosystem and the modern vowels. A preliminary approach consists in choosing certain etyma sufficiently well represented in the languages of the area,[5] and getting a first overview of their modern reflexes. For example, one may want to check what modern vowels reflect the protovowel *a by examining the lexical reflexes of, say, POc *paʀu 'hibiscus':[6]

(1) POc ***paʀu** 'hibiscus': Hiu *βɔʀ̆*; Ltg *βɔr*; Lhi *βɔy*; Lhr ?; Vlw *n-βɛy*; Mtp *nɛ-βɛy*; Lmg *n-βɛr*; Vra *fɛr*; Vrs *βœr*; Msn *βɔr*; Mta *βar*; Num *far*; Drg *βaːr*; Kro *βɛ͡ar*; Olr *βay*; Lkn *βaː* ; Mrl *nɵ-βɔ͡ɵr*.

The first observation suggested by this set of cognate forms is the great diversity of reflexes deriving from a single protovowel. In this example, *a is reflected as [a], [aː], [ɔ], [ɛ], [œ], [ɛ͡a], and [ɔ͡ɵ]. Obviously, no simple correspondence can be established for the whole group of languages, and it would even be difficult to propose isoglosses that would make sense from a dialectological point of view. Clearly, phonetic correspondences will have to be stated separately for each language: for example, (1) would suggest *a > [ɔ] in Hiu, Ltg, Lhi, Msn, but *a > [ɛ] in Vlw, Mtp, Lmg, Vra; *a > [œ] in Vrs; and so on.

But the situation gets more complex again if a second cognate set is considered. Let us observe the vowels corresponding to *a in the lexical reflexes of POc *paʀi 'stingray':

(2) POc ***paʀi** 'stingray': Hiu *βɔʀ̆*; Ltg *βɛr*; Lhi *βœy*; Lhr *βɛy*; Vlw *n-βɛy*; Mtp *nɛ-βɛy*; Lmg *n-βɛr*; Vra *fɛr*; Vrs *βœr*; Msn *βɛr*; Mta *βar*; Num *fɛr*; Drg *βaːr*; Kro *βɛ͡ar*; Olr *βay*; Lkn *βœː*; Mrl *nɛ-βɛr*.

The correspondences that were initially suggested by (1) appear to be confirmed in some languages (e.g., *a > [ɔ] in Hiu, *a > [ɛ] in Mtp, *a > [œ] in Vrs, *a > [ɛ͡a] in Kro), but contradicted in others: reflexes of *a differ between (1) and (2) in Ltg, Lhi, Msn, Num, Lkn, Mrl. In other words, the first difficulty we defined (discrepancies of reflexes across closely cognate languages) is now duplicated by a second difficulty (discrepancies of reflexes language-internally). Unlike consonant correspondences, which are generally consistent and straightforward (e.g., POc *p > [f] in Vra, Num; *p > [β] everywhere

5. Whenever possible, the etyma cited in this study are given in their Proto-Oceanic (POc) form; they either come from common knowledge among Oceanists, or more specifically from Ross, Pawley, and Osmond (1998, 2003). When no relevant POc example can be found, I cite the reconstructions proposed by Clark (1985; in prep.) for the putative protolanguage named Proto–North-Central Vanuatu (PNCV), to which all the languages of the Banks and Torres Islands belong.

6. Languages are cited following roughly a northwest to southeast axis, in the same order as in the appendices. In some languages where the noun article (usually a reflex of **na*) has been accreted to the phonological word (see 5.2.3), it appears as a prefix in the modern reflex. When the etymon has been integrated within a word that is synchronically indivisible, the boundary is indicated with a "/", e.g., (13) *ni-si/ɔk*.

All forms are transcribed using standard IPA, with two exceptions. First, following wide usage among Oceanists, voiced stops in *all* languages cited here (whether modern or reconstructed) must be understood as prenasalized: thus |b|, |g|, |d|, |bʷ|, |g͡bʷ| stand respectively for /ᵐb/, /ⁿd/, /ᵑg/, /ᵐbʷ/, /ᵑg͡bʷ/. Second, the symbol |ʀ̆| represents what I identify as a UVULAR FLAP—a consonant of Hiu that, to my knowledge, has never been observed anywhere else in the world, and therefore lacks an appropriate IPA symbol.

else), the modern distribution of vowels in this area of northern Vanuatu thus appears to be much more problematic.

2.2 DEFINING THE CONDITIONING FACTOR. This sort of complex situation is familiar to language comparatists and normally requires each discrepancy between correspondences to be attributed to a conditioning factor. So, what could be the formal factor that might account for the different reflexes of *a between (1) and (2), in each language taken separately?

Choosing very similar etyma, namely *paʀu and *paʀi, makes it possible to quickly eliminate two possible criteria suggested by other languages of the world, and specifically by the comparatist tradition. One possible factor that is known to affect the evolution of vowels is their position within the word, and the position of stress (see section 5). But because the position of *a is exactly the same in *paʀu and *paʀi—the penultimate syllable, demonstrably the one receiving word stress (Lynch 2000)—this criterion cannot provide the explanation for the differences between (1) and (2).

A second hypothesis, widely supported by other languages, would be the influence of the consonant context. However, northern Vanuatu languages generally show relatively few cases of assimilation, or phonetic influence whatsoever, between consonants and vowels. If this kind of phenomenon does exist marginally,[7] it sometimes provides a clue to account for certain exceptions, but never constitutes the primary key to regular vowel correspondences. And, of course, this argument has to be ruled out in the case of (1) and (2), because *a appears in exactly the same consonant environment in the two etyma.

The only plausible hypothesis that remains is to take into account the context of surrounding vowels in the protoform. And indeed, the northern Vanuatu data reveal that the evolution of a given stressed vowel was systematically conditioned by *the vowel of the following syllable.* In (1) and (2), the distinctive evolution of *a in *paʀu vs. *paʀi was thus directly conditioned by the presence of *u vs. *i in the next syllable.

This hypothesis was tested on a large number of cognate forms in all these languages, and yielded satisfying results. At this stage of the presentation, and for the sake of space, only three new cognate sets will illustrate this point. The reader can compare the reflexes of *a in the modern forms that reflect (3) POC *patu 'stone', (4) POC *kani 'eat', and (5) POC *mate 'die, dead'.

(3) POC ***patu** 'stone': HIU *βɔt*; LTG *βɔt*; LHI *βɔt*; LHR *βɛt*; VLW *n-βɛt*; MTP *nɛ-βɛt*; LMG *n-βɛʔ*; VRA *fɛʔ*; VRS *βɛt*; MSN *βɔt*; MTA *βat*; NUM *fat*; DRG *βaːt*; KRO *βɛ͡at*; OLR *βat*; LKN *βat*; MRL *nɘ-βɔ͡ɘt*.

(4) POC ***kani** 'eat': HIU *ɣɔn*; LTG *ɣɛn*; LHI *ɣæn*; LHR *ɣɛn*; VLW *ɣɛn*; MTP *ɣɛn*; LMG *ɣɛn*; VRA *ɣɛn*; VRS *ɣɛn*; MSN *ɣɛn*; MTA *ɣan*; NUM *ɣɛn*; DRG *ɣaːn*; KRO *ɣɛ͡an*; OLR *ɣɪn*; LKN *ɣæn*; MRL *ɣɛn*.

7. One example concerns the labiovelars when a rounded vowel has labiovelarized a consonant: e.g., *molis '*Citrus* sp.' > VRS *ŋ͡mʷøl*. Yet this is far from being systematic, as shown by *mule 'go back' > VRS *mʊl*. François (2001:76–77) gives the reverse situation in Mwotlap, that is, the influence of labiovelar consonants on adjacent vowels.

(5) POc ***mate** 'die, dead': HIU *met*; LTG *met*; LHI *mat*; LHR *mat*; VLW *mat*; MTP *mat*; LMG *maʔ*; VRA *maʔ*; VRS *m͡iat*; MSN *mat*; MTA *mate*; NUM *mat*; DRG *mat*; KRO *mat*; OLR *mat*; LKN *mæt*; MRL *mɛt*.

If one examines the modern reflexes of *a in each language, (1) *paʀu and (3) *patu clearly belong in a single correspondence set that could be called *a(C)u, whereas (2) *paʀi and (4) *kani group together under *a(C)i.[8] As for the cognate set (5) *mate, it shares very little with the other sets, and must be assigned to a third correspondence set *a(C)e.

The destiny of V_1 is so intimately linked to the nature of the following vowel V_2 that one could metaphorically speak of a process of "hybridization," as if the reflex of V_1 were in fact the result of the combination of two protovowels V_1 and V_2. Crucially, this newly coined term of "vowel hybridization" has the advantage of remaining essentially descriptive of the data, and neutral with regard to any specific historical interpretation. For example, simple observation shows that in Lakon the combination of vowels *a…u is regularly reflected as /a/, while *a…i and *a…e both hybridized into /æ/. These factual correspondences can be stated regardless of their phonetic explanation, which remains hypothetical and subject to discussion (section 3).

In sum, the evolution of a given (stressed) protovowel V_1 can be shown to be much more regular than it may have appeared at the beginning of this study, provided that (a) each language is considered separately, and (b) the quality of V_2 (the vowel of the following syllable in the protoform) is taken into account.

2.3 MAPPING REGULAR VOWEL CORRESPONDENCES. Now that the main principle of evolution has been understood, it becomes possible to track the vowel correspondences for each language taken separately. I will choose Mwesen, because it shows the most straightforward and regular situation of the whole area.

The preliminary observations proposed in (1) to (5) can be continued for Mwesen by listing successively and systematically the modern reflexes for each combination of vowels in the protolanguage. Knowing that the latter had an inventory of five vowel phonemes { i e a o u }, the combinations V_1–V_2 amount to 25. Each of these will be illustrated here with a single (regular) example, though it must be clear that they have all been checked on several lexical items. These 25 illustrative examples are given in table 2.

Once all 25 combinations have been tested for a given language, it becomes possible to display them in a simple two-dimensional chart. If the vowel V_1 is listed in rows, and the conditioning vowel V_2 in columns, then the result of their hybridization (hereafter V') appears in the corresponding square. Table 3 shows the regular vowel correspondences for Mwesen. Such charts provide a clear and simple way to visualize the phonological evolution of vowels in each language (see appendix 1). Whereas the most striking quality of table 3 is its neat pattern and perfect symmetry—a true seventeenth-century "French garden"—other northern Vanuatu languages, as we shall see, are often much less orderly in their correspondences.

8. To be precise, there are a couple of inconsistencies from one cognate set to another, but they are marginal. For example, in Vurës, both combinations *a(C)i and *a(C)u unpredictably show /œ/ and /ɛ/ as their possible reflexes; and likewise, Olrat reflects *a(C)i sometimes as /a/ and sometimes as /ɪ/. See 4.2.

3. A FUNCTIONALLY BASED HISTORICAL EXPLANATION. So far, my only attempt has been to give an overview of the observable data. Regular patterns have emerged from this observation, resulting in tables such as table 3; but no historical interpretation has been proposed. This will be the topic of the present section: how can we explain the general evolution observed in these 16 languages, namely, the regular changes in vowel qualities, and their corollary in terms of new vowel inventories?

3.1 PROSODIC STRESS AND VOWEL REDUCTION. If each etymon is compared with its modern reflexes, an important observation that has been left unmentioned thus far is the phenomenon of vowel reduction. The Mwesen examples (table 2) illustrate how protoforms with two syllables (*CVCV) are regularly reflected by a monosyllable (usually CVC); vowel reduction also occurs from three syllables to two,

TABLE 2. VOWEL CORRESPONDENCES BETWEEN POC AND MWESEN

POC V_1	POC V_2	MSN REFLEX OF V_1	POC ETYMON	MSN REFLEX	
i…	…i	i	*kinit	ɣ**i**n	'pinch'
	…e	ɪ	*talise	t**ɪ**l**ɪ**s	'*Terminalia*'
	…a	ɪ	*kuʀita	w**ɪ**r**ɪ**t	'octopus'
	…o	ɪ	*sipo	s**ɪ**w	'go down'
	…u	i	*taci-gu	tis**i**-k	'my sibling'
e…	…i	ɪ	*sei	s**ɪ**	'who'
	…e	ɛ	*bebe	p**ɛ**p	'butterfly'
	…a	ɛ	*pea	β**ɛ**	'where'
	…o	ɛ	*baʀeko	p**ɛ**x	'breadfruit'
	…u	ɪ	*abe-gu	p**ɪ**-k	'my body'
a…	…i	ɛ	*[ka]ŋaʀi	ŋ**ɛ**	'*Canarium* sp.'
	…e	a	*kape	ɣ**a**ɸ	'crab sp.'
	…a	a	*padan	β**a**n	'*Pandanus* sp.'
	…o	a	*jalatoŋ	sal**a**t	'*Dendrocnide*'
	…u	ɔ	*kaʀu	ɣ**ɔ**r	'swim'
o…	…i	ʊ	*boŋi	k͡pʷ**ʊ**ŋ	'night'
	…e	ɔ	*qone	**ɔ**n	'sand'
	…a	ɔ	*ñoʀap	n**ɔ**r	'yesterday'
	…o	ɔ	*toto(k)	t**ɔ**t	'cut, chop'
	…u	ʊ	*tolu	ni-t**ʊ**l	'three'
u…	…i	u	*upi	**u**ɸ	'blow'
	…e	ʊ	*kasupe	ɣ**ʊ**s**ʊ**w	'rat'
	…a	ʊ	*quraŋ	**ʊ**r	'lobster'
	…o	ʊ	*puro	w**ʊ**r	'bubble up'
	…u	u	*saŋapulu(q)	saŋw**u**l	'ten'

TABLE 3. REGULAR VOWEL CORRESPONDENCES FOR MWESEN

	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	ɛ	a	a	a	ɔ
*o…	ʊ	ɔ	ɔ	ɔ	ʊ
*u…	u	ʊ	ʊ	ʊ	u

from four to two, and so on. Examples (1) to (5) show the same observation for the remaining languages of the area: thus in (4), an etymon with two open syllables *kani is systematically reflected by one closed syllable in modern languages.

This process of vowel reduction is undoubtedly an effect of phonetic stress. In a protoform with two syllables, only the one receiving stress was preserved, while the unstressed vowel eventually disappeared (e.g., *ˈmate > *mat*). This is typologically a familiar phenomenon, also witnessed by Latin *cīuitātem* [ˌkiːwiˈtaːtem] > Catalan *ciutat* [siwˈtat] 'city'. In the case of northern Vanuatu languages, there is every likelihood that the final consonants of POc forms had been lost at some stage (e.g., 'ten' *saŋapuluq > *saŋapulu); this resulted in vowel-final lexemes that systematically received primary stress on their penultimate syllable, and secondary stress every second syllable leftward (e.g., *ˌsaŋaˈpulu). Vowel reduction affected word-medial as well as word-final posttonic syllables,[9] which explains why words with four syllables were regularly reduced to two: for example, *ˌsaŋaˈpulu > MSN *saŋˈwul*.

The loss of word-final posttonic vowels explains why, in essentially all the languages of the area, words are now systematically stressed on their final rather than their penultimate syllable (contra Lynch 2000:77). Exactly the same evolution is attested in modern French: due to the progressive loss of all etymological posttonic vowels, French has become a perfectly oxytone language.

As for the deletion of word-medial unstressed vowels, also known as syncope, it is rather rare among Oceanic languages, unlike in western Austronesia. According to Blevins and Blust (2003), "general syncope is inhibited by the absence of pre-existing closed syllables," as is the case in several Oceanic subgroups, including North-Central Vanuatu. In their view, "syncopating sound change is common where closed syllables pre-exist, and rare or absent where they do not"—a universal tendency that "receives empirical support within the Austronesian language family." In this perspective, it is worthwhile to underline that the Torres and Banks languages provide counterevidence to that tendency. General syncope has taken place massively in languages that lacked closed syllables when vowel reduction began.

3.2 LEXICAL DISTINCTIVENESS AND THE STRUCTURAL ECONOMY OF THE SYSTEM. Vowel reduction occurred in all of the 17 languages of my corpus, although with varying impact upon their phonologies. In one language, Mota, it only affected part of the lexicon, namely those words where the unstressed—either medial or final—vowels were high, that is, /i/ or /u/. Thus compare (4) *kani 'eat' > *ɣan*, but (5) *mate 'die' > *mate*. The homophones that were triggered through this process—e.g., (1) *paʀu 'hibiscus' > *βar* vs. (2) *paʀi 'stingray' > *βar*—were not so numerous as to impede communication. This limited impact upon the lexicon can arguably be seen as the reason why Mota has kept its five-vowel system intact up until now. This, by the way, makes it the most conservative language of the area.

But the scenario turned out to be more complex for the 16 remaining languages. In all of these, vowel reduction affected the whole lexicon, whatever the quality of the unstressed vowel. This can be seen in (5), where all languages but Mota have reduced

9. The specifics of word-medial and especially word-initial syllables are presented in section 5.

the two CV syllables of *mate to a single CVC one. In this situation, the effect of vowel reduction upon the lexicon was going to be much more extensive, at least potentially, than in Mota. Indeed, it virtually ensured that the lexical contrasts that could exist between five disyllables of the type *CaCi–CaCe–CaCa–CaCo–CaCu* would all merge into a single syllable of the type **CaC*. In a purely statistical perspective, it would have meant reducing lexical distinctiveness by virtually 80 percent. Needless to say, such a drastic increase in the number of homophones in the language would have considerably threatened the success of communication.

In fact, none of these northern Vanuatu languages let vowel reduction affect its whole lexicon without some sort of functionally driven reaction, as it were, that would preserve at least some level of lexical distinctiveness. Although the details eventually differed from one language to another, they all followed the same overall strategy: namely, *an increase in the number of their vowel phonemes*. One can take the example of Mwesen (table 3), and see that a potential set of five disyllables *CaCi–CaCe–CaCa–CaCo–CaCu* did not merge into a single form **CaC*, but into three distinct forms *CɛC–CaC–CɔC*, which is obviously a more efficient outcome from a functional point of view.

Of course, what were initially 25 (= 5 × 5) potential V_1–V_2 combinations did not give birth to 25 distinct vowel qualities. The emergence of phonetic differences was in fact counterbalanced by a reverse phenomenon of phonetic convergence, whereby several new vowels resulting from diverse combinations would merge together into a single phoneme. For example, in Mwesen (knowing that languages behave diversely in this respect) the vowel resulting from *a…i merged with the one resulting from *e…a, namely, the phoneme /ɛ/. Yet this second process of phoneme conflation never reverted back to the initial five-vowel system. The push toward the expansion of phoneme inventories has proved everywhere stronger than the reverse merging trend to such an extent that the final systems ended up having at least seven, and up to 13 distinct vowel qualities. Although this certainly did not completely prevent homophones from appearing, such an expansion of vowel inventories at the system level cushioned the effects of vowel reduction upon communication.

The relevance of such a functional interpretation has long been illustrated for other languages, as early as Martinet's seminal study *Économie des changements phonétiques* (1955). Here is what Martinet says about Germanic umlaut (1970:200; my translation): "Originally, umlaut must have consisted in the transfer of certain features from the vowel affected by syncope or apocope, to a preceding stable vowel—generally the one in the stressed initial syllable. … Resulting from this, new vowel phonemes emerged, which compensated for the loss of the unstressed vowels with respect to distinctiveness. It is probable that speakers were subconsciously inclined to anticipate the articulation of the disappearing vowel *because* this vowel helped identify the word or form."[10] This type of historical process has also received the name of "trans-

10. "L'Umlaut … a dû consister, à l'origine, dans le transfert de certains traits des voyelles atteintes par la syncope ou l'apocope à une voyelle stable précédente, en général celle de la syllabe initiale accentuée. … Il en est résulté de nouveau phonèmes vocaliques compensant, sur le plan distinctif, la chute des voyelles inaccentuées, et l'on peut croire que les sujets ont été inconsciemment entraînés à anticiper l'articulation de la voyelle qui disparaissait *parce que* cette voyelle contribuait à l'identification du mot ou de la forme."

phonologization" (Hagège and Haudricourt 1978)—that is, the structural preservation of lexical distinctiveness by transferring some phonetic features from one segment to another. Other examples of a similar process involving an increase in vowel inventories include the transfer of the nasality feature from consonants to vowels, and the emergence of a tone system to compensate the loss of certain contrasts between consonants.[11] In our case, what is being transferred is the distinctiveness potential of disyllables to monosyllables via the expansion of vowel systems. One could also formulate the principle in Saussurian terms, focusing on the structural economy of the system: as words become shorter (reduction on the horizontal, syntagmatic axis), a larger phoneme inventory is necessary (expansion on the vertical, paradigmatic axis).

Vowel reduction is also attested in other parts of Oceania, but with varying consequences. In some languages, such as South Efate (Thieberger 2004:74) or the various languages of southern Vanuatu (Lynch 2001:103–6), the deletion of unstressed final and medial vowels had no particular effect upon vowel phonemes. Conversely, in areas such as Micronesia, vowel reduction resulted in the expansion of vowel inventories in much the same way as in northern Vanuatu. Chuukese ended up having nine phonemic vowels (Dyen 1949, Goodenough 1992; see below) and Kosraean 12 (Lee and Wang 1984:403).

3.3 METAPHONY OR METATHESIS? Although this structural explanation is probably the key to the overall history of vowel inventories in northern Vanuatu, it only accounts for the phonological level, but does not explain all the details of what happened exactly from the phonetic point of view. That is, now that we have seen *why* new vowels were structurally useful at that particular point in the history of these languages, we have to explain *how* they appeared.

The general process one can think of here is umlaut: that is, the anticipatory spread of certain phonetic features from one vowel to the vowel of the preceding syllable. The best-known form of umlaut took place in the history of Germanic languages. During this process, a posttonic high front vowel **i* regularly fronted a preceding back vowel before disappearing. For example, the Proto-Germanic singular/plural pair *muːs 'mouse' vs. *muːs-iz 'mice' eventually became a contrast **muːs* vs. **müːs* in Old English. Because the term umlaut is often restricted to high vowels, I prefer to use the wider term METAPHONY, which covers "any type of assimilation between nonadjacent vowels in a word" (Trask 1996:221).

In the case of northern Vanuatu languages, a possible scenario that would account for most of the modern data would resort to the notion of metaphony: some sort of regular assimilation (or feature transfer) from V_2 to V_1 took place before V_2 disappeared altogether. If we take the example of *paʀi 'stingray', one can assume a first stage of the type *βari > *β**æ**ri,[12] whereby final [i] affected tonic [a], bringing about a fronted allophone such as [æ]—the latter being nothing more, at this stage, than a contextual variant of the phoneme /a/ before /(C)i/. Likewise, a form like 'hibiscus' *paʀu > *βaru would have developed a back variant such as [ɒ], thus *βaru > *β**ɒ**ru. In a second stage, when

11. As far as the Oceanic group is concerned, these two historical processes are especially attested in the languages of New Caledonia: see Ozanne-Rivierre and Rivierre (1989) for nasal vowels, and Rivierre (2001) for the emergence of tones. See also Blust (1990:248–51) for other Austronesian languages.

the process of vowel reduction eliminated the posttonic vowels, these two phonetic allophones [æ] and [ɒ] eventually became phonemicized, as only these two vowel qualities were then able to maintain the lexical distinction *βær 'stingray' vs. *βɒr 'hibiscus'. What has later occurred to these two new phonological entities (whether they remained distinct or eventually merged with each other, or whether they merged with other vowels of the new system) differs from one language to another. But at least this scenario can explain how the original lexical distinction *paʀi : *paʀu was able to be preserved in several modern languages, even after the loss of the final vowels—e.g., LTG *βɛr* : *βɔr*; LHI *βœy* : *βɔy*; MSN *βɛr* : *βɔr*; LKN *βœː* : *βɑː*; MRL *nɛ-βɛr* : *nɵ-β͡ɔɵr*. In all these languages, what were once no more than allophonic variations of a single phoneme /a/ were eventually frozen in the form of phonemic contrasts.

Although the scenario I reconstruct here of phonetically conditioned variants that later acquired the status of phonemes cannot be directly witnessed in any modern language of the area, its likelihood is confirmed by certain observations that were made in other parts of Oceania. Goodenough (1992) describes the same evolutionary path in two Micronesian languages, Kiribati and Chuukese. Kiribati still has no more than five vowels on the phonological level, yet each shows metaphonic variation, depending on the quality of the posttonic vowel: for example, /CaCe/ surfaces as [ˈCæCᵉ], /CaCo/ as [ˈCɒCᵒ]. Chuukese went beyond this allophonic stage when it lost its word-final vowels: then, as Goodenough (103) puts it, "all the work of differentiation fell on the first vowels, and what was before a phonetic difference had now to be recognized analytically as a phonemic one"—for example, /æ/ vs. /ɒ/. This is how metaphony was able to trigger an increase of the Chuukese phoneme inventory from five to nine vowels.

In principle, the metaphony hypothesis should equally well be able to explain the other instances of vowel change that took place between POc and the modern languages of northern Vanuatu. If we consider the Mwesen examples of table 3, we can imagine that the final [u] in *tolu 'three' raised the stressed vowel from [o] to [ʊ] before disappearing, hence *tolu > *tʊlᵘ > *tʊl*; and conversely that the final [a] in (*quraŋ >) *ura 'lobster' lowered [u] to [ʊ], hence *ura > *ʊrᵃ > *ʊr,* and so on. As long as the changes are phonetically expected, they can easily be explained in terms of feature assimilation at a distance—that is, in terms of metaphony.

This scenario is in fact not the only possible way to account for the vowel hybridization processes attested in the area. Another proposal, suggested by A. Pawley (pers. comm.), would suggest a parallel with the evolution attested in Rotuman (Besnier 1987): a form like *βari could have undergone a process of metathesis *βari > *βair, followed by a merger of the two then adjacent vowels *βair > *βær. Similarly one could reconstruct such changes as *βaru > *βaur > *βɒr; *tolu > *toul > *tʊl*, or *ura > *uar > *ʊr.*[13]

12. Depending on the languages and the lexical items, POc *ʀ either disappeared altogether or merged with *r; but in no language of northern Vanuatu does *ʀ surface with a reflex different from *r. That is why I choose here, for the sake of simplicity, to spell *r the reflex of *ʀ when proposing intermediate reconstructions. Anyway, the relative chronology of consonant changes (*ʀ > *r*, *p > *β*, …) goes beyond the present discussion, which focuses on vowels.

13. Note, however, that a sequence /uCa/ in Rotuman yields a sequence glide + vowel rather than a plain vowel: e.g., *puka* 'creeper sp.' > *puak* > *pwɔk* (Besnier 1987:208).

Note that these two explanations rely on the same logic, namely, the notion of phonetic assimilation and feature transfer across syllable boundaries.[14] Therefore, they have essentially the same explanatory power with regard to the vowel changes attested in the corpus: both models can easily explain changes that are phonetically expected (such as *aCi > ɛC), and both will have equal difficulty in accounting for those changes that are more unusual (such as *aCi > ɔC).

In sum, the only fact that is established with certainty is the general process whereby a pair of vowels such as *a…i in *βari eventually hybridized into a single vowel such as /æ/ in *βær. What is then a matter for debate is the precise nature of the missing link that should be reconstructed between these two ends: the metaphony hypothesis suggests an intermediate form *βæri, whereas the metathesis scenario reconstructs a form *βair. Technically, the two scenarios are equally plausible here—except that metaphony is typologically much more common. Overall, this second hypothesis is probably too costly to account for regular sound change in so many distinct languages; and metaphony must be retained as the most probable historical scenario.

3.4 SHARED OR PARALLEL INNOVATION? The reader must note that I have so far deliberately avoided any commitment as to whether the historical process under discussion occurred only once, at the level of a common ancestor, or if it happened after these languages had separated from each other in a series of parallel changes that would have taken place in each language separately.

I will touch briefly on a few arguments that suggest we are dealing with parallel changes. First, if we were to situate the process at the level of a common ancestor, we might have to go back in time to a putative "Proto–Torres-Banks" ancestral to the 16 languages of our corpus, and exclusive to other northern Vanuatu languages (see 1.1). However, the existence of such a common ancestor has not yet been demonstrated. Furthermore, because Mota is the only language in the area that did not go through this phonological process all the way, we then might be tempted to exclude it from this genetic subgroup, which would not make sense in other respects.[15]

Furthermore, if one were to demonstrate the antiquity of the change in the genetic tree, one would have to show not only that all these languages underwent the process as a *type* of phonetic change, but that they went through the *same* actual patterns of change. Yet the diversity of resulting vowel inventories attested from one language to another (section 4), and the impossibility of reconstructing any common system from which to derive all modern inventories make the shared-innovation hypothesis difficult to advocate. In sum, supposing some subgroup encompassing all the languages of the Torres and Banks were to be demonstrated by future research, the phonological evidence related to vowel change would clearly have to be excluded from the set of possible shared innovations.

14. In this sense, an autosegmental representation of these processes that distinguishes tiers for consonants vs. vowels may provide an efficient model for both the metaphony and the metathesis hypotheses (Besnier 1987). See also 5.2.3.

15. Setting aside the issue of vowel hybridization, most features typical of Banks languages are also represented in Mota, whether regarding the phonology of consonants, the morphosyntax (e.g., possessive classifiers, TAM markers), or the lexicon (appendix 2).

A possible argument in favor of defining vowel hybridization as an areal phenomenon is the existence of a very similar phonological process in a language of Espiritu Santo that I have not yet mentioned. According to Guy (1977), Sakao has expanded its vowel inventory from five to 12 vowels, demonstrably by going through a parallel development (see Sakao vowel correspondences in appendix 1):

(6) Vowel hybridization in Sakao (after Guy 1977):
POc *mata-ña 'his/her eyes' > *mð**a**n*; POc *mata-gu 'my eyes' > *mð**ɛ**ɣ*;
POc *pulu-ña 'his/her hair' > *ul**œ**n*; POc *pulu-gu 'my hair' > *ul**ü**ɣ*;
POc *tolu 'three' > *ð**œ**l*; POc *qone 'sand' > *n/**ɔ**n*;
POc *keli 'dig' > *ɣ**œ**l*; PNCV *bʷeta 'taro' > *œ/β**ɒ**ð*.

While it is genetically rather remote from the Torres and Banks languages and shares more features with other languages of Santo (Tryon 1976:80), the area of Sakao lies just opposite Gaua; that is, it is the language of Santo that is geographically closest to the Banks area. Although further evidence would be required to ascertain this language-contact hypothesis, it seems likely that such a parallel evolution between geographically neighboring languages is not totally accidental.

All these arguments tend to demonstrate that the process of vowel hybridization with its reshaping of vowel inventories is the result of parallel innovations that took place in several languages of northern Vanuatu. Overall, this process may have occurred separately up to 17 times—that is, all the languages of my corpus other than Mota, plus Sakao.[16] It is difficult to determine whether what took place here should be described as an areal phenomenon that spread from one place to another through language contact, or as drift (Sapir 1921). Drift is perhaps the scenario that functionally might be better motivated, because it "occurs when languages [that] are no longer in contact move in similar directions due to the continued, independent operation of inherited structural pressures" (Blevins and Blust 2003). Yet, the existence of ongoing contact between these northern Vanuatu languages suggests the two historical motivations may well have interacted here.

As far as dates are concerned, my personal intuition—which cannot be demonstrated—is that these processes probably occurred fairly recently: say, during the last few centuries. What *can* be demonstrated, however, is their relative chronology in comparison with other instances of sound change in certain languages. For example, in Lakon, the difference between *ŋ͡mʷas̱ɪk* < *mʷaṯiga (#109)[17] 'purple swamphen' and *ṯɪl* < *ṯolu 'three' shows the assibilation of /t/ before high front vowels took place before, not after, the hybridization process.[18] Because this assibilation is attested with Lakon but not with its neighbors, this pleads once more against the antiquity of vowel changes in the genetic tree of northern Vanuatu languages.

Corollary to these conclusions, the historical scenario I have reconstructed in the present section must be taken for what it is: an outline of the general principles that

16. To my knowledge, the languages of Maewo, Pentecost, and northwest Santo, south of our area, did not go through the process. Neither did the three languages of Vanikoro (pers. data) to the north.
17. Example numbers preceded by "#" refer to the list of northern Vanuatu reconstructions that is proposed in appendix 2.
18. This relative chronology hypothesis is corroborated by the existence of such forms as LKN *matwus̱* < *matakuṯ-i 'fear' or *pælæs̱* < *balaṯ-i 'take with tongs' (see 6.1.3).

guided the shift from a five-vowel protosystem to richer inventories in the modern languages. While all these languages have essentially gone down the same track in terms of functional and structural evolution, the specifics of each history may have to be reconstructed for each language separately. Although this task is beyond the scope of the present study, I shall now give at least an overview of the variety of situations attested across the area.

4. CROSS-LANGUAGE DIVERSITY. The choice of Mwesen as an illustration for the general discussion (2.3) was explicitly justified by its simplicity and exemplary nature. The other languages differ from Mwesen in both the quantity and quality of vowels resulting from the historical process of hybridization. For some of these languages, it is just a matter of phonetic correspondences being different, with no need of further discussion. But other systems have developed peculiarities such as diphthongs or long vowels that require a more specific presentation.

4.1 CROSS-LANGUAGE DISCREPANCIES. The methodology presented in 2.3 and illustrated by Mwesen makes it possible to establish a chart of regular vowel correspondences for each language of the sample. The 17 charts can be seen in appendix 1. Quite remarkably, they all differ from each other, including between neighboring or otherwise close languages. To begin with, I will cite here certain languages that, though differing from Mwesen in their vowel correspondences, do not require any further discussion. The six languages Lehali, Lehalurup, Volow, Mwotlap, Lemerig, and Nume can be considered as following basically the same pattern as Mwesen. For all of them, each combination of protovowels V_1–V_2 is regularly reflected by a single short monophthongal vowel V': *(C)V_1(C)V_2 > (C)V'(C).

Certain correspondences, however, appear to be paradoxical from a phonetic point of view, especially if compared with the "well-behaved" vowels of Mwesen. For example, the combination *a…u is almost systematically reflected in several of these languages by the front vowel /ɛ/—see (3) above. Volow is even more consistent in providing almost any combination *V_1…u with a front vowel reflex, as if some sort of dissimilation had taken place. Thus compare the five reflexes of *V_1…u in Mwesen { i ɪ ɔ ʊ u } and in Volow { i ɪ ɛ ɪ i }:

(7) *V_1…u is regularly reflected with [+front] [+spread] vowels in Volow:
POc *taci-gu 'my younger sibling' > *tih**i**-ŋ* 'my same-sex sibling';
PNCV *rebu 'wave' > *nɪ-y**ɪ**m*; POc *aʀu '*Casuarina*' > *n-**ɛ**y*;
POc *motus 'island' > *nɪ-ŋ͡mʷ**ɪ**t* 'bush'; POc *pusuʀ 'bow' > *n-**i**h*.

In order to account for such language-specific distribution patterns, certain intermediate stages may have to be reconstructed on a case-by-case basis. For example, following Guy (1977) for Sakao, one could suggest that VLW *i and *u first merged into a single nonback, nonrounded vowel (such as central *-ɨ) before hybridizing with the preceding stressed vowel.

Vurës can be added to the preceding list, with one peculiarity. It has developed a series of front rounded vowels /œ/, /ø/, /ü/. These result from the combination of the three nonfront V_1 *a/o/u with a high V_2. When V_1 was rounded and V_2 was high front *i, the change corresponded somewhat to a classical case of umlaut:

(8) *V_1…i is regularly reflected with [+front] [+rounded] vowels in Vurës:
POc *boŋi 'night' > *k͡pʷøŋ*; POc *quRis '*Spondias dulcis*' > ***ür***.

But when V_2 was itself a back vowel *u, the fronting *o…u > *ø* and *u…u > *ü* was more unusual. Once again, it looks as though some sort of dissimilation had taken place—which is always more difficult to explain than assimilation.

(9) *V_1…u is regularly reflected with [+front] [+rounded] vowels in Vurës:
POc *motus 'island' > *ŋ͡mʷ**ø**t* 'bush'; POc *pusuR 'bow' > *β**ü**s*.

These vowel correspondences, which are exclusive to Vurës, account for the genesis of its unique vowel system (see figure 1). Front rounded vowels are also found in Lemerig and Lehalurup. Note also the three central rounded vowels /ɞ/, /ɵ/, /ʉ/ developed in Mwerlap and in Hiu—the latter being better described, for phonological reasons, as /ə/, /ɵ/, /ʉ/.

While differences between vowel systems normally result from a distinct set of correspondences, the reverse is not necessarily true. That is, two languages may have quite different charts in appendix 1, but still present exactly the same phoneme inventory. For example, the same system of seven vowel qualities { i ɪ ɛ a ɔ ʊ u } is found in Mwesen, Mwotlap, Vera'a, Nume, Olrat (table 1), despite substantial differences with regard to the precise vowel correspondences that led to that inventory (appendix 1).

4.2 LANGUAGE-INTERNAL INCONSISTENCIES. Unlike Mwesen, whose vowel correspondences are remarkably systematic, a characteristic of most other languages is the existence of more than one reflex for certain V_1–V_2 combinations, generally with no possibility of defining any conditioning factor.

Examples (1) and (3) have already shown that Vurës may reflect the combination *a…u either as /ɛ/ (*patu > *βɛt*) or as /œ/ (*paRu > *βœr*), with no obvious motivation. Likewise, *a…i sometimes became /ɛ/ (*kani > *ɣɛn*) and sometimes—though much less often—/œ/ (*paRi > *βœr*). Other examples for VRS include:

(10) Inconsistent reflexes of *a…i and *a…u in Vurës:
POc *RapiRapi 'evening' > *raβiraβi > *r**ɛ**βr**ɛ**β*;
(#132) °saraβi 'rub, stroke' > *sœr**œ**β*;
POc *koras-i 'grate coconut' > *ɣɛr**ɛ**s*; (#7) °asi 'song' > ***œ**s*;
POc *manuk 'bird' > *m**ɛ**n*; POc *ñatuq '*Burckella obovata*' > *n**œ**t*.

Similarly in Mwotlap, the combination *o…i normally hybridized as /ɪ/, and sometimes—quite rarely in fact—as /ʊ/:[19]

(11) Some reflexes of *o…i in Mwotlap:
POc *boŋi 'night' > *nʊ-k͡pʷʊŋ*;
POc *poli 'buy' > *wɪl*; POc *molis '*Citrus* sp.' > *nɪ-ŋ͡mʷɪl*;
PNCV *domi 'think' > *dɪm*; PNCV *doŋi 'coconut leaf mat' > *nɪ-dɪŋ*.

The same two outcomes are attested for *o…u. Compare the expected (but rare) shift *o…u > /ʊ/ with the less expected (but much more frequent) shift *o…u > /ɪ/:

19. The history of Mwotlap vowels is presented in detail in François (2001:83–110).

(12) Some reflexes of *o…u in Mwotlap:
POc *topu 'sugarcane' > *nʊ-tʊw*;
POc *katou 'hermit crab' > *na-ɣtɪ*; POc *motus 'broken' > *ŋ͡mʷɪt*;
POc *tolu 'three' > *βɪ-tɪl*; POc *nako-gu 'my face' > *na-nɣɪ-k*.

Finally, the usual reflex of *a…a is /a/ (POc *baga 'Ficus sp.' > *na-bak*). Yet, in a number of lexical items, some form of dissimilation (see Lynch 2003) has taken place:

(13) An unpredictable case of dissimilation (*a…a > ɔ) in Mwotlap:
POc *asaq 'grate, rub' > *ɔh* 'rub';
POc *waga 'canoe' > *ni-silɔk*;
POc *ma-ⁿriⁿri(ŋ) 'cold' → *mamariri > *mɔmyiy*;
POc *[ma-]ʀaqan 'light' → *mamaʀaʔa > *mɔmya*;
POc *saŋapulu(q) 'ten' > *sɔŋwul*.

These multiple reflexes appear in the relevant boxes of each appendix chart. The only case when an alternative reflex is not indicated in a chart is when it is only witnessed in one or two items. For example, whereas the outcome of *u…i in Mwotlap is almost always /i/ (POc *suʀi 'bone' > *ni-hiy*) and rarely /u/ (POc *susuʀi 'sew' > *susuy*), it appears as /ɪ/ only in one item (POc *quʀis '*Spondias dulcis*' > *n-ɪy*). Likewise, *a…u becomes systematically Mtp /ɛ/, except in just two words: POc *raun 'leaf' > *na-yɔ*, PNCV *nau '1st singular pronoun' > *nɔ*. Because such reflexes are clearly exceptions, they are not listed in the chart.

Most of the time, it appears impossible to define any conditioning context—let alone any phonetic motivation—for these language-internal inconsistencies. When it has been feasible, the condition for each alternative reflex is indicated in the chart. A typical example of conditioning is the presence or absence of a consonant between the two vowels at the time of their hybridization. Thus in Vurës, *e…a hybridized into /i͡a/ when the two vowels were separated by a consonant (4.3.1 below), but became /ɪ/ when they were immediately adjacent. In other words, Vurës requires two distinct rules here: {*eCa > /i͡aC/}; {*ea > /ɪ/}.[20]

(14) Some reflexes of word-final **ea* in Vurës:
POc *pea 'where' > *alβɪ*; PNCV *βareʔa 'outside' > *βarea > *βarɪ*;
PNCV *maraya 'eel' > *marea > *marɪ*.

4.3 DIPHTHONGS AND LONG VOWELS. Another peculiarity of the vowel systems in the languages under consideration is the emergence not only of new vowel qualities, but also of diphthongs and long vowels.

4.3.1 Diphthongs. Certain modern languages show diphthongs in places where their neighbors just have plain monophthongal vowels. One example is Vurës, which normally reflects as /i͡a/ the combinations *a…e or *e…a (but see a subcase in [14] above):

20. A similar distinction must be made for *e/o…a in Vera'a (see fn. 26); for *a…(i/u) in Koro and Dorig (see [20] below); and for *a…(i/u) in Mwerlap. See also Guy's discussion (1977) on Sakao. All such cases are indicated by angle brackets "⟨…⟩" in the charts of appendix 1.

(15) Some reflexes of *a…e in Vurës:
POc *kape 'crab' > *ɣ**i͡a**β*; PNCV *ʔata-mate 'ghost' > *tim**i͡a**t*;
PNCV *mʷabʷe '*Inocarpus*' > *ŋ͡mʷ**i͡a**k*.

(16) Some reflexes of *e…a in Vurës:
PNCV *bʷeta 'taro' > *k͡pʷ**i͡a**t*; PNCV *mena 'ripe' > *m**i͡a**n*;
PNCV *mʷera 'child' > *ŋ͡mʷirŋ͡mʷ**i͡a**r* 'children'.

It is difficult to tell whether this emergence of a diphthong is historically a direct outcome of the process (*a…e > *i͡a*), or if some different vowel must be reconstructed as an intermediate link (say *a…e > *ä), which for some reason would have later diphthongized (*ä > *i͡a*). This question can probably not be solved: all that can be established with certainty, at least at this stage of our observation, is the factual correspondence between certain sequences $*V_1 \ldots V_2$ and a certain diphthong.

Another example of a diphthong is Koro /ɛ͡a/, a regular reflex for the two combinations *a…i and *a…u: see (1) *βɛ͡ar*, (2) *βɛ͡ar*, (3) *βɛ͡at*. The same phoneme /ɛ͡a/ appears in Mwerlap, along with two rounded diphthongs /ɔ͡ɞ/ and /ʊ͡ɵ/. The former results from *a…u, as illustrated in (1) and (3). As for /ʊ͡ɵ/, it normally corresponds to *o…u:

(17) Some reflexes of *o…u in Mwerlap:
POc *tolu 'three' > *i-t**ʊ͡ɵ**l*; POc *topu '*Saccharum*' > *nɞ-t**ʊ͡ɵ***;
POc *katou 'hermit crab' > *nɞ-ɣɞt**ʊ͡ɵ***.

The third diphthong /ɛ͡a/ proceeds from four different combinations:

(18) The four combinations at the source of /ɛ͡a/ in Mwerlap:
*i…e: POc *talise '*Terminalia*' > *tal**ɛ͡a**s*; POc *papine 'woman' > *βaβ**ɛ͡a**n*;
*i…a: POc *p(w)ilak 'lightning' > *nɛ-β**ɛ͡a**l*; POc *ikan 'fish' > *n-**ɛ͡a**ɰ*;
*i…o: POc *sikon 'kingfisher' > *nɛ-s**ɛ͡a**ɰ*; PNCV *nigo 'you (sg)' > *n**ɛ͡a**k*;
*a…i: POc *kadik 'black biting ant' > *nɛ-ɣ**ɛ͡a**n*; PNCV *laŋi 'wind' > *nɛ-l**ɛ͡a**ŋ*.

In comparison with its neighbors, Mwerlap has a rich vowel inventory—12 phonemes altogether—including /ɞ/, /ɵ/, /ʉ/, /ɛ͡a/, /ɔ͡ɞ/, /ʊ͡ɵ/. This synchronic uniqueness goes along with an unusual distribution of vowel correspondences from the historical point of view: compare the neatly ordered chart of Mwesen (table 3) with the paradoxes and asymmetries of Mwerlap (appendix 1). If one adds to this a certain level of dialectal variation observed within Mwerlap, it is not surprising that the surrounding populations perceive Mwerlap as a particularly difficult language.

Finally, the existence of diphthongs is what makes the difference between the two dialects of Lo-Toga, namely Lo and Toga. Whereas Toga essentially has monophthongs, the Lo dialect possesses as many as five different diphthongs, namely /i͡a/, /i͡ɛ/, /i͡e/, /o͡ə/, and /o͡ɔ/. Insofar as the latter may be considered authentic phonemes, then Lo possesses 13 vowel phonemes altogether, which is one of the largest inventories in the area (see table 1):

(19) Diphthongs in the dialect Lo of Lo-Toga:

POc *api	'fire'	> TGA *ɛβ*	~ LO ***i͡ɛ**β*
POc *kona	'bitter'	> TGA *ɣɔnə*	~ LO *ɣ**o͡ɔ**nə*
PNCV *domi	'think'	> TGA *t̻əm*	~ LO *t̻**o͡ə**m*
POc *boŋi	'night'	> TGA *kʷəŋ*	~ LO *kʷ**o͡ə**ŋ*

However, the correspondences of Lo regarding diphthongs are less systematic than those of Vurës, Koro, or Mwerlap: each of these phonemes occurs in no more than about a dozen lexical items. For example, most etyma ending in *a…i are reflected in Lo with a monophthong /ɛ/, not with /i͡ɛ/.

4.3.2 The emergence of vowel length. In comparison with its neighbors, Dorig is unique in having created a single long vowel. Whereas most sequences $*V_1 \ldots V_2$ hybridized into short vowels (e.g., POc *bebe 'butterfly' > *bɛb*), the combination of *a with a high vowel *i* or *u* regularly brought about a long vowel /aː/. Thus compare the long vowel in (1) *βaːr*, (2) *βaːr*, (3) *βaːt*, with the short vowel in (5) *mat*.[21] No combination other than *aCi or *aCu yielded any long vowel in Dorig. As a result, the phoneme inventory of this language now consists of seven short vowels { i ɪ ɛ a ɔ ʊ u } plus a single long vowel /aː/. The phonemic status of this long vowel is made obvious by such minimal pairs as *laŋ* 'fly' (POc/PNCV *laŋo) vs. *laːŋ* 'wind' (PNCV *laŋi).

The only case where *a…(i,u) is reflected by a short vowel /a/ in Dorig is when the two vowels were (in premodern Dorig) immediately adjacent—that is, not separated by any consonant. One can imagine that the sequences *ai or *au were first reflected by a long vowel /aː/, and later shortened to /a/ in word-final position:

(20) Some short reflexes of *a…i and *a…u in Dorig:
POc *[ka]ŋaʀi '*Canarium* almond' > *ŋai > *ŋaː > *ŋa*
PNCV *bataβu 'breadfruit' > *batau > *btaː > *bta*

This emergence of one long vowel in Dorig must be carefully distinguished from the emergence of vowel length as a phonological feature in two contiguous languages of West Gaua, Olrat and Lakon. What happened in these two languages is that the loss of a certain consonant in syllable-final position triggered compensatory lengthening upon the preceding vowel: {*VC > Vː}. The lengthening process did not concern the same consonant in the two languages: for Olrat, the lost consonant was /ɣ/ (< POc *k), whereas for Lakon it was /r/ (< POc *r or *ʀ). Yet the process in itself is perfectly parallel in the two languages—see (21–22):

(21) Compensatory lengthening in Olrat: { Vɣ → Vː / _# }
POc *sake 'up' > *saɣe > *saɣ > ***saː***
POc *baʀeko 'breadfruit' > *paeɣo > *pɛɣ > ***pɛː***
PNCV *liko-ti 'tie up, tether' > *liɣo > *lɪɣ > ***lɪː***
POc *paka-rua 'twice' > *βaɣa-rua > *βaɣ-rʊ > ***βaː-rʊ***

(22) Compensatory lengthening in Lakon: { Vr → Vː / _# }
POc *paʀu 'hibiscus' > *βaru > *βar > ***βaː***
POc *paʀi 'stingray' > *βari > *βær > ***βæː***
POc *boʀe 'dream' > *k͡pʷore > *k͡pʷɔr > ***k͡pʷɔː***
POc *quʀis '*Spondias dulcis*' > *uri > *ur > ***uː***

Incidentally, because the consonant was only lost syllable-finally in a CVC pattern, this implies that the process under discussion necessarily happened after the process of

21. The match is perfect between Dorig /aː/ and the diphthong /ɛ͡a/ in Koro, a dialect of the same language (4.3.1).

vowel reduction. A corollary to this point is that long vowels in Olrat and Lakon may occur anywhere in the word, but exclusively in open (CV) syllables.

This process of consonant loss with resulting compensatory lengthening triggered the emergence of vowel length as a distinctive phonemic feature in these two languages.[22] The synchronic analysis provides genuine minimal pairs such as OLR *la* 'take' (PNCV *lai) vs. *laː* 'marry' (POC/PNCV *laki), or LKN *pʊ* 'bamboo' (PNCV *bue) vs. *pʊː* 'swell' (PNCV *bura < POC *puʀa 'elephantiasis'). As a result, not only did these two languages expand their vowel inventories through hybridization just like their neighbors (seven distinct vowel qualities for Olrat, eight for Lakon), but later on they even duplicated these into two sets, short vs. long. This is why Olrat can be said to have 14 phonemic vowels, and Lakon as many as 16—which is, by the way, the largest inventory of all northern Vanuatu languages.

In summary, it is now obvious that the emergence of vowel length followed different historical paths across the three languages under discussion. On the one hand, Dorig only developed one long vowel as a direct (or indirect) result of vowel hybridization; this is why it has its place in the appendix 1 chart of Dorig. On the other hand, Olrat and Lakon developed vowel length in a phonological process that evidently occurred after hybridization had taken place; this is why the charts of these two languages do not mention long vowels.[23]

4.4 POLYSYLLABIC OUTCOMES. Finally, the three languages Hiu, Lo-Toga, and Vera'a require specific comments, for the shape of their words follows a phonological structure that is slightly different from their neighbors. So far, all the examples of vowel reduction presented in this study have taken the form of a reduction in the number of syllables, whereby two open syllables CV_1CV_2 became a single syllable of the form CV'C. Yet, although this general pattern is indeed well attested in the three languages under discussion here—see (1–5)—it does not represent all vowel combinations. In some instances, these three languages reflect a sequence CVCV in the protolanguage with another sequence CVCV. For example, while the POC disyllable *mule 'go back' is reduced to a monosyllable in Mwotlap *ŋ͡mʷʊl*, it keeps its CVCV structure in Hiu, Lo-Toga, and Vera'a:

(23) POC *mule 'go back': HIU *ŋʷuɣə*, LTG *ŋʷulə*, VRA *mulʊ*.

A question regarding these three exceptional languages would be to define in which cases the CVCV pattern is reduced to a CVC syllable—as in (1) to (5)—and in which cases it is preserved—as in (23). I will examine Hiu and Lo-Toga first, and treat the more complex Vera'a in 4.4.2.

4.4.1 Low vowel resistance in the Torres Is. Despite their differences with regard to precise correspondences, the two languages of the Torres follow essentially identical patterns here. The charts of Hiu and Lo-Toga (appendix 1) show that, out of 25 V_1–V_2 combinations, nine are regularly reflected as a sequence CVCV in the modern languages:

22. The two processes do not necessarily go together: for example, Lehali, Lehalurup, and Nume lost /ɣ/ syllable-finally, yet with no compensatory lengthening.

23. There is a second difference between the two situations. Knowing that DRG /aː/ was shortened in open syllables (see [20]), it only occurs within closed syllables CVC; this is exactly the opposite with the long vowels of Olrat and Lakon.

*i…e, *i…o, *i…a, *e…a, *a…a, *o…a, *u…a, *u…e, *u…o.[24] This covers all the V_1–V_2 sequences where V_2 either is absolutely low (*a), or is lower than V_1. In both languages, the output of all these combinations is a vowel followed by an unstressed schwa.

(24) Some disyllabic reflexes of *CVCV in Hiu and Lo-Toga:

POC *ⁿraʀaq 'blood'	LTG *ˈt̻arə*	~ HIU *ˈtaʀ̆ə*
POC *saman 'outrigger'	LTG *ˈhemə*	~ HIU *woˈsɔmə*
POC *alap 'take'	LTG *ˈɔlə*	~ HIU *ˈɔɣə*
POC *kuʀita 'octopus'	LTG *ɣəˈritə*	~ HIU *ˈʀ̆itə*
POC *bakewa 'shark'	LTG *pəˈɣɛwə*	~ HIU *pəˈweɣə*
POC *aliton 'firewood'	LTG *ˈlitə*	~ HIU *ˈyitə*
POC *kasupe 'rat'	LTG *ɣəˈhʉwə*	~ HIU *ɣʉˈsʉwə*

In comparison with other V_1–V_2 sequences that underwent complete vowel reduction (*CV_1CV_2 > CV'C), the nine combinations under discussion here have shown a greater resistance, as it were, to phonetic attrition. Thus compare POC *mate 'dead' > LTG *met* with POC *mataq 'raw' > *mata > LTG *metə*. The importance of the [+low] feature in accounting for such resistance can also be observed in other languages of the world that have followed similar evolutionary paths involving syllable reduction. For example, the history of Romance languages (Old French, Occitan, Catalan …) often showed how a contrast between masculine *-o* and feminine *-a* endings eventually shifted to a contrast between *zero* and *-ə*, as in Latin 'twisted' **tortu(m)* : **torta(m)* > **torto* : **torta* > Cat. /tɔrt/ : /tɔrtə/. This preservation of an unstressed vowel in the form of schwa is restricted to *a* in the Romance languages, but in Hiu and Lo-Toga it also includes *e* and *o* when they are lower than the preceding vowel V_1. Probably the best explanation for this phenomenon would refer to the sonority hierarchy between vowels (Jespersen 1904): *a* is more sonorous than *e/o*, which are more sonorous than *i/u*. The underlying principle would thus be straightforward: the more sonorous the vowel, the more it tends to resist phonetic attrition.

In a way, one could question whether this is still an instance of vowel hybridization in the strict sense of the term. However, it must be clear that patterns of change such as (24) still make it necessary to consider vowels in pairs, because a sequence /V_1…V_2/ changed *as a whole* into a different sequence /V'…ə/. Unlike Catalan, where one can formulate a simple rule of the form "all word-final unstressed /-a/ became /-ə/," in the case of Hiu and Lo-Toga the precise outcome of the change always depends on the nature of both proto-vowels V_1 and V_2: e.g., *u…e > LTG /ʉ…ə/, but *o…e > LTG /o…/. All of these regular vowel correspondences appear in the appendix 1 charts of Hiu and Lo-Toga.

Furthermore, because the various forms of V_2 lost their distinctive power as they merged into /ə/, what happened here is once again the same sort of transphonologization as the one defined earlier in 3.2. That is, what used to be two different vowel slots {*CV_1CV_2} each with its own full inventory, eventually conflated into a single phonotactic structure {CV'Cə}, where lexical distinctiveness ended up being concentrated in just one slot. For all these reasons, Hiu and Lo-Toga must definitely be included in the group of languages that historically went through the processes of vowel reduction and vowel hybridization.

24. The next section will show that Vera'a, on this matter, has exactly the same distribution.

4.4.2 The special status of word-final vowels in Vera'a. The most complex situation with regard to the history of vowels appears in Vera'a. At first glance, such forms as *sama* 'outrigger' (POC *saman) or *naka* 'canoe' (POC *waga) would suggest that Vera'a has gone through neither vowel reduction nor vowel hybridization, and is simply conservative like Mota (cf. MTA *sama* and *aka*). In fact, this parallelism is deceptive.

In a way similar to the two Torres languages, Vera'a regularly reflects certain $*CV_1CV_2$ combinations as a closed syllable CV'C—see (1–5)—while others have preserved a disyllabic structure CV'CV_f. Interestingly, if we track them in the chart of regular correspondences of Vera'a, we find exactly the same nine pairs of vowels as the ones that were identified for Hiu and Lo-Toga: that is, those sequences in which V_2 is [+low], whether intrinsically (*a) or in comparison with V_1. A selection of examples is given in (25).

(25) Some disyllabic reflexes of *CVCV in Vera'a:
POC *talise '*Terminalia*' > *ʔili**sɪ***; POC *kuʀita 'octopus' > *wir**iʔɪ***;
POC *aliton 'firewood' > *kʊl/l**iʔɪ***; PNCV *bʷeta 'taro' > *k͡pʷ**ɛʔɛ***;
POC *mʷata 'snake' > *ŋ͡mʷ**aʔa***; POC *na-ñoʀap 'yesterday' > *nɔnɔrɔ*;
POC *kasupe 'rat' > *ɣus**uwʊ***; POC *ma-tuqa 'ripe' > *mu**ʔuʊ***.

The final vowel (V_f) in all these forms calls for two comments.

First of all, V_f has a special status in the phonology and morphology of Vera'a. Whereas it clearly belongs to the citation form of the word, and is always present at the end of an intonation unit, it is regularly dropped in the middle of a phrase (e.g., the first verb in a serial construction, or a noun followed by a modifier). Thus *niŋ͡mʷɪ* 'house' (< *imʷa < POC *ʀumaq) becomes shortened in phrases such as *niŋ͡mʷ rusʊ* 'hospital (lit. house sick)' or *niŋ͡mʷ ʔaʔar* 'church (lit. house pray)'; likewise, *naka* 'canoe' loses its final vowel in *nak susuʊ* 'canoe with no sail (lit. canoe paddle)'. This recalls the behavior of the posttonic schwa in Lo-Toga and Hiu, which is the only vowel that is prone to elide before another vowel: compare *n-ekə* 'canoe' (POC *waga) with *n-ek' ɔ* 'bamboo raft'. According to the phonological rules of these languages, such a deletion would never occur with full vowels. Thus no deletion is possible either for the final /a/ of MTA *aka* 'canoe', for the final /a/ of VRA *ʔala* 'clam' (POC *talai), or the final stressed /ə/ of LTG *ɣəˈtə* 'hermit crab' (POC *katou), for they all have the status of full vowels. This suggests that the final vowel V_f of Vera'a has a specific elidable status when (and only when) it proceeds from a posttonic [+low] V_2 in a process of vowel reduction.[25]

A second observation concerns the phonetic quality of this vowel V_f in Vera'a. Whereas the quality of the vowel V_2 in the etymon was independent from vowel V_1, this is no longer true in modern Vera'a, where the quality of V_f is systematically correlated to that of the preceding vowel V', itself a direct reflex of protovowel V_1. This can be seen in (25): whenever V' is a stressed /i/, then V_f is systematically /ɪ/, regardless of the precise nature of the protovowel V_2. In fact, the nine sequences $*CV_1CV_2$ with a [+low] V_2 may be reflected in modern Vera'a by no more than five sequences of vowels: /i…ɪ/, /ɛ…ɛ/, /a…a/, /ɔ…ɔ/, or /u…ʊ/.[26] Clearly, while the quality of V_2 during the initial step of vowel reduction was crucial in determining the general pattern of evolution for each etymon (i.e., whether

25. This status may be formulated in autosegmental terms, describing V_f as a "floating vowel"—see François (2000) about Mwotlap.

*CV_ICV_2 was to be reflected by one or two syllables), it later played no role in determining the quality of the final vowel V_f. The latter is no more than a clone of the preceding stressed vowel—with the only caveat being that a high vowel had to be lowered by one step (/i…ɪ/ instead of **/i…i/; /u…ʊ/ instead of **/u…u/).

Historically speaking, a plausible hypothesis would suggest that Vera'a first went through a schwa stage. That is, sequences of two syllables *CV_ICV_2 satisfying the {V_2 = [+low]} condition changed initially into sequences ending with a central vowel */CV'Cə/, resulting in forms very similar to the ones found in the modern Torres languages. Clearly, at this stage, some kind of vowel hybridization must have taken place, because phonological contrasts that were initially carried by two vowel slots eventually concentrated into a single vowel V'; see the discussion for Hiu and Lo-Toga. Later, a second process of vowel assimilation (rightward spread of phonetic features) occurred in Vera'a in such a way that the schwa was colored into becoming a (nonhigh) clone of V'. One would thus reconstruct *na-ñoʀap > *nənɔrə > *nɔnɔrɔ* or *kuʀita > *wəritə > *wiriʔɪ* (see 5.2.3 for initial syllables).

From this perspective, the tempting parallelism I first mentioned between Vera'a and Mota was a mere illusion. On the one hand, MTA *aka* has escaped vowel reduction and therefore preserved the two full vowels /a/ of the etymon. Conversely, VRA *naka* is the result of vowel hybridization, consisting phonologically of no more than one vowel /a/ that happens to surface in two subsequent syllables.

Considered from the perspective of the history of vowel systems, Vera'a is therefore another instance of vowel hybridization—albeit more complex than its neighbors.

4.5 SYNTHESIS. I have shown a correlation between, on the one hand, a stress-induced process of vowel reduction, and on the other hand, the phonemicization of new contrasts between vowels, resulting in an increase of vowel inventories in 16 out of the 17 languages spoken in the Torres and Banks Islands. After proposing a functional and structural hypothesis to account for the general evolution, a more detailed examination of the data has revealed the great variety of historical changes from one language to another, to such an extent that we will probably have to speak of parallel innovations that took place in each language separately. Yet, even if some languages proved unique in developing front rounded vowels, or diphthongs, or vowel length, or elidable word-final vowel slots, they have all followed essentially the same evolution involving vowel hybridization and its expansion of vowel inventories.

The following section examines certain specific cases of vowel change that occurred in word-internal and especially word-initial positions. Finally, section 6 mention the contribution of these phonological reconstructions to our understanding of the lexicon, morphology, and syntax of northern Vanuatu languages.

26. Another regular reflex concerns the two low mid vowels /ɛ/ and /ɔ/ when the vowel changes resulted in a sequence $V'V_f$ with no consonant in between, that is, */ɛɛ/ and */ɔɔ/. In this case, a dissimilation took place, whereby the first of the two adjacent low mid vowels (*ɛ*, *ɔ*) became high (*i*, *u*). Thus POc *bakewa 'shark' > *baɣea > *bɛɣɛɛ > *bɛɣiɛ*; POc *toqa 'fowl' > *toa > *tɔɔ > *tuɔ*. Note that these sequences /iɛ/ and /uɔ/ are distributed into two syllable slots, unlike diphthongs.

5. WORD-INTERNAL SPECIFIC RULES. So far, the present paper has been focusing on that part of protowords directly involved in vowel change: namely, the penultimate syllable that received primary word stress, associated with the immediately adjacent posttonic syllable. Indeed, the detailed examination of how these last two syllables of each etymon are reflected in modern languages provides all the keys that are necessary to solve most questions related to the history of vowels in the area.

Yet, the history of vowels in northern Vanuatu would not be completely described if no mention were made of the way longer etyma have been handled by the languages under discussion. I will discuss first the case of four- and six-syllable etyma, and leave for 5.2 the more complex analysis that is required by protoforms with an odd number of syllables.

5.1 DO WORD-INTERNAL SYLLABLES REQUIRE SPECIFIC RULES? The general principle is that the same vowel changes occurred word-medially as word-finally. That is, knowing that the protoforms were stressed on their penultimate syllable (primary stress noted by "ˈ" in IPA) and received secondary stress every second syllable leftward (noted "ˌ"), one can say that the vowel correspondences that were defined in relation to primary stress normally apply also to word-internal syllables receiving secondary stress. For example, I have already mentioned POc *saŋapuluq 'ten' > *ˌsaŋaˈpulu > MSN *saŋˈwul* (3.1).

Example (4) showed the set of correspondences for a two-syllable etymon *kani. Example (26) illustrates what can result from a sequence of two similar *a…i syllables in the reduplication of POc *ʀapi 'evening'.

(26) POc ***ʀapiʀapi** 'evening': HIU *ʀ̆əβʀ̆ɔβ*; LTG *rəβrɛβ*; LHI *yepyæp*; LHR ?; VLW *yɛpyɛp*; MTP *yɪpyɛp*; LMG *rɛβrɛβ*; VRA *rɛβrɛβ*; VRS *rɛβrɛβ*; MSN *rɛɸrɛɸ*; MTA *raβraβ*; NUM *rɛβrɛβ*; DRG *raːβrɪβ*; KRO *rɛβrɛ͡aβ*; OLR *raβraβ*; LKN *ræβræβ*; MRL *rɛprɛp*.

Clearly, most languages (VLW, LMG, VRA, VRS, MSN, MTA, NUM, OLR, LKN, MRL) process the first half of the protoform *ˌʀapiˈʀapi in the same way as the second half. Yet, other languages make a difference between word-internal and word-final syllables.

5.1.1 Asymmetries independent of vowel qualities. For two languages, namely Hiu and Lo-Toga, the asymmetry is systematic between primary and secondary stress, and does not depend on the actual vowels involved. Basically, only the last two syllables of the protoform will be reflected by a vowel of full quality, whereas all the rest will be reflected by schwa. This is an extreme effect of word stress in these two modern languages, which tend to centralize any vowel that does not receive primary stress.

(27) Some reflexes of four-syllable etyma in Lo-Toga:
POc *toka 'stay' → *ˌtoɣaˈtoɣa > *təɣəˈtɔɣə*
POc *matakut 'fear' → *maˌtaɣuˈtaɣu > *mətəɣ͡ˈtɔɣ*
PNCV *domi 'think' → *ˌdomiˈdomi > *t̥əmˈt̥͡ɔəm*

There are exceptions, however: words in which regular correspondences also apply word-internally:

(28) Some reflexes of four-syllable etyma in Hiu and Lo-Toga:
POc *tabakau 'coconut leaf mat' > LTG *ˌtepəˈɣɔ* ~ HIU *ˌtapəˈɣɔ*
POc *saŋapulu(q) 'ten' > LTG *ˌheŋəˈwul* ~ HIU *ˌtaŋəˈwiy*

Lehali also tends to favor asymmetry within polysyllabic forms, regardless of the nature of the vowels:

(29) Some reflexes of four-syllable etyma in Lehali:
POc *RapiRapi 'evening' → *ˌraβiˈraβi > *yepyœp*
PNCV *bora 'coconut leaf basket' → *ˌboraˈbora > *peypɔy*
PNCV *βara-si 'tread, step' → *ˌβaraˈβara > *βeyβay*
*urebarabara 'Ureparapara island' → *ureˌbaraˈbara > *n/oypeypay*

5.1.2 Asymmetries depending on vowel qualities. For the three remaining languages (Mwotlap, Dorig, Koro), the asymmetry between word-internal and word-final positions depends on the nature of the vowels. Most of the time, these languages treat all pairs of syllables *CVCV identically, whether they receive primary or secondary stress:

(30) Some symmetrical reflexes of four-syllable etyma in Mwotlap, Dorig, Koro:
POc *pano 'go' → *ˌβanoˈβano > MTP/DRG/KRO *βanβan*
POc *sipo 'go down' → *ˌsiβoˈsiβo > MTP *hɪwhɪw* ~ DRG/KRO *sɪwsɪw*

5.1.2.1 Primary vs. secondary stress in Mwotlap. Nevertheless, certain combinations of $*V_1 \ldots V_2$ have different reflexes according to where they appear in the protoword. Thus, while the regular outcome of word-final *a…i or *a…u in Mwotlap is /ɛ/ (see [1–4]), it regularly takes the form of a higher vowel /ɪ/ word-internally, that is, whenever the etymological vowel *a received secondary rather than primary stress. This was obvious in (26), where POc *RapiRapi > *ˌraβiˈraβi > MTP *yɪpyɛp*. Other examples follow:

(31) Some reflexes of word-internal *a…i and *a…u in Mwotlap:
POc *ma-takut 'afraid' → *maˌtaɣuˈtaɣu > *mɪtɪɣtɛɣ*
POc *taliŋa > PNCV *daliŋa 'ear' → *ˌdaliˈŋa-na > *nɪ-dɪlŋa-n*
PNCV *bʷalika 'in-law' → *ˌbʷaliˈɣa-na > *k͡pʷɪlɣa-n*
PNCV *natu- 'offspring' + *mʷera 'child' → *ˌnatu-ˈmʷera > *nɪtŋ͡mʷɛy*
POc *panua 'inhabited land' → *ˌβanuˈa-gu > *nɪ-βɪnɛ-k*
POc *paRi- 'reciprocal prefix' → *ˌβari- > *βɪy-*

This specific rule affecting word-internal syllables is, in fact, no more than vestigial. The functional pressure toward morphological transparency has more recently triggered the elimination of such asymmetrical patterns of sound change (of the type *yɪpyɛp*), in favor of symmetrical structures. Due to this process of reanalysis and analogical reshaping, Mwotlap now possesses two sets of bisyllables originating from reduplicated *CaCi (or *CaCu) roots. Those forms that are no longer perceived synchronically as reduplicative have maintained their asymmetrical shape up until now, as in (#154) °taŋitaŋi 'goatfish' > MTP *nɪ-tɪŋtɛŋ*. Other forms have been reanalyzed phonologically so as to fit a simpler, more iconic pattern, as in POc *taŋis 'cry': *taŋitaŋi → ***tɛŋtɛŋ*** 'cry: REDUP'. Likewise, the verb *ɣɛn* (< *kani) 'eat' productively reduplicates as *ɣɛnɣɛn*, not **ɣɪnɣɛn*; and the noun *nɛ-βɛt* (< *patu) 'stone' as *nɛ-βɛtβɛt* 'pebbles', not **nɪ-βɪtβɛt*.

5.1.2.2 Asymmetries related to diphthongs. Another instance of asymmetry concerns diphthongs. Indeed, all the languages that possess diphthongal vowels (4.3) only allow them under primary stress, while word-internal syllables can only contain monophthongs. It is typologically well known that diphthongs tend to appear under word stress rather than in unstressed syllables. See, for example, the evolution from Latin to Spanish: Lat. ˈ*focum* 'hearth' > Sp. ˈ*fuego* 'fire' vs. late Latin *foˈcāris* 'hearth' > *hoˈgar.* Thus, in Koro, the combinations *a…i and *a…u regularly brought about a diphthong /ɛ͡a/ under word stress, as in (1) and (2), but their outcome inside the word is normally /ɛ/, as in (26) *rɛβrɛ͡aβ*. This raises the question as to how such forms should be represented. On the one hand, one may speak of an asymmetry in historical vowel correspondences, whereby *a…i becomes a diphthong /ɛ͡a/ under primary stress, but becomes a distinct phoneme /ɛ/ elsewhere—see (31) for Mwotlap. But this situation could also be formulated in synchronic terms, by saying that the diphthongal phoneme /ɛ͡a/ in Koro surfaces as [ɛ͡a] under word stress, and as a monophthong [ɛ] in other contexts—in such a way that a form like [rɛβrɛ͡aβ] would be considered the surface form of an underlying /rɛ͡aβrɛ͡aβ/. This formulation does not seem contradicted by currently available data. If things were to be considered from such a deep phonological level, Koro would then be counted in the group of "symmetrical" languages. Mwerlap shows a comparable situation: for example, the reduplicated form of /ɛ͡al/ 'seek' (< PNCV *ilo 'see, know') is [ɛlɛ͡al], for what is probably an underlying /ɛ͡alɛ͡al/.

A similar pattern is also represented by Vurës, with its diphthong /i͡a/ already illustrated in (15) and (16). It only surfaces as [i͡a] under primary stress, whereas it takes the form of a monophthong [i] in all other contexts:

(32) Correspondence between stressed [i͡a] and unstressed [i] in Vurës:
PNCV *tabe 'love, honor' → *tabe-tabe > *t**i**mti͡am* 'loving'
PNCV *mʷabʷe '*Inocarpus*'→ *mʷabʷe-mʷabʷe > *wɛ͡lŋ͡mʷ**i**kŋ͡mʷi͡ak* 'kidneys'
PNCV *mʷera 'child' → *mʷera-mʷera > *ŋ͡mʷ**i**rŋ͡mʷi͡ar* 'children'

Two formulations are possible here. This contrast [i]/[i͡a] may alternatively be described either as the effect of an asymmetry in historical changes (/i/ and /i͡a/ being two different phonemes), or as a case of allophonic variation in synchrony ([i] and [i͡a] being two allophones of a unique phoneme /i͡a/).[27]

5.1.2.3 Asymmetries related to vowel length. Finally, one finds a similar phenomenon in Dorig, although it concerns vowel length rather than diphthongs.

Just as Koro, Mwerlap, and Vurës present a monophthong variant of their diphthongs in word-internal positions, the long vowel /aː/ of Dorig normally only occurs once within the word.[28] Thus, the reduplication of a form like /ɣaːn/ 'eat' is not ***ɣaːnɣaːn* as would be expected. Now, two details are slightly unusual here. First, the shortened variant, as it were, of /aː/ is not [a] but [ɪ]. Second, instead of affecting word-internal syllables as in all other

27. The synchronic morphology of Vurës tends to confirm the second of these hypotheses. Indeed, when /i͡a/ must be copied onto a prefix such as *mV-* 'PRF' (5.2.4), the vowel of the latter is always a monophthong [i] (or [ɪ]), never [i͡a]: e.g., *mV-* + *mi͡at* → *m**i**-mi͡at*. This suggests that [i] is indeed the allophone taken by /i͡a/ in positions other than under primary stress.

28. Two exceptions are, however, mentioned in appendix 2: (#91) *maːntaːb* < °man[i,u]tabu '*Ptilinopus tannensis*'; (#154) *taːŋtaːŋ* < °taŋitaŋi 'goatfish'.

languages reviewed so far (Lo-Toga, Lehali, Mwotlap, Koro, Vurës), the noncanonical reflex is found on the last syllable of the modern word. Compare (4) *kani 'eat' > *ɣaːn* with (33) *kanikani > *ɣaːnɣɪn*.

(33) Asymmetrical reflexes of *a…i and *a…u in Dorig:
POC *ʀapiʀapi 'evening' > *raβiraβi > *raːβrɪβ*
POC *kanikani 'eat' > *ɣaːnɣɪn*
°sarusaru (#134) 'wear' > *saːrsɪr*
°m[w]ab[w]usaɣi (#104) 'breathe; take rest' > *maːbsɪɣ*

Interestingly, although Dorig is otherwise a well-behaved oxytone language (e.g., [marˈmar] 'hard'), the presence of a long /aː/ word-internally tends to attract word stress: [ˈraːβrɪβ].

5.2 DEALING WITH WORD-INITIAL SYLLABLES. So far, the demonstration has focused on the description of *pairs of syllables starting from the end of the word*, that is, the last two or four or six syllables of a given protoform. These pairs of syllables all shared the same structural feature, namely a sequence {stressed σ + posttonic σ}; and indeed this is the pattern for which all vowel changes have been defined so far (cf. the charts in appendix 1).

I have said nothing yet about the third type of syllable that can be found in a protoform and that is neither stressed nor posttonic; namely, an unstressed word-initial (i.e., pretonic) syllable. Given the distribution of primary and secondary stress in the word, this means that the present section will be concerned with protoforms having an odd number of syllables—typically three or five. The rules that have been defined up to this point with regard to vowel hybridization do not make it possible to predict the evolution of this pretonic vowel (hereafter V_i). For example, how will these languages reflect the first /a/ in POC *panua 'inhabited land'?

(34) POC ***panua** 'inhabited land, village': HIU *βən̪iɵ*; LTG *βən̪ʉə*; LHI *βono*; LHR ?; VLW *n-βʊnʊ*; MTP *na-pnʊ*; LMG *n-βʊnʊ*; VRA *funuʊ*; VRS *βʊnʊ*; MSN *βʊnʊ*; MTA *βanua*; NUM *funu*; DRG (*βnʊ*); KRO *βʊnʊ*; OLR *βʊnʊ*; LKN *βanʊ*; MRL (*βʊnʊ*).

The following overview examines successively the four situations attested in my corpus: (a) V_i remains unchanged; (b) V_i disappears altogether; (c) V_i assimilates to the following vowel; (d) V_i becomes another vowel.

5.2.1 The pretonic vowel is maintained. Not surprisingly, Mota generally preserved pretonic vowels in a perfectly conservative way, as in *βanua*. The only exception to this principle is when V_i was itself a high vowel /i/ or /u/, which indeed are the only phonemes subject to attrition in that language (3.2). This deletion of pretonic high vowels was not reported by Codrington (1885), and may well be a recent change. Thus, whereas Codrington noted MTA *ɣilala* 'know' (< POC *kilala), one frequently hears now in informal Mota the form *ɣlala* starting with two consonants. Other pairs include *sinaɣa* ~ *snaɣa* 'vegetable food' (PNCV *sinaka); *ɣire* ~ *ɣre* 'pandanus' (POC *kiʀe); *putepute* ~ *ptepte* 'sit'; *liwoa* ~ *lwoa* 'big'; *niŋa* ~ *nŋa* 'reach'.

Apart from Mota, Lakon is the only language that has regularly preserved intact the pretonic vowel V_i (e.g., *βanʊ*). This is worthy of notice, because in other respects Lakon is perfectly representative of the process of vowel hybridization—including the deletion of all word-internal unstressed vowels other than the pretonic.

(35) The preservation of pretonic vowels in Lakon:
PNCV *diŋori ‘*Cananga odorata*’ > *t͡ʃ**i**ɲɪː*
POC *talise ‘*Terminalia*’ > ***ta**lɪh*
PNCV *bʷakaʀe ‘porcupine fish’ > *k͡pʷaɣare > *k͡pʷ**a**ɣæː*
POC *bakewa ‘shark’ > *baɣea > *p**a**ɣɛ*
POC *tobʷa-ña ‘his/her belly’ > *t**ɔ**k͡pʷan*
POC *buto-ña ‘his/her navel’ > *p**u**tɔn*

The assimilation of V_i to the following vowel, which is the norm in many other languages (5.2.3), is only marginal in Lakon:

(36) The assimilation of certain pretonic vowels in Lakon:
PEOc *paʀage ‘*Pangium edule*’ > *βa̲rake > *β**æ**ræk*
POC *[wa]lasi ‘*Semecarpus vitiensis*’ > *a̲lasi > ***æ**læh*
POC *katou ‘hermit crab’ > *ɣa̲tou > *ɣɪtɪ*
POC *kuʀita ‘octopus’ > *ɣu̲rita > *wɪrɪt*
POC *kasupe ‘rat’ > *ɣa̲suβe > *wʊhʊw*

Furthermore, Lakon has even preserved certain pretonic vowels that were lost in all other languages of the area—including the otherwise conservative Mota. For example, compare the reflexes of word-initial *a in Lakon and Mota:

(37) The preservation of pretonic vowels in Lakon:
POC *aliton ‘firewood’ > LKN ***a**lɪt* ~ MTA *lito*
PNCV *ʔaŋaʀi ‘*Canarium*’ > *a̲ŋai > LKN ***a**ŋæ* ~ MTA *ŋai*
PNCV *ʔaβua ‘turtle’ > *awua > *a̲uwa > LKN ***a**ʊw* ~ MTA *uwa*

As far as the preservation of pretonic vowels is concerned, Mota and Lakon are therefore the two most conservative languages of the whole group. This will make these two languages valuable when it comes to lexical reconstruction (6.1).

5.2.2 The pretonic vowel is deleted. The total deletion of V_i had different implications, and indeed shows a totally different distribution across the area, depending on the phonotactic structure of the protoform. Sometimes, the etymon—or more exactly, the form taken by the etymon in the last stage before vowel reduction took place—lacked a consonant before and/or after V_i, thus taking the form #V_iCV- or #CV_iV- or #V_iV-. In that case, the deletion of V_i caused no problem in the majority of languages, as shown by the Mota examples in (37), as well as the Vera’a data in (38).

(38) The loss of pretonic vowels in Vera’a:
PNCV *ʔaβua ‘turtle’ > *awua > *a̲ˈuwa > *n/uwʊ*
(POC *qebal) PNCV *ʔeba-gu ‘my mat’ > *e̲ˈba-gu > *bɔ-k*
(POC *ʀumaq) PNCV *yumʷa-gu ‘my house’ > *i̲ˈmʷa-gu > *ŋ͡mʷɔ-k*

(POC *waga) PNCV *waga-gu 'my canoe' > *a̲ˈga-gu > *kɔ-k* 'POSS CLF for vehicles, 1.SG'

But the situation was different when V_i was surrounded by two consonants in a #CV_iCV- pattern. In this case, its deletion logically implied the creation of an initial consonant cluster #CCV- at the word boundary. This is a phonotactic pattern that most Oceanic languages avoid—and that indeed was avoided in my entire corpus, except for a single language: Dorig (and to a lesser extent, its dialect Koro).

(39) Emergence of word-initial consonant clusters in Dorig:
POC *kasupe 'rat' > *ɣaˈsuβe > ***ɣs**ʊw*;
PEOC *bakuRa '*Calophyllum* sp.' > *ba̲ˈɣura > ***bɣ**ʊr*;
PNCV *gamuyu 'you plural' > *ka̲miu > ***km**i*;
PNCV *bʷakaRe 'porcupine fish' > *k͡pʷa̲ˈɣare > ***k͡pʷɣ**ar*;
PNCV *mʷalau 'megapode' > *ŋ͡mʷa̲ˈlau > ***ŋ͡mʷl**a*;
POC *kuRita 'octopus' > *ɣu̲ˈrita > ***wr**ɪt*.

As a consequence, a fair part of the Dorig lexicon consists of #CCV- words, with no restriction whatsoever on the nature of the consonants that may cluster together. This phonological characteristic of Dorig is remarkable not only in the Pacific context, but also on a worldwide scale. As far as northern Vanuatu is concerned, word-initial CC clusters are sometimes attested (see the Mota examples cited earlier), but always marginally—unlike Dorig, where this phonotactic pattern is perfectly standard.

5.2.3 The pretonic vowel is a copy of the following vowel. The third solution, by far the best represented throughout my corpus, consists of the pretonic vowel V_i totally assimilating to the vowel of the immediately following syllable. This change was in fact the norm for ten languages: LHI, LHR, VLW, LMG, VRA, VRS, MSN, NUM, KRO, and OLR—see (34) above. The phenomenon is illustrated here with Mwesen:

(40) Assimilation of V_i to the following vowel in Mwesen:
PNCV *bisu-gu 'my finger' > ***pu**ˈsu-k*; POC *katou 'hermit crab' > ***ɣʊ**ˈtʊ*;
POC *nako-ña 'his/her face' > ***nɔ**ˈɣɔ-n*; POC *bakewa 'shark' > *baɣoa > ***pɔ**ˈɣɔ*;
POC *tobʷa-ña 'his/her belly' > ***ta**ˈk͡pʷan*; POC *kapika '*Syzygium*' > ***ɣɪ**ˈβɪx*;
PNCV *gamami 'we EXCL' > ***kɛ**ˈmɛm*; PNCV *gamuyu 'you PL' > *kamiu > ***ki**ˈmi*.

5.2.3.1 Historical interpretation vs. synchronic model. The loss of the phonetic identity of V_i was to be expected during such a massive vowel reduction process as the one that took place in the entire area. This alteration was initially due to the prosodic status of V_i as a pretonic vowel, and therefore to its articulatory and acoustic weakness. In a way, this makes the preservation of V_i in Lakon even more striking. From a historical perspective, it is likely—though not necessary—that at least some of these languages went through a schwa stage, whereby all pretonic vowels became centralized before assimilating to the following vowel: POC *nako-ña > *nəˈɣɔnə > *nɔˈɣɔn*. This hypothesis is validated somewhat by the forms attested in Hiu and Lo-Toga, as if these two Torres languages provided the missing link to account for the forms found in the Banks Islands: for example, LTG *pəˈhʉ-k* 'my finger', *nəˈɣɔ-nə* 'his/her face', *ɣəˈβiɣə* '*Syzygium*', *kəˈmɛm* 'we EXCL', *kəˈmi* 'you PL'.

In fact, an alternate analysis that would adopt a synchronic perspective would be possible for all these languages. Rather than assuming that V_i preserved its vowel slot (unlike Dorig) while borrowing its phonetic quality from the next vowel, it would be equally accurate to say that V_i disappeared altogether during the vowel reduction process in all these languages as well as in Dorig (*nako-ña > *nɣɔn*); and that a phonological rule of VOWEL EPENTHESIS later took place in all these languages (except Dorig), that would break word-initial consonant clusters by inserting a clone of the following vowel (*nɣɔn → *nɔɣɔn*). Indeed, this rule is required as it is by the synchronic phonological analysis of each of these languages, regardless of the etymology of the lexical items: for example, Eng. *play cards* was borrowed into Mwotlap under the form *bɛ̲lɛkat*.

Even if they take a different perspective, the historical explanation (with a schwa stage and feature assimilation) and the synchronic analysis (with vowel epenthesis) are complementary and account for two facets of the same phenomenon (see François 2000). Certain instances of hesitation in fluent speech and reanalyses (François 2001:1029) strongly suggest that, from a cognitive point of view, these lexical items are in fact memorized as if they consisted of only a single vowel that distributes itself into as many vowel slots as it can. This can be formulated using the autosegmental approach and a multi-tiered representation separating vowels from consonants ("planar V/C segregation" in McCarthy [1989]):

(41) MSN: 'his/her face' { n _ ɣ _ n }$_C$ × { ɔ }$_V$ ⇒ /n**ɔ**ɣ**ɔ**n/

Vera'a involves the distribution of the same vowel not only into two, but sometimes three vowel slots (see 4.4.2):

(42) VRA: 'yesterday' { n _ n _ r _ }$_C$ × { ɔ }$_V$ ⇒ /n**ɔ**n**ɔ**r**ɔ**/

To be precise, the word-final vowel slot of Vera'a goes with a condition, namely that this vowel must be [–high]. Hence the phonological formula of (43):

(43) VRA: 'octopus' { w _ r _ ʔ _$_{[-high]}$ }$_C$ × { i }$_V$ ⇒ /w**i**r**i**ʔ**ɪ**/

This analysis fits most of the data for this set of "vowel-copying" languages.

5.2.3.2 Vowel copy and the phonological word in Mwotlap. In general, Mwotlap treated pretonic vowels in exactly the same way as Mwesen and other similar languages, that is, by assimilating them to the following vowel, as in *gamami > *kɛmɛm*; *gamuyu > *kimi*. But what makes the picture different here is that Mwotlap systematically treated the nominal article *na (as well as a number of other morphemes preceding nouns, adjectives, and verbs) as if it were integrated into the phonological noun. While still functioning syntactically like any article in the area, including the possibility of its absence, *na became a prefix in Mwotlap.[29]

On the one hand, all other languages treated a sequence {Article + Noun} as if it consisted of two distinct phonological words, leaving the article aside, and processing the first syllable of the noun root as a pretonic syllable: for example, *na mata-gu ('my eyes') became VRS *na mœtœ-k*. On the other hand, Mwotlap treated the same sequence as a sin-

29. The phonology, morphology, and syntax of noun articles in northern Vanuatu are outlined in François (forthcoming).

gle word, in such a way that what was elsewhere a pretonic vowel V_i was eventually to be processed as a word-internal posttonic vowel. When the noun consisted of an odd number of syllables (e.g., *maˈta-gu with three), then the article *na logically received stress, in which case it was systematically preserved as /na/, as in *ˌna-maˈta-gu > MTP *na-mtɛ-k*. In the latter form, no vowel copying took place, because the etymon had no pretonic vowel V_i: thus *ˌna-maˈta-gu evolved like any four-syllable etymon would have in Mwotlap (cf. *ˌtabaˈkau > *tamɣɛ* 'mat'). As a corollary to this point, the protoforms that can be chosen to illustrate the process of pretonic vowel assimilation in other languages, as in (34) or (40) above, are generally not relevant for Mwotlap, because the addition of a prefix changed the whole phonotactic structure: for example, in (34), MTP *na-pnʊ* does not illustrate the phenomenon of vowel copying as the other languages do.

This does not mean that Mwotlap ignored this vowel-cloning process altogether, but that it applied it to different forms. There are two kinds of etyma that can illustrate this point for Mwotlap. One would consist in taking the same etyma as for other languages, but only in those syntactic contexts where Mwotlap removes the article (François 2001:187–214; forthcoming), as when the noun functions as a modifier to another noun, or is incorporated into a verb. In those cases, the protoform had no prefixed article, and thus behaved in the same way as in (40). Thus, while the article is included in the citation form *na-pnʊ* 'village' (< *ˌna-βaˈnua), it disappears in *na-hɛ **βʊ**nʊ* 'name of village' (< *βaˈnua). Indeed, like most of its neighbors, Mwotlap avoids consonant clusters word-initially, and automatically inserts a vowel slot after the first consonant: a form like ***pnʊ* would be excluded.

The second way to illustrate vowel copy in Mwotlap is by choosing etyma with an even number of syllables and seeing what their reflex will be with the article *na as an extra syllable. Remarkably, for all these protoforms, Mwotlap is perfectly systematic in applying the rule of vowel assimilation to the pretonic vowel V_i—in this case, to the article *na itself:

(44) The rule for vowel copy on the article *na in Mwotlap:
POC *na kutu 'louse' > ***ni**-ɣit*; POC *na molis '*Citrus* sp.' > ***nɪ**-ŋ͡mʷɪl*;
POC *na bebe 'butterfly' > ***nɛ**-bɛm* ; POC *na pose 'paddle' > ***nɔ**-wɔh*;
POC *na boŋi 'night' > ***nʊ**-k͡pʷʊŋ*; POC *na bulit 'gum' > ***nu**-k͡pʷul*;
(POC *panua) *na βanua-gu 'my country' > ***nɪ**-βɪnɛ-k*.

This process accounts for the emergence of one of the most complex rules of Mwotlap morphology: namely, the mechanism of vowel copy on eight prefixes (François 1999; 2000; 2001:96–128). For historical reasons, this rule applies exclusively to those lexical roots that begin with a single consonant (reflecting a protoform in which the prefix was pretonic, as in *nɪ-**β**ɪnɛ-k* < *na ˌβanuˈa-gu) and never to those that begin with two consonants (reflecting a protoform in which the prefix received secondary stress, such as *na̲-**pn**ʊ* < *ˌna βaˈnua).

Incidentally, the need to formulate this principle as an ongoing phonological rule in synchrony—rather than just considering it as the vestigial result of historical changes—is proved by the shape of certain loanwords. Thus #CV- loans must make the vowel copy (***nu**-bus* 'cat' < Eng. *puss*; ***nɔ**-bɔmdɛtɛ* 'potato' < Fr. *pomme de terre*) whereas #CCV- loans normally do not (***na**-mlɛkat* 'playing cards'; ***na**-k͡pʷlismɛn* 'policeman'). In other words, Mwotlap speakers have reanalyzed as a phonological constraint in synchrony what is fundamentally the result of complex vowel changes in history involving vowel hybridization and feature assimilation.

5.2.4 The pretonic vowel is altered. Finally, the last possibility is for the pretonic vowel V_i to be reflected with neither its original quality nor a quality directly borrowed from the following vowel, but with yet another vowel.

In Hiu and Lo-Toga, this occurs systematically, because all pretonic vowels are reflected as the central vowel /ə/: see (24) LTG *ɣəˈhʉwə*, *pəˈɣɛwə*, *ɣəˈritə*. Marginally, a tendency toward vowel copy seems to be emerging in Hiu, with such forms as *ɣʉˈsʉwə* as a variant to *ɣəˈsʉwə*.

A language that appears to be less predictable in this respect is Mwerlap. On the one hand, Mwerlap shows instances both of pretonic vowel preservation (e.g., *papine 'woman' > *βaβɛ͡ an*) and of assimilation to the following vowel (*talai 'clam' > *tɪlɪ*). But on the other hand, it also has numerous instances in which V_i became a different vowel:

(45) Alteration of pretonic vowels in Mwerlap:
POC *m<u>a</u>-turuʀ 'sleep' > *mɵtʉr*; POC *katou 'hermit crab' > *ɣɵtʊ͡ɵ*;
POC *t<u>a</u>ma-gu 'my father' > *tɵmɔ-k*; POC *t<u>o</u>bʷa-gu 'my belly' > *tɵkʷɔ-k*;
POC *t<u>o</u>bʷa-ña 'his/her belly' > *takʷa-n*;
PNCV *m<u>a</u>raya 'eel' > *marea > *mɛrɪ*; PNCV *β<u>a</u>reʔa 'outside' > *βɛrɪ*;
PNCV *bʷ<u>a</u>riki 'today' > *kʷɛriɥ*; PNCV *gamuyu 'you pl.' > *kamiu > *kɛmi*.

A probable scenario is that the pretonic vowel was first reduced to schwa before undergoing partial assimilation to the following vowel: $*V_i$ > *ə > /ɛ/ before spread vowels, $*V_i$ > *ə > /ɵ/ before rounded vowels, $*V_i$ > *ə > /a/ before /a/. In this sense, Mwerlap followed essentially the same change mechanism as vowel-copying languages, with the only difference being that the assimilation of V_i to the following stressed vowel was only partial.

In a way similar to Mwotlap, the article *na in Mwerlap is integrated into the noun as a prefix. As a consequence, it takes part in these vowel alterations in the same way as any initial syllable would—sometimes fully assimilating to the next vowel (e.g., *nɪ-kʷɪt* 'taro'), and sometimes showing only partial assimilation:

(46) Alteration of the vowel of the article *na in Mwerlap:
POC *n<u>a</u> pulan 'moon' > *nɵ-βʊl*; POC *n<u>a</u> patu 'stone' > *nɵ-βɔ͡ɵt*;
POC *n<u>a</u> ma-gu 'my drink (POSS CLF)' > *nɵ-mɔ-k*;
POC *n<u>a</u> kadik 'black ant' > *nɛ-ɣɛ͡an*.

Finally, the language of Vurës shows a situation similar to Mwerlap. While the general rule was for V_i to copy the quality of the following vowel (PEOC *bakuʀa '*Calophyllum* sp.' > *bʊɣʊr*; POC *katou 'hermit crab' > *ɣøtø*; POC *kuʀita 'octopus' > *wɪrɪt*), there was one exception. When the stressed vowel resulting from hybridization was a high monophthong (either /i/ or /ü/), then V_i became the corresponding high mid vowel. This explains why so many words in Vurës have the shape (C)*ɪ*(C)*i*(C) or (C)*ø*(C)*ü*(C):

(47) Alteration of pretonic vowels in Vurës:
POC *paliji 'grass' > *βɪlis*; PNCV *gamuyu 'you pl.' > *kamiu > *kɪmi*;
POC *banic 'wing' → *bani-gu 'my arm/hand' > *bɪni-k*;
PNCV *βasusu 'give birth' > *βøsüs*; POC *natu-gu 'my child' > *nøtü-k*;
POC *takuRu 'back' > *tøwür* 'behind, after'.

In the spirit of (42–43) above, these modern forms could be represented using a simple, autosegmental formula:

{ C_1 _[−high] C_2 _ C_3 }$_C$ × { V }$_V$

This formula should cover both total assimilation (copy) and partial assimilation of the pretonic to the following vowel, and thus fit most lexical items based on three-syllable etyma:

(48) Total and partial assimilation of the pretonic in Vurës (an autosegmental representation):

'*Calophyllum*'	{ b _[−high] ɣ _ r }$_C$ × { ʊ }$_V$	⇒ /b**ʊ**ɣ**ʊ**r/
'hermit crab'	{ ɣ _[−high] t _ }$_C$ × { ø }$_V$	⇒ /ɣ**ø**t**ø**/
'octopus'	{ w _[−high] r _ t }$_C$ × { ɪ }$_V$	⇒ /w**ɪ**r**ɪ**t/
'grass'	{ β _[−high] l _ s }$_C$ × { i }$_V$	⇒ /β**ɪ**l**i**s/
'behind'	{ t _[−high] w _ r }$_C$ × { ü }$_V$	⇒ /t**ø**w**ü**r/

Just as in Mwotlap and Mwerlap, several morphemes in Vurës behave like any word-initial pretonic syllable, thereby revealing their prefixal status. For example, the four TAM markers *t*V- 'PROG', *m*V- 'PRF', *ɣ*V- 'STATIVE-FUT', *ɣ*V*t*V- 'NEG' inherit their vowel from the first syllable of the following verb root (e.g., *ɣ**a**-βan* 'will go', *ɣ**ɛ**t**ɛ**-lɛ* 'did not take'). But when the latter is a high vowel /i/ or /ü/, then the rule is normally for the prefix vowel to take the corresponding high mid quality, as in *t**ø**-sürsür* 'is singing'; *m**ɪ**-tiŋ* 'has created'; *ɣ**ø**-lüwʊ* 'is big'; *ɣ**ɪ**t**ɪ**-ɣilal* 'do not know'.

This last point illustrates once again how the complex patterns of vowel change can still affect the synchronic morphology of modern languages. Section 6 examines in detail the various ways in which vowel hybridization, as a phonological process in history, has left its traces in the lexicons and grammars of all these northern Vanuatu languages.

5.3 SUMMARY TABLE. The various analyses presented in the preceding pages are summarized in table 4. For each language, the following information is given:

- whether etymological posttonic vowels (V_2) were lost during vowel reduction in "all" or in just some instances (3.1, 4.4);
- whether vowel hybridization took place: that is, whether the reflexes of stressed V_1 were regularly conditioned by posttonic V_2 before their deletion (3.2);
- whether the outcome of vowel hybridization under secondary stress was the "same as" or "different from" the outcome under primary stress (5.1);
- whether etymological pretonic vowels (V_i) were preserved unchanged, or were altered, or underwent total or partial assimilation to the following vowel (5.2).

Where more than one option was valid for the same language, I indicate the one that is statistically most significant.

6. VOWEL HYBRIDIZATION AND LANGUAGE RECONSTRUCTION.

Beyond its intrinsic interest for Oceanic linguistics or typological phonology, the historical model of evolution I propose here also constitutes a useful key to the understanding of a variety of linguistic facts in all the languages of northern Vanuatu.

I divide this section into two parts: first, the domain of LEXICAL RECONSTRUCTION; and second, the study of HISTORICAL MORPHOLOGY and its syntactic corollaries, especially regarding the marking of objects on the verb and possessors on the noun.

6.1 LEXICAL RECONSTRUCTION

6.1.1 Methodological preliminaries. Through a detailed examination of all Torres and Banks languages, I have attempted to track the evolution of their vowels, whether positioned at the end, middle, or beginning of words. Setting aside a certain number of exceptions, most of the modern forms attested in the Torres and Banks languages should now appear unproblematic from a historical point of view.

TABLE 4. PATTERNS OF VOWEL CHANGE IN NORTHERN VANUATU: SUMMARY

LGG	NAME	LOSS OF POSTTONIC V2?	VOWEL HYBRIDIZATION?	PRIMARY VS. SECONDARY STRESS OUTCOME?	PRETONIC VOWEL V1
HIU	Hiu	[–sonorous] > Ø [+sonorous] > /ə/	yes	different	altered > /ə/
LTG	Lo-Toga	[–sonorous] > Ø [+sonorous] > /ə/	yes	different	altered > /ə/
LHI	Lehali	all	yes	different	total assimilation
LHR	Lehalurup	all	yes	same	total assimilation
VLW	Volow	all	yes	same	total assimilation
MTP	Mwotlap	all	yes	same except *a…(i,u)	total assimilation (including prefixes)
LMG	Lemerig	all	yes	same	total assimilation
VRA	Vera'a	[–sonorous] > Ø [+sonorous] > V_f	yes	same	total assimilation
VRS	Vurës	all	yes	same except diphthong	partial assimilation (including prefixes)
MSN	Mwesen	all	yes	same	total assimilation
MTA	Mota	high *i/u > Ø	no	same	unchanged (except high *i/u > Ø)
NUM	Nume	all	yes	same	total assimilation
DRG	Dorig	all	yes	same except long vowel	deleted
KRO	Koro	all	yes	same except diphthong	total assimilation
OLR	Olrat	all	yes	same	total assimilation
LKN	Lakon	all	yes	same	unchanged
MRL	Mwerlap	all	yes	same except diphthongs	partial assimilation (including prefixes)

To take just one example, such forms as MTP *na-tyɔ*, VRA *ʔuruɔ*, and LKN *tarɔ* '*Columba vitiensis*' now clearly appear to be perfectly regular and predictable reflexes—taking into account each language's own history—of their PNCV etymon *taroa ('white-throated pigeon'). Even better, had not this etymon already been reconstructed based on other languages (Clark, in prep.), the model and rules proposed in the present study should be powerful enough to calculate the form *taroa based only on these three modern reflexes.

Indeed, the absence of vowel copy on the article *na-* in Mwotlap indicates that it was followed by an odd number of syllables, in this case three: hence *tVrVV. The quality of the pretonic vowel is revealed by Lakon: hence *tarVV. As for the identity of the last two vowels, the charts in appendix 1 for both Mwotlap and Lakon show that /ɔ/ may reflect either *o…e, *o…a, or *o…o: the penultimate vowel of the protoform was thus necessarily *o, hence *taroV. Finally, the Vera'a final sequence /uɔ/ is the regular reflex of a sequence *oa with no intervening consonant (see fn. 26). Consequently, the only possible source for these three modern forms necessarily had the form *taroa.

Up until now, I have always endeavored to illustrate each phonetic change with etyma already well established, either from Proto-Oceanic or from Proto–North-Central Vanuatu (see fn. 5). But now that all regular correspondences (appendix 1) as well as the general processes of change have been firmly established, it becomes possible to utilize them as a tool for the discovery of new unknowns. In particular, one can reconstruct certain lexical items that are particularly well reflected in northern Vanuatu, but whose protoforms were until now unclear, due to the complexity of modern vowel systems and the embarrassing variety of attested forms. The result of this research takes the form of a selection of lexical reconstructions, given in appendix 2.

6.1.2 Paving the way for subgrouping studies. The reconstructions proposed in appendix 2 are not necessarily intended to describe any specific protolanguage, such as a hypothetical "Proto Torres–Banks." Such a claim would require external data and further discussion that lie beyond the scope of the present study. Nevertheless, subgrouping matters are not totally absent from this list of reconstructions, albeit indirectly.

The rationale behind this list is to show how the understanding of vowel hybridization constitutes the first necessary step in any effort toward unraveling the genetic history of northern Vanuatu languages. Indeed, not only does it help assess the cognacy of modern forms, but it even permits us to reconstruct protoforms. To take just one example, the correspondences regarding vowels and consonants now make it clear that LHI *hɔy* and LKN *saː* ('put on, wear') are cognate; and that they both point toward an etymon of the form °saru.[30] The other languages of the area suggest the same protoform:

(#134) °**saru** 'put on, wear (clothes+)': LTG *hɔr*; LHI *hɔy*; MTP *hɛy*; VRS *sœr*; MTA *sar*; DRG *saːr*; LKN *saː*.

Obviously, this stage of identifying cognate sets and reconstructing likely protoforms is a prerequisite before any language comparison—whether inside or outside the area under study—can even begin. Only then will it become possible to track the geo-

30. In order to distinguish typographically my own reconstructions from already established etyma, I shall use the degree sign ° instead of the asterisk *, hence °saru.

graphic expansion of each etymon's reflexes, and thus to tackle the issues of subgrouping and protolanguage reconstruction per se. The complex issues of genetic classification must be kept for future research. However, I briefly illustrate here, with two examples, the usefulness of the vowel hybridization model when it comes to formulating fine-grained subgrouping hypotheses based on lexical data.

Despite their variety, the forms taken by the 1.EXCL DU pronoun can be grouped in two sets. In the first set, the pronoun's last vowel is the regular reflex of a sequence *u…a: this is the expected outcome of a protoform °gamaˈrua (< *rua 'two'). In the second set (underlined below), the hybridization pattern involved is *a…u, pointing to a truncated variant °gaˈmaru:

(#67) °**gamarua** ~ °**<u>gamaru</u>** '1.EXCL.DU independent pronoun': HIU *kamaʀ̆ɵ*; LTG *<u>kəmɔr</u>*; LHI *mæyo*; VLW *gɛmyʊ*; MTP *kamyʊ*; LMG *kamarʊ*; VRA *kamaduʊ*; VRS *kʊmʊrʊk*; MSN *kɛmɛmrʊ*; MTA (*kara*); NUM *<u>kamar</u>*; DRG *<u>kmaːr</u>*; KRO *<u>kɛmɛ͡ar</u>*; OLR *<u>kɪmɪy</u>*; LKN *ɣ<u>amaː</u>* ; MRL *<u>kamar</u>*.

Interestingly, the reflexes of °gamaru (setting aside Lo-Toga) outline a consistent geographical area: the six southernmost languages of the Banks group. Along with additional evidence (François 2004), this sort of observation could well prove helpful in defining shared innovations and diagnosing subgroups—in this case, a possible southern Banks branch (?) within the small group of northern Vanuatu languages.

The same method can also help define the precise form taken by a well-known Oceanic etymon in this particular area. For example, Torres and Banks languages designate kava with forms that generally contain a front vowel:

(#61) °… 'kava': HIU *ɣa*; LTG ***ɣi***; VLW *na-ɣa*; LHR *n-ɣa*; MTP *na-ɣa*; LMG *n-ɣa*; VRA ***ɣiɛ***; VRS ***ɣɪ***; MSN ***ɣɛ***; MTA ***ɣea***; DRG ***ɣɛ***; KRO ***ɣɛ***; OLR ***ɣɛ***; LKN ***ɣɛ***; MRL (*nɘ-mɘlʊp*).

Most of these items reflect a premodern form *ɣea, while a few (HIU, LHR, VLW, MTP, LMG) suggest *ɣaa. This matches exactly the usual distribution of reflexes when the etymon shows a sequence */aya/. Consider the forms for 'eel' (PNCV *maraya):

(#95) °**maraya** 'moray, eel' [PNCV *maraya]: HIU ?; LTG *məri*; LHR ?; VLW *n-maya*; MTP *na-mya*; LMG ?; VRA *mɛriɛ*; VRS *marɪ*; MSN ?; MTA *marea*; NUM ?; DRG *mrɛ*; KRO *mɛrɛ*; OLR *mɛrɛ*; LKN *marɛ*; MRL *nɛ-mɛrɪ*.

This means that the most probable reconstruction for 'kava' in the Torres and Banks would take the form °**ɣaya**. Crucially, this *might* be an irregular reflex of POC *kawaR(i) 'root with special properties;[31] kava' (Lynch 2002), involving an unexpected change of glide from *w to *y: *kawa(R) → *kaya > *ɣaya. If this hypothesis were to be confirmed by additional data, such an instance of irregular sound change would constitute strong evidence toward the identification of a shared innovation, and hence of a possible subgroup.[32]

31. POC *kawaRi was also retained under the form *ɣawari > *ɣoari 'root'—see (#63).

32. The precise shape of the *kaya isogloss remains to be ascertained. Although most other Vanuatu languages show a reflex of "early post-PCNV *maloku" (Lynch 2002), *kaya is also witnessed in southern Espiritu Santo, with Araki *hae* 'kava' (François 2002:250). The sequence /ae/ recalls the form *mar<u>ae</u>* 'eel' taken by PNCV *maraya in several nearby languages, such as Raga (Clark, in prep.).

6.1.3 Tracing back the paragogic *-i. In sum, although vowel hybridization per se cannot be taken as diagnostic evidence for subgrouping matters (see 3.4), it proves useful when it comes to identifying cognate sets and reconstructing protoforms. As we have just seen, the evidence it provides is all the more valuable when it helps trace back irregular sound change. In this regard, another instance of formal irregularity in the lexicon deserves discussion here, because of its statistical significance in northern Vanuatu: the existence, in a number of lexemes scattered throughout the area, of a nonetymological final vowel *-i.

A first observation is that for some lexemes, several northern Vanuatu languages appear to have unexpectedly preserved a final consonant of a POc etymon that normally was supposed to have disappeared long ago. For example, the final *p in POc *Ruap 'high tide', as expected, was deleted in MTP (*Ruap > *ˈrua >) *yʊ*; but it was surprisingly preserved in MTA *ruaβ*, NUM *ruɛβ*, MRL *ruɛp*. Once again, the key to the problem is not the history of consonants, but of vowels. These three forms become perfectly regular again if their etymon is reconstructed not as *rua(β), but as *ruaβ-i, with an extra vowel *i. Indeed, the charts of these three languages in appendix I reveal that the regular reflexes of *a…i are MTA /a/, NUM /ɛ/, MRL /ɛ/. And, of course, the addition of a word-final vowel had the effect of shifting word stress by one syllable, which explains why the vowel hybridization subcase here is no longer *u…a (as in *ˈrua > *yʊ*), but *a…i (as in *ruˈaβ-i > *ruɛp*). In other words, for the same etymon, two reconstructions must be proposed, one with and one without this extra vowel *-i: °rua ~ °ruaβi; or to make it shorter, °rua[βi].[33]

At first sight, this vowel *-i is reminiscent of the former POc applicative suffix *-i, which could explain its presence on transitive verbs. However, none of these modern languages uses the suffixed vs. unsuffixed contrast as a morphosyntactic device, such as opposing intransitive and transitive forms. Furthermore, *-i is found on nouns as well as on verbs, with no clear semantic contribution, and therefore must be disregarded as a genuine morpheme. This *-i should better be described as a "paragogic" vowel: that is, a device that allows consonant-final languages to regularly "create phonetically open syllables by inserting a 'default' vowel after a coda" (Klamer 2002:368).

The existence of this paragogic vowel, also known as an "echo-vowel" (Lynch 2000:73), has already been documented for several areas of the Austronesian family, including in Clark's (1985:204) reconstruction of PNCV. But whereas it is generally observed directly in the form of a word-final /i/, what makes the northern Vanuatu area worthy of mention is that due to the vowel reduction process, this paragogic *-i is never present as such in the modern forms. Its presence can only be inferred by analyzing the phonetic marks it has left in the modern lexicons, resorting to the vowel hybridization model as a heuristic tool. In the examples below, those reflexes that point to an augmented protoform are underlined. They can be recognized, thanks to the presence of the etymon's word-final consonant.[34]

33. When citing protoforms, I will follow here Clark's (in prep.) usage to group the final *i with the preceding consonant, because the latter got preserved only in the presence of the *i suffix: e.g., PNCV *liko-ti 'tie up, tether' rather than **likot-i*.

34. In some instances, even the presence of that consonant must be inferred from the traces it has left in the modern word. For example, although LKN *tuː* 'stand' resembles the plain form of the etymon *tuʔu, its long vowel presupposes the former presence of /r/ (see 4.3.2), which in turn betrays the former presence of paragogic *-i ! That is, *tuː* < *tur < *turi < *tuʔu-ri < *tuqur + *-i.

(49) POc *saqat → PNCV *saʔa-ti > °**saa**[**ti**] 'bad': Hiu *sa*; Ltg *h͡ia*; Lhi *sæt*; Lhr *sɛt*; Vlw *hɪt*; Mtp *hɛt*; Lmg *sɛʔ*; Vra *sɛʔ*; Vrs (*tisɪ*); Msn (*tisɪ*); Mta *tatas*; Num *ttɪs*; Drg *ttaːs*; Kro *sa*; Olr *sa*; Lkn *sa*; Mrl *sɪt*.

(50) POc *tuqur → *tuʔu-ri > °**tuu**[**ri**] 'stand': Hiu *tʉ*; Ltg *tʉ*; Mtp *tiɣ*; Lmg (*ʔar*); Vra *ʔir*; Vrs *tür*; Msn *tur*; Mta *tur*; Num *tur*; Drg *tur*; Kro *tur*; Olr *tuɣ*; Lkn *tuː* ; Mrl *tʉr*.

(51) POc *ma-takut → °**mataɣu**[**ti**] 'fear, be afraid': Ltg *mə(təɣ)tɔɣ*; Lhi *mɔtɔ*; Lhr *mɛt͡ʃɛ*; Vlw *mɛtɛɣtɪɣ*; Mtp *mɪtɪɣtɛɣ*; Lmg *mæʔœɣ*; Vra *maʔaɣ*; Vrs *mætœɣtœɣ*; Msn *mɔtɔwtɔw*; Mta *mataɣtaɣ* ~ *mataɣut*; Drg *matwut*; Kro *matwut*; Olr *matwut*; Lkn *matwus*; Mrl *mɞtɞwʉt*.

(52) PNCV *bala-ti 'wattled structure' → °**bala**[**ti**] 'take (stones+) with tongs': Mtp *bal*; Vrs *bal*; Mta *pala* ~ *palat*; Num *balɛt*; Drg *blaːt*; Lkn *pælæs*.

As mentioned earlier, the paragogic *-i is not restricted to verbs or adjectives, and is also found in several nouns (see also [#108]):

(53) POc *tawan > °**tawa**[**ni**] '*Pometia pinnata*': Ltg *tɔwə*; Mtp *na-twɛn*; Lmg *ʔɛwɛn*; Vra *tɛwɛn*; Vrs *tɛwɛn*; Msn *tɛwɛn*; Mta *tawan*.

(54) POc *rarap > PNCV ***rara**[**βi**] '*Erythrina indica*': Mtp *na-yay*; Vra *raraβ*; Vrs *rɛrɛβ*; Mta *rara* ~ *raraβ*; Drg *rraːβ*; Lkn *ræræβ*.

(55) POc *ñamuk > PNCV *namu-ki > °**namu**[**ɣi**] 'mosquito': Ltg *nɛm*; Mtp *nɛ-nɛm*; Vra *nam*; Vrs *nɛm*; Msn *nɔm*; Mta *nam*; Num *nam*; Drg *d͡ŋmʷuɣ*; Kro *muɣ*; Olr *muː* ; Lkn *namuɣ*; Mrl *nɞ-nɔm*.

(56) POc *quraŋ > °**ura**[**ŋi**] 'lobster': Hiu (*ʀ̆ɔɣ*); Ltg (*rɔɣ*); Mtp *n-ɪɣ*; Vra *n/irɪ*; Vrs *ʊr*; Msn *ʊr*; Mta *ura*; Num *w/ʊr*; Drg *ʊr*; Kro *r͡ɛaŋ*; Olr *n/urɪŋ*; Lkn *uræŋ*; Mrl *n-͡ʊɵr*.

Although certain augmented protoforms are well represented throughout the area—see (49), (50), (53), (54)—the phenomenon seems to be concentrated toward the south of the area, especially in Gaua. The language that possesses the greatest number of augmented reflexes is no doubt Lakon, a deviant language in many respects. Table 5 lists a selection of modern Lakon forms, whether verbs or nouns, that show indirect traces of the paragogic vowel *-i; they are shown in contrast with languages from further north (such as Mwotlap, Mwesen, and Vurës) that reflect a plain form.

6.2 HISTORICAL MORPHOLOGY. In sum, the model of vowel hybridization that is developed here makes it possible to reconstruct the precise phonological shape of words in earlier historical stages. On some occasions, it even helps us retrieve the earlier presence of certain phonemes that have now disappeared from the modern languages. This powerful tool can be of great help when it comes to unraveling the history of their morphosyntax.

In this section I mention the major aspects of grammatical analysis that can benefit from this reconstruction of vowel change: first, the verbal morphology related to object-marking and valency; second, the nominal morphology related to possession.

6.2.1 Verbal morphology and the coding of arguments

6.2.1.1 Plural subject morphology in Lo-Toga. In Lo-Toga, several verbs show a different root according to the number of the subject. In some instances, the strategy used is pure suppletion, as in *met* ‘die:SG’ vs. *pəpʉn* ‘die:PL’. But in other cases, the stem alternation seems to amount historically to a derivational process: thus *tʉ* ‘stand:SG’ vs. *βɛrtʉr* ‘stand:PL’; *haɣ* ‘sit:SG’ vs. *βɛrhaɣir* ‘sit:PL’; *in* ‘lie:SG’ vs. *βɛrənəβ* ‘lie:PL’; *kərɛ* ‘cry:SG’ vs. *βɛrkari* ‘cry:PL’.

These plural verb roots, which have become opaque in synchrony, can be analyzed in the perspective of historical phonology. It appears that the modern irregularities, in fact, betray a perfectly regular morphological process in the protolanguage, combining prefixation and suffixation. On the one hand, the element *βɛr-* evidently reflects the POc prefix *paʀi- ‘unified or conjoined action by a plural subject’ (Pawley 1973:151). On the other hand, the quality of word-final vowels and the frequent presence of an extra consonant point toward a suffix *-i (table 6) in a way very similar to 6.1.3 above.[35]

In other words, and unlike Banks languages further south, Lo-Toga has clearly kept a trace of the POc circumfix *paʀi-…-i, which has been described as “combined or repeated action by a plurality of actors or affecting a plurality of entities” (Pawley 1973:152; see also

TABLE 5. TRACES OF A FORMER PARAGOGIC VOWEL *-i IN LAKON

‘cut, chop’	POc *taʀaq	*ˈtara >	Msn *tar*	*taˈra-i >	Lkn *tæræ*
‘carry on back’	POc *bebe	*ˈbebe >	Mtp *bɛm*	*beˈbe-i >	Lkn *pɪpɪ*
‘lie flat’	PNCV *tabʷa	*ˈtabʷa >	Mtp *tak͡pʷ*	*taˈbʷa-βi >	Lkn *tæk͡pʷæβ*
‘step on’	PNCV *βara-si	*ˈβara >	Mtp *βay*	*βaˈra-si >	Lkn *βæræh*
‘swallow’	POc *dolom	*ˈdolo >	Vrs *dʊl*	*doˈlo-mi >	Lkn *t͡ʃɪlɪm*
‘husk coconut’	POc *kojom	*ˈɣoso >	Mtp *ɣɔh*	*ɣoˈso-mi >	Lkn *ɣɪhɪm*
‘forage seafood’	POc *paŋoda	*βaˈŋoda >	Mtp *βɔŋɔn*	*βaŋoˈda-i >	Lkn *βaŋ͡tʃæ*
‘house’	POc *ʀumaq	*ˈyumʷa >	Msn *ɪŋ͡mʷ*	*yuˈmʷa-i >	Lkn *uŋ͡mʷæ*
‘blood’	POc *^{n}raʀaq	*ˈdara >	Mtp *day*	*daˈra-i >	Lkn *t͡ʃæræ*
‘earth, ground’	POc *tanoq	*ˈtano >	Msn *tan*	*taˈno-i >	Lkn *tanɪ*
‘green coconut’	PNCV *βusa	*ˈβusa >	Vrs *βʊs*	*βuˈsa-ɣi >	Lkn *βuhæɣ*

TABLE 6. TRACES OF A FORMER CIRCUMFIX *paʀi-…-i IN LO-TOGA

	SINGULAR SUBJECT			PLURAL SUBJECT		
‘stand’	tʉ	< *ˈtuu	< *tuqur	βɛrtʉr	< *βari-tuˈu-ri	< ***paʀi**-tuqur-**i**
‘sit’	haɣ	< *ˈsaɣe	< *sake	βɛrhaɣir	< *βari-saˈɣe-ri	< ***paʀi**-sake(r)-**i**
‘lie’	in	< *ˈeno	< *qenop	βɛrənəβ	< *βari-eˈno-βi	< ***paʀi**-qenop-**i**
‘cry’	kərɛ	< *gaˈrai	< *…	βɛrkari	< *βari-ˌgaraˈi-i	< ***paʀi**-…-**i**

35. The consonant that occurs before *-i normally reflects the original consonant of the etymon (e.g., /r/ in *tuqur, /β/ < *p in *qenop), but this is not always what happens. In many instances, whether with *-i or with *-aki(n) below, a consonant appears that was not present in the etymon (e.g., /r/ added to *sake…).

Bril 2005). Once again, the vowel hybridization model has proved capable of retrieving a morpheme even when it has disappeared as such from the modern languages.

6.2.1.2 Traces of the applicative *-aki(n). Another example is the well-known POC applicative suffix *-aki(n) 'remote-object'. Due to the phonetic erosion that took place in all the northern Vanuatu area, this suffix is often retained as a syllable of the type -C*aɣ* ~ -C*ɛɣ*, or even -C*ɛ* in some languages. These reflexes make it difficult to trace back the suffix, unless careful attention is paid to vowel hybridization.

For certain etyma, the suffix *-aki(n) appears in all the languages of the area. This is true for the verb 'breathe', which in other languages reflects PNCV *mabu-si (Clark, in prep.), but for this area is best reconstructed as °m$^{[w]}$ab$^{[w]}$u-saɣi:

(57) PNCV *mabu-si > °**m$^{[w]}$ab$^{[w]}$u-saɣi** 'breathe; take rest': LTG *məkʷhɛ*; LHI *mɔksæ*; LHR *mʷoŋsɛ*; MTP *ŋ͡mʷʊkhɛɣ*; LMG *møpsɛ*; VRA *mɔmsɛ*; VRS *mɛmsɛɣ*; MSN *mɔpsɛ*; MTA *ŋ͡mʷapsaɣ*; DRG *maːbsɪɣ*; KRO *mɛmsɛ͡aɣ*; OLR *mɪpsaː*; LKN *mahpæɣ*.

For other words, suffixed and unsuffixed forms are both found in my corpus. If we take the example of °roŋo[taɣi] 'hear' (POC *roŋoR), it appears that LTG, LHI, VRA, MTA, LKN, and MRL have maintained a semantic difference between the plain verb (LTG *rʊŋ* 'feel, hear s.t./s.o.') and the same verb suffixed with *-aki(n) (LTG *rʊŋtɛ* 'pay attention, listen to s.t./s.o.'). Other languages seem to have merged the two forms, generalizing either the plain form (HIU, DRG, OLR) or the suffixed one (VLW, MTP, VRS, MSN, NUM):

(58) POC *roŋoR > °**roŋo[taɣi]** 'hear, feel; listen to': HIU *ʀ̆ʊŋ*; LTG *rʊŋ* ~ <u>*rʊŋtɛ*</u>; LHI *yɛŋ* ~ <u>*yeŋtæ*</u>; VLW <u>*yɔŋtɛɣ*</u>; MTP <u>*yɔŋtɛɣ*</u>; VRA *rʊŋ* ~ <u>*rʊŋda*</u>; VRS <u>*rʊŋtɛɣ*</u>; MSN <u>*rɔŋtɛ*</u>; MTA *roŋo* ~ <u>*roŋotaɣ*</u>; NUM <u>*rɔŋɔtɛ*</u>; DRG *rɔŋ*; OLR *rɔŋ*; LKN *rɔŋ* ~ <u>*rɔŋtæɣ*</u>; MRL *rɔŋ* ~ <u>*rɔŋta*</u>.

It sometimes happens that a single language even possesses three reflexes for the same root: the plain verb, the verb suffixed with *-i, and the verb suffixed with *-aki(n): see (59) for Mwotlap. Yet no productive derivational process can relate these three forms in synchrony: they have become no more than an etymological triplet in the lexicon—in this case, a set of three distinct transitive verbs.

(59) An etymological triplet in Mwotlap:
°lamʷa(s) > *laŋ͡mʷ* 'beat s.t. (drum+) with a stick'
°lamʷas-i > *lɛŋ͡mʷɛh* 'beat s.o./s.t. with a flexible stick, whip'
°lamʷas-aɣi > *laŋ͡mʷhɛɣ* 'lash s.t. (a fishing line, a tail)'

To my knowledge, Mota and Lo-Toga are the only languages that still use the reflex of *-aki(n) as a productive device to turn a plain verb (usually intransitive) into a transitive verb: see table 7 for Lo-Toga.

6.2.1.3 The massive decline of object pronoun suffixes. Somehow related to these valency-changing suffixes is the destiny of object-indexing suffixes in these languages.

Originally, a set of personal enclitics served to encode the direct object on the verb. The forms that are reconstructed for POc (Evans 1995, cited by Lynch, Ross, and Crowley 2002:67) are *=au '1SG', *=ko '2SG', *=a '3SG', and *=ra '3 NON-SG'. This system is still alive in many conservative languages of Vanuatu, including Mota (Codrington 1885:266). These pronominal forms (among which *=au was lost) can be suffixed to verbs as well as verb-like prepositions:

(60) Object suffixes in Mota:
βus(i)-ko 'hit thee' *βusi-a* 'hit him/her' *βus(i)-ra* 'hit them' (cf. [#190])
nan(i)-ko 'from thee' *nani-a* 'from him/her' *nan(i)-ra* 'from them' (cf. [#42])

Like any other word-final syllable, object suffixes were altered during vowel hybridization. Modern Mwerlap still employs the post-hybridization reflexes of these four suffixes, or more precisely of their combination with the transitivizer *-i: thus *-ʊ* '1sg' < *-(i)ˈau; *-ɛ͡ak* '2sg' < *-ˈiko; *-ɛ͡a* '3sg' < *-ˈia; *-ɛ͡ar* '3pl' < *-ˈira. They can be suffixed on transitive verbs and on verb-like prepositions as well:

(61) Object suffixes in Mwerlap:
*rɔŋ-**ʊ*** 'hear me' *rɔŋ-**ɛ͡ak*** 'hear thee' *rɔŋ-**ɛ͡a*** 'hear him/her' *rɔŋ-**ɛ͡ar*** 'hear them'
*sʉr-**ʊ*** 'for me' *sʉr-**ɛ͡ak*** 'for thee' *sʉr-**ɛ͡a*** 'for him/her' *sʉr-**ɛ͡ar*** 'for them'

The verb (or preposition) appears unsuffixed with NPs: *rɔŋ nɘ-liŋɔ-k* 'heard my voice'. This is also the way objects are encoded for other persons, by means of an independent pronoun: *rɔŋ ɣɛ͡an* 'heard us'.

In fact, the effects of vowel hybridization in Mwerlap were not limited to the object suffixes themselves, but were even able to affect considerably the shape of certain verb roots. As a result, Mwerlap has developed an unusually complex system of morphological alternations between different stems that can be compared to a system of verb conjugations. Thus the verb 'bite' appears under three allomorphs: *ɣ**ɛ**t* (< *ˈɣat-i < POc *kaʀat-i) for direct constructions; *ɣ**ɘ**t-* for 1SG suffix (*ɣɘt-ʊ* < *ɣat-ˈau); *ɣ**a**t-* for other suffixed forms (e.g., *ɣat-ɛ͡ak* < *ɣat-ˈiko). The same kind of stem alternation is attested with certain prepositions (e.g., [#42] °dani):

(62) Object suffixes and allomorphic alternations in Mwerlap:
*ɣ**ɘ**t-ʊ* 'bite me' *ɣ**a**t-ɛ͡ak* 'bite thee' *ɣ**a**t-ɛ͡a* 'bite him/her' *ɣ**ɛ**t kɛmi* 'bite you'
*n**ɘ**n-ʊ* 'from me' *n**a**n-ɛ͡ak* 'from thee' *n**a**n-ɛ͡a* 'from him/her' *n**ɛ**n kɛmi* 'from you'

From a cognitive point of view, these morphological alternations evidently tend to be perceived as burdensome, and indeed they prove to be unstable over time. This observation is suggested by the strong tendency, which can be observed in the field, to eliminate these irregularities in favor of more transparent strategies. In the four languages that have kept object suffixes alive (Hiu, Lo-Toga, Mota, Mwerlap), this

TABLE 7. TRACES OF THE APPLICATIVE SUFFIX *-aki(n) IN LO-TOGA

PLAIN VERB			VERB SUFFIXED WITH *-aki(n)		
'go'	βen	< *pano	'go with, take away'	βen-ɣɛ	< *pano + -aki(n)
'return'	ŋʷulə	< *mule	'return with, bring back'	ŋʷulə-βɛ	< *mule + -aki(n)
'stay'	tɔɣə	< *toka	'stay with'	tɔɣə-βɛ	< *toka + -aki(n)

push toward functional simplification and formal transparency takes the form of alternate patterns for coding objects that manage to bypass morphological variation.

For example, the inherited stems for the verb 'lie, deceive' (PNCV *kale) are *ɣɵlɣɵl* with 1SG *-ʊ*, and *ɣɛlɣɛl* otherwise. Similarly, the verb 'watch' alternates between *mɵtɵn-*, *matan-,* and *mata*:

(63) Object suffixes and allomorphic alternations in Mwerlap:

ɣɵlɣɵl-ʊ 'deceive me'	*ɣɛlɣɛl-ɛ͡ak* 'deceive thee'…	*ɣɛlɣɛl kɛmi* 'deceive you'
mɵtɵn-ʊ 'watch me'	*matan-ɛ͡ak* 'watch thee'…	*mata kɛmi* 'watch you'

Younger speakers and adults in situations of lax speech resort to avoidance strategies that allow the use of an invariant root for each verb. This has an obvious cognitive advantage: namely, that whatever the nature of their object, all verb roots become invariant again—that is, easier to memorize and process. One strategy, attested with the verb 'deceive', consists in combining the default form (*ɣɛlɣɛl*) with the independent, heavy form of all personal pronouns. Another strategy, illustrated here with 'watch', resorts to a peripheral construction, using the oblique preposition *ɣin*:

(63') Alternate strategies for coding objects in Mwerlap:

ɣɛlɣɛl inɔ 'deceive me'	*ɣɛlɣɛl inɛ͡ak* 'deceive thee'	*ɣɛlɣɛl kɛmi* 'deceive you'
mata ɣin-ʊ 'watch me'	*mata ɣin-ɛ͡ak* 'watch thee'	*mata ɣin kɛmi* 'watch you'

The same simplifying tendency can be currently observed in Hiu, Lo-Toga, and Mota. Everywhere, object suffixes are in declining use, and are being slowly replaced by free invariant pronouns and/or with oblique structures.

Remarkably, this evolution has even come to its extreme in the 13 remaining languages of the Banks and Torres, which have now simply lost all traces of all object suffixes, whether on verbs or prepositions. For example, the translation of (62) in Mwesen would be:

(62') The generalization of free pronouns for object marking (Mwesen):

ɣar nɔ 'bite me'	*ɣar nɪk* 'bite thee'	*ɣar nɪ* 'bite him/her'	*ɣar kimi* 'bite you'
nɛn nɔ 'from me'	*nɛn nɪk* 'from thee'	*nɛn nɪ* 'from him/her'	*nɛn kimi* 'from you'

Even if the use of independent pronouns for object cross-referencing was probably already a tendency in earlier stages of the protolanguage, it is most likely that its generalization to all persons was accelerated by the drastic effects of vowel hybridization upon verbal morphology.

6.2.2 Nominal morphology and the coding of possessors. The last important domain where the history of vowels plays an important role is the morphology of possession.[36]

6.2.2.1 Emergence of stem alternations. Originally, the marking of inalienable possession involved the combination of a fixed root with a set of personal suffixes:

(64) POc: 'my eyes' *na mata-gu 'his/her eyes' *na mata-ña

The double phenomenon of vowel reduction and vowel hybridization deleted the final vowel of the suffix and regularly modified the penultimate vowel, usually rais-

36. Also related to this domain is the proposed reconstruction of (#89) °m[aɣ]u-, the general possessive classifier in most languages of the area.

ing it in the case of 1SG *-gu and lowering it in the case of 3SG *-ña. This situation is witnessed, for example, in Mwotlap:

(65) Possessive suffixes and allomorphic alternations in Mwotlap:
‘my eyes’ *na-mt**ɛ**-k* ‘his/her eyes’ *na-mt**a**-n*

This historical process had the following consequence. In most languages of the Torres and Banks Islands, inalienable nouns present two distinct allomorphs, one ending with a vowel higher than the other. Each language normally presents five pairs of such reflexes, corresponding to the five possible (root-final) vowels of the original etymon, and to their hybridization with posttonic *u and *a. For example, all etyma ending in *o are reflected in Mwotlap by a pair of stems, one ending in /ɪ/ (< *o…u), the other in /ɔ/ (< *o…a): for example, POc *lipon ‘teeth’ → *nɪ-lw**ɪ**-k* : *nɪ-lw**ɔ**-n*; POc *nakon ‘face’ → *na-nɣ**ɪ**-k* : *na-nɣ**ɔ**-n*; POc *laso ‘testicles’ → *na-hl**ɪ**-k* : *na-hl**ɔ**-n*.

One could draw a parallel with the process of transphonologization defined in 3.2, and speak here of a process of “transmorphologization.” That is, what was historically a difference of vowel on the possessive suffixes has become a rule of stem alternation affecting the noun roots themselves. Interestingly, this pattern of evolution is paralleled in several Micronesian languages, in which vowel changes have resulted in the emergence of similar inflectional morphology—see Goodenough (1992:101) for Chuukese, Lee (1975:62–73) for Kosraean, Rehg (1981:166–78) for Ponapean. New Caledonia is another area where such metaphony-induced inflections are common, such as in Iaai (Ozanne-Rivierre 1976:96–105) or Cèmuhî (Rivierre 1980:83).

In several languages—Volow, Vurës, Mwesen, Mwerlap, for example—the alternation actually involves not just a change in one vowel, but affects the phonetic shape of the whole word. Table 8 shows five such pairs of forms in Vurës. The final vowels found on the noun stems, namely {i ɪ œ ø ü} for the 1SG and {ɪ i͡a a ɔ ʊ} for the 3SG, correspond rigorously to the hybridization of the five protovowels {*i e a o u} with, respectively, posttonic *u and *a (see the chart of Vurës in appendix 1). Furthermore, due to the total or partial assimilation of the pretonic to the stressed vowel (5.2.4), it looks as if the features [±higher] and [±back] had diffused across syllable boundaries. This recalls the way features spread across the word in languages with vowel harmony.[37]

TABLE 8. MORPHOLOGY OF POSSESSION: STEM ALTERNATIONS IN VURËS

	MEANING	ETYMON	1 SG STEM	3 SG STEM
*i	‘arm/hand’	POc *banic ‘wing’	bɪni-k	banɪ-n
*e	‘thigh’	(#176) °βage	βɪkɪ-k	βiki͡a-n
*a	‘belly’	POc *tobʷa	tœk͡pʷœ-k	tak͡pʷa-n
*o	‘face’	POc *nakon	nøɣø-k	nɔɣɔ-n
*u	‘head’	POc *bʷatu	k͡pʷøtü-k	k͡pʷʊtʊ-n

37. And indeed, Mwotlap can be said to have developed a genuine case of ATR vowel harmony, directly resulting from these stem alternations: e.g., *iplu-k* ‘my friend’ (< *i βaˈlu-gu, cf. PAN *baliw) vs. *ɪplʊ-n* ‘his friend’ (< *i βaˈlu-na). See François (2001:95; 2005).

In most languages, the two stems thus created are also used with other persons in such a way that each alienable noun alternates between two allomorphs. For example, Mwotlap presents complex rules of combination for stem 1 and stem 2 with the different possessive suffixes or other kinds of possessors (François 2001:468–75; 2005). Basically, stem 1 is found on 1SG and 2SG as well as with [–human] possessors (e.g., *na-mtɛ baɣɔ* 'shark's eyes') and stem 2 is used for 3SG and most nonsingular forms (e.g., *na-mt**a**-mʊyʊ* 'the eyes of you-DU').

6.2.2.2 Tracing back 2SG possessive suffixes. The model of vowel hybridization proves indispensable when it comes to understanding the history of the 2SG possessive suffix. Among the 17 languages of northern Vanuatu, only three have preserved the *-mu suffix of POc: Lemerig, Vera'a, and Mwesen. They combine a suffix *-m* with a noun stem that reflects a posttonic vowel /u/, the same as for 1SG: e.g., MSN *tɔmɔ-k* 'my father', *tɔmɔ-m* 'thy father' (< *tama-**mu**), *tama-n* 'his/her father'.[38]

Four other languages, namely Hiu, Lo-Toga, Volow, and Mwotlap, encode their 2SG possessor in the form of a -Ø suffix. The modern stem-final vowel regularly points to a former posttonic vowel /u/: for example, MTP *na-nɣɪ-k* 'my face', *na-nɣɪ* 'thy face', *na-nɣɔ-n* 'his/her face'. In other words, these four languages reflect a truncated variant of the 2SG possessive suffix, a form *-u with no consonant: *na-nɣɪ* < *na naɣo-**u**.

But the majority of northern Vanuatu languages (namely LHI, VRS, NUM, DRG, KRO, OLR, LKN, and MRL) show an even less expected 2SG suffix /-ŋ/. Crucially, in all of these languages, the stem that combines with this /-ŋ/ suffix is not stem 1 used with 1SG /-k/, but stem 2 used with 3SG /-n/. Table 9 illustrates this for Dorig.

Are we going to reconstruct a protosuffix *-ŋa? Such a form would be hard to explain historically. The solution to the problem is given by Mota, where the 2SG suffix has the form /-ŋ͡mʷa/, e.g., *naɣo-ŋ͡mʷa* 'thy face'. This form /-ŋ͡mʷa/, which is also witnessed in other Vanuatu languages in the form /-mʷa/ or /-ŋʷa/ (Clark 1985:207), is an irregular reflex of the original suffix *-mu (Pawley 1972:113). The labial consonant in *-mu went through a first stage of labiovelarization, while its vowel was dissimilated into /a/ (*-mu > *-mʷa > *-ŋ͡mʷa). With the exception of Mota, which has preserved final /a/ until today, the process of vowel reduction in all other languages resulted in the labiovelar consonant forming the end of the word. Eventually, the labial element in this final consonant got lost, resulting in a plain velar (*-ŋ͡mʷ# > *-ŋ*)—a sound change

TABLE 9. MORPHOLOGY OF POSSESSION: THE 2SG SUFFIX IN DORIG

	MEANING	ETYMON	1 SG	2 SG	3 SG
*i	'shoulder'	POc *banic 'wing'	bni-k	bnɪ-ŋ	bnɪ-n
*e	'thigh'	(#176) °βage	βkɪ-k	βkɛ-ŋ	βkɛ-n
*a	'belly'	POc *tobʷa	tk͡pʷaː-k	tk͡pʷa-ŋ	tk͡pʷa-n
*o	'face'	POc *nakon	nɣʊ-k	nɣɔ-ŋ	nɣɔ-n
*u	'head'	POc *bʷatu	k͡pʷtu-k	k͡pʷtʊ-ŋ	k͡pʷtʊ-n

38. Apart from these three languages, Hiu, Volow, and Mwotlap show a vestigial suffix *-mu in the irregular inflection of their possessive classifiers: e.g., VLW *n-ɣɔ-m* < *na ka-mu 'thy X (food classifier)'.

common in the area.[39] The path I propose to reconstruct here would thus be as follows: POc *nako-mu >*naɣo-ŋ͡mʷa > *nɣɔ-ŋ͡mʷ > DRG *nɣɔ-ŋ*.

6.2.2.3 Retrieving lost morphemes. Certain languages present an even greater complexity, as they use not two but three or even four sets of allomorphs, depending on the morphological and syntactic context. For example, besides the two stems *mœtœ-* and *mata-* for 'eye', Vurës requires a third stem *mɛtɛ* in two cases. One is the combination with a construct suffix *-n* introducing an overt human NP (compare *na mata-n* 'his eyes' with *na mɛtɛ-n i Wemal* 'Wemal's eyes'); incidentally, this "overt human NP" also includes all nonsingular independent personal pronouns: *na mɛtɛ-n kʊmʊrʊŋ* [lit. 'the eyes of you-DU'] 'your eyes'. The second context is when the possessor is an overt nonhuman (and generally nonspecific) NP, in which case this stem 3 is constructed directly: *mɛtɛ bʊɣʊ* 'shark's eyes'.

Thanks to what we now know of vowel hybridization in Vurës, it becomes possible to formulate a hypothesis on the origin of this third stem (François 2001:494–508). While *mata-n* comes from 3SG *mata-ña, *mɛtɛ-n* is the regular reflex of a form *mata-ni. This suggests that Vurës has transmorphologized onto the noun root an earlier contrast between two suffixes: *-na '3SG possessor' (< POc *-ña) and a genitive suffix of the form *-ni. This hypothesis is supported by other languages of Vanuatu such as Araki (François 2002:97) and Northeast Ambae (Hyslop 2001:167), which make use of a suffix *-ni in exactly the same conditions as Vurës—namely the introduction of [+specific] [+human] NP possessors with inalienable nouns.[40] Furthermore, the contrast between *-ña '3SG possessor' and *-ni 'construct suffix' is explicitly set forth by Dyen (1949:422) to account for similar pairs in modern Chuukese: *masa-n* 'his eye' < *mata-ña vs. *mese-n* 'eye of' < *mata-ni.

As for the unsuffixed form VRS *mɛtɛ*, it necessarily proceeds from the hybridization of a premodern form *mata-i. In all likelihood, this corresponds to POc *qi, indeed a possessive linker used between inalienable nouns and [–specific] possessors (Hooper 1985, Ross 2001): thus VRS *mɛtɛ bʊɣʊ* < *maˈta-i baɣoa < POc *mata qi bakewa. As table 10 shows, when inalienable nouns are followed in Vurës by a nonspecific nonhuman possessor, their final vowels are {i ɪ ɛ ø ü}. Once again, this matches exactly the hybridization of the five original vowels {*i e a o u} with a posttonic *i. In other words, POc *qi is no longer reflected as a segmental suffix: it only survives in the subtle, hidden form of a raised vowel on the possessed noun.

Other languages of the Banks also provide evidence for the same conclusion. For example, Mwotlap would translate 'shark's eyes' as *na-mtɛ baɣɔ* < *na maˈta=qi bakewa. This is worthy of mention, because the same *qi has been wrongly attributed by Ross

39. Total delabialization of syllable-ending labiovelars is well attested across the area: e.g., see the reflexes under (#103), (#104), (#137), (#141). In two languages, Lehali and Mwerlap, it is even the rule. This is how certain consonants that were originally plain labials eventually became plain velars, via a labiovelar stage: e.g., POc *ʀumaq 'house' > PNCV *yumʷa > *iŋ͡mʷa > LHI ***eŋ*** ~ MRL ***ɛaŋ***; POc *qumun 'stone oven' > *uŋ͡mʷu > LHI *n-u**ŋ***; PNCV *damu 'yam' > *daŋ͡mʷu > LHI *dɔ**ŋ***; POc *quma 'clear land for garden' > *uŋ͡mʷa > MRL *n-ʊɵ**ŋ*** 'garden'; PNCV *tabʷa 'lie flat' > *tak͡pʷa > LHI/MRL *ta**k***; POc *karabʷa 'new' > *ɣarak͡pʷa > MRL *ɣara**k***.

40. A morpheme *ni has been reconstructed with a different function for POc (Hooper 1985, Ross 1998); namely, the introduction of [–specific] [–human] possessors with alienable nouns.

(2001) to another morpheme of Mwotlap:[41] the suffix *-ɣɛ,* which is used, among other things, to encode the generic human possessor of an inalienable noun (François 2001:527–39), e.g., *na-mtɛ-ɣɛ* 'the (human) eye'. In fact, the history of Mwotlap vowels now makes it clear that *-ɣɛ* can reflect neither *qi nor *ki, and is more certainly the reflex of a disyllable: POc *kai 'native, inhabitant of a place, person' (Pawley 1976).[42] Ironically, *qi is not totally absent from a form like *na-mtɛ-ɣɛ*, because the latter should be reconstructed as *na maˈta=qi ˈkai, lit. 'the eye of a (nonspecific) person'—which is exactly parallel to *na-mtɛ baɣɔ* 'the eye of a (nonspecific) shark'.

6.2.2.4 Reacting against morphological complexity. The historical process of vowel hybridization constitutes the direct source for these stem alternations, and for the intricate morphology of possession that is characteristic of the whole linguistic area. One language, namely Mwerlap, even shows allomorphic alternations both in the domain of inalienable possession and in the morphology of object marking. The parallel between the two patterns is striking:

(66) Allomorphic alternations in (a) verbs and (b) nouns, in Mwerlap:

(a)	*ɣɵt-ʊ* 'bite me'	***ɣat**-ɛa͡* 'bite him/her'	***ɣɛt** kɛmi* 'bite you'
(b)	*nɵ-kʷ**ɵtʉ**-k* 'my head'	*na-kʷ**at**ʊ-n* 'his/her head'	*nɛ-kʷ**ɛt** kɛmi* 'your heads'

Although it is still well represented throughout the northern Vanuatu area, this sort of vestigial morphology is, again, structurally unstable. The functional pressure toward morphological transparency later triggered the four languages Lo-Toga, Vera'a, Nume, and Lakon to react against this emergent complexity. They have suppressed the alternation between stems by generalizing one allomorph for all persons: for example, LTG *mət**e**-k* 'my eyes', *mət**e**-nə* 'his/her eyes', *mət**e**-n Wɛmal* 'Wemal's

TABLE 10. TRACES OF POC *qi ON INALIENABLE NOUNS IN VURËS

	MEANING	VURËS	PRE-VURËS	POC
*i	'pig's bone'	sir**i** k͡pʷʊ	< *suˈri-i bʷoe	< *suRi qi boRok
*e	'pig's feces'	ti**ɪ** k͡pʷʊ	< *taˈe-i bʷoe	< *taqe qi boRok
*a	'pig's belly'	tɛk͡pʷ**ɛ** k͡pʷʊ	< *toˈbʷa-i bʷoe	< *tobʷa qi boRok
*o	'pig's tusk'	lüw**ø** k͡pʷʊ	< *liˈβo-i bʷoe	< *lipo(n) qi boRok
*u	'pig's head'	k͡pʷøt**ü** k͡pʷʊ	< *bʷaˈtu-i bʷoe	< *bʷatu qi boRok

41. More precisely, Ross (2001:274) claims that *-ɣɛ* results from a merger of POc *ki 'free-form derivative suffix' and *qi 'nonspecific inalienable possessive marker', and explains this merger saying "*qi has no productive reflexes in Mwotlap." In fact, Mwotlap possesses reflexes of both *qi and *ki, neither of which is *-ɣɛ*. Ross's *ki seems to have a phonetically regular reflex in the form of an anaphoric suffix *-ɣi* in several Banks languages. The latter combines with inalienable nouns, with different but related meanings: MSN/LMG *-ɣi* 'nonhuman possessor suffix'; VRA *-ɣi* '3SG possessor suffix'; MTP *-ɣi* 'anaphoric suffix' (François 2001:334). As for the personal article *i, mentioned by Hooper (1985) and Ross (2001) in their discussion of *qi, it is also reflected in northern Vanuatu languages: see François (forthcoming).

42. The same etymon *kai is found in several Banks languages, including Mwotlap, as part of the marker for human nonsingular articles (François forthcoming): e.g., MTP *ɣɔ-ɣɛ ta͡ŋmʷan* 'the two men' < *rua kai tamʷane (contra Ross 2001:269). In both instances, *kai can be said to have specialized from a lexical meaning 'inhabitant, person' to a grammatical function, coding for a human referent in general (cf. French *on* < Lat. *homo*).

eyes', *məte pəɣɛwə* 'shark's eyes'. Due to this process of morphological realignment, the vowels in most of these forms are historically irregular. Indeed, the expected Lo-Toga reflexes of *mata-gu, *mata-ni, and *mata-qi (respectively ***mətɔ-k*, ***mətɛ-n*, ***mətɛ*) have gone through a process of analogical leveling based on a unique stem *məte-*. The latter proceeds from the segmentation of *məte-nə*, itself the perfectly regular outcome of 3SG *mata-ña.

In sum, the origins of the various possessive suffixes attested today in the modern languages of northern Vanuatu can only be understood properly provided precise vowel correspondences are taken into account. This patient work of reconstruction helps lift the veil of their morphological intricacies, and brings to light their profound continuity with the grammar of their Proto-Oceanic ancestor.

7. CONCLUSION. As the final part of this study has shown, the double process of vowel reduction and vowel hybridization is not merely a matter of phonology. The understanding of this massive phenomenon is also a prerequisite for whomever may want to unravel the often complex morphology of the Banks and Torres languages, and track the history of their syntax. Yet, if one were to analyze in any detail all the grammatical aspects of these languages to which the vowel hybridization model provides the key, much more than one paper would be necessary.

APPENDICES

Appendix 1. Charts of Regular Vowel Correspondences

The following tables present the regular vowel correspondences I have been able to establish for the 17 languages of my corpus. These charts of regular vowel correspondences are introduced in more detail in 2.3.

For each sequence of protovowels $*V_1(C)V_2$, the stressed vowel $*V_1$ is represented in rows, while the posttonic vowel $*V_2$ appears in columns. Most of the time, posttonic $*V_2$ disappears altogether from the modern forms, following a pattern $\{*V_1(C)V_2 > V'(C)\}$—for example, *kani > *ɣæn*. In this case, one can consider that V_1 and V_2 regularly hybridized into a single vowel V', and this appears in the corresponding box: for example, in Lehali, the sequence *a(C)i regularly hybridized into /æ/.

In four languages (Hiu, Lo-Toga, Vera'a, Mota), the sequence $*V_1(C)V_2$ is sometimes reflected by another sequence of syllables $\{*V_1(C)V_2 > *V'(C)V_f\}$. In this case, the (optional) consonant slot between *V' and $*V_f$ is indicated by an empty underscore "_". For example, in Hiu, *u(C)o regularly hybridized into *ɵ(C)ə. In all other languages, this optional consonant slot is not indicated, because it systematically follows the modern vowel.

When there is more than one regular reflex for a given combination of vowels, these are indicated in the same box (either in two different lines, or separated by '||'). In those cases where a sequence of two adjacent vowels $*V_1V_2$ did not hybridize in the same way as a sequence $*V_1CV_2$, this is indicated by angled brackets: for example, in Vurës, a sequence *eCa hybridized into /i͡a/, whereas *ea became /ɪ/ (see 4.2).

HIU

Hɪᴜ	*…i	*…e	*…a	*…o	*…u
*i…	i_	i_ə	i_ə e_ə	i_ə	i_
*e…	e_	e_	e_ə	e_	e_
*a…	ɔ_ e_	a_ e_	a_ə ɔ_ə	a_ e_	ɔ_
*o…	ɵ_	o_	ɔ_ə	o_	ɵ_
*u…	ʉ_ i_	ʉ_ə	ʉ_ə ɵ_ə	ɵ_ə	ʉ_ i_

LO-TOGA

Lᴛɢ	*…i	*…e	*…a	*…o	*…u
*i…	i_	i_ə	i_ə e_ə	i_ə	i_
*e…	e_	i_	e_ə (i)ɛ_ə	i_ ɛ_	e_
*a…	(i)ɛ_	(i)a_ e_	(i)e_ə (i)a_ə ɔ_ə	a_ e_	ɔ_ ɛ_
*o…	(o)ə_	o_	(o)ɔ_ə	o_	ə_
*u…	ʉ_	ʉ_ə	ə_ə ʉ_ə	ə_ə	ʉ_ i_

LEHALI

Lʜɪ	*…i	*…e	*…a	*…o	*…u
*i…	i	e	e	e	i
*e…	e	ɛ	æ	ɛ	e
*a…	æ	a	a	a	ɔ
*o…	o	ɔ	ɔ	ɔ ‖ ɛ	e
*u…	u	o	o	o	u

LEHALURUP

Lʜʀ	*…i	*…e	*…a	*…o	*…u
*i…	i	?	i͡e	i͡e	?
*e…	e	ɛ	ɛ	ɛ	e
*a…	ɛ	a	a	a	ɛ ‖ œ
*o…	o	ɔ	ɔ	ɔ	œ
*u…	u ‖ i	o	o	o	u ‖ i

VOLOW

Vʟᴡ	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	ɛ ‖ ɪ	a	a	a	ɛ
*o…	ʊ ‖ ɪ	ɔ	ɔ	ɔ	ʊ ‖ ɪ
*u…	u ‖ i	ʊ	ʊ	ʊ	u ‖ i

MWOTLAP

Mᴛᴘ	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	ɛ ‖ ɪ†	a	a ‖ ɔ	a	ɛ ‖ ɪ†
*o…	ʊ ‖ ɪ	ɔ	ɔ	ɔ	ʊ ‖ ɪ
*u…	u ‖ i	ʊ	ʊ	ʊ	u ‖ i

† For *a…i and *a…u, the two reflexes /ɪ/ are only found in word-internal syllables: see 5.1.2.1.

LEMERIG

Lᴍɢ	*…i	*…e	*…a	*…o	*…u
*i…	i	a	a ‖ ⟨ɪ⟩	a	i
*e…	ɪ	ɛ	a	ɛ	ɪ
*a…	ɛ ‖ œ	a	a ‖ ɒ	a	ɛ ‖ œ
*o…	ø	ɔ	ɔ	ɔ ‖ œ	ø
*u…	u	ʊ	ʊ	ʊ	u

VERA'A

Vʀᴀ	*…i	*…e	*…a	*…o	*…u
*i…	i_	i_ɪ	i_ɪ	i_ɪ	i_
*e…	ɪ_	ɪ_	ɛ_ɛ ⟨iɛ⟩	ɪ_	ɪ_
*a…	a_ ɛ_	a_ ⟨iɛ⟩	a_a	a_	a_ ɛ_ ɔ_
*o…	ʊ_	ʊ_	ɔ_ɔ ⟨uɔ⟩	ʊ_	ʊ_
*u…	i_ u_	u_ʊ	u_ʊ	u_ʊ	i_ u_

VURËS

Vrs	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɪ	i͡a ‖ ⟨ɪ⟩	ɪ	ɪ
*a…	ɛ ‖ œ	i͡a ‖ ⟨ɪ⟩	a	a	ɛ ‖ œ
*o…	ø	ʊ	ɔ	ʊ	ø
*u…	ü	ʊ	ʊ	ʊ	ü

MWESEN

Msn	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	ɛ	a	a	a	ɔ
*o…	ʊ	ɔ	ɔ	ɔ	ʊ
*u…	u	ʊ	ʊ	ʊ	u

MOTA

Mta	*…i	*…e	*…a	*…o	*…u
*i…	i_	(i)_e	(i)_a	(i)_o	i_
*e…	e_	e_e	e_a	e_o	e_
*a…	a_	a_e	a_a	a_o	a_
*o…	o_	o_e	o_a	o_o	o_
*u…	u_	(u)_e	(u)_a	(u)_o	u_

NUME

Num	*…i	*…e	*…a	*…o	*…u
*i…	i	i	i ‖ ɪ	i	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	a ‖ ɛ	a ‖ ɛ	a	a	a
*o…	ʊ	ɔ	ɔ	ɔ	ʊ
*u…	u	u	u ‖ ʊ		u

DORIG

Drg	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	aː ⟨a⟩	a	a	a	aː ⟨a⟩
*o…	ʊ	ɔ	ɔ	ɔ	ʊ
*u…	u	ʊ	ʊ	ʊ	u

KORO

Kro	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	ɛ͡a ⟨a⟩	a	a	a	ɛ͡a ⟨a⟩
*o…	ʊ	ɔ	ɔ	ɔ	ʊ
*u…	u	ʊ	ʊ	ʊ	u

OLRAT

Olr	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	a ‖ ɪ	a	a	a	a
*o…	ʊ ‖ ɪ	ɔ	ɔ	ɔ	ʊ ‖ ɪ
*u…	u	ʊ	ʊ	ʊ	u

LAKON

Lkn	*…i	*…e	*…a	*…o	*…u
*i…	i	ɪ	ɪ	ɪ	i
*e…	ɪ	ɛ	ɛ	ɛ	ɪ
*a…	æ	æ	a	a	a
*o…	ɪ	ɔ	ɔ	ɔ	ɪ
*u…	u	ʊ	ʊ	ʊ	u

MWERLAP

Mrl	*…i	*…e	*…a	*…o	*…u
*i…	i	ɛ͡a	ɛ͡a	ɛ͡a	i
*e…	ɪ	ɪ	ɪ	ɪ	ɪ
*a…	ɛ ‖ ɛ͡a ⟨ɪ⟩	ɛ	a	a	ɔ ‖ ɔ͡ɞ ⟨ʊ⟩
*o…	ʊ ‖ ɵ	œ	ɔ	ɔ	ʊ͡ɵ ‖ ʊ
*u…	ʉ	ʊ	ʊ	ʊ	ʉ

SAKAO†

Sak	*…i	*…e	*…a	*…o	*…u
*i…	ü	œ ‖ ⟨i⟩	œ ‖ ⟨i⟩	œ ‖ ⟨i⟩	ü
*e…	œ ‖ ⟨e⟩	ɒ	ɒ	ɒ	œ ‖ ⟨e⟩
*a…	ɛ	a	a	a	ɛ
*o…	œ ‖ ⟨ø⟩	ɔ	ɔ	ɔ	œ ‖ ⟨ø⟩
*u…	ü	œ ‖ ⟨u⟩	œ ‖ ⟨u⟩	œ ‖ ⟨u⟩	ü

† In order to help the reader compare Sakao (see 3.4) with northern Vanuatu languages, I reproduce here (as the 18th chart) the correspondences outlined in Guy (1977).

Appendix 2. A selection of northern Vanuatu reconstructions

Thanks to the vowel correspondences set out in appendix 1, it is possible to reconstruct lexical items in the premodern stages of the attested languages, that is, to calculate their form before the processes of vowel reduction and vowel hybridization. The reconstructions below constitute a selection of such premodern forms taken from the shared lexicon of northern Vanuatu languages. For more details, the reader is referred to the explanations in section 6.1.

Each premodern reconstruction is cited together with its reflexes when they are known, and when indeed they are cognate. I have selected only those lexical items that are shared by at least five languages of the Torres and Banks area, eliminating many items that belong to smaller linguistic areas. Even under such a condition, the list is by no means comprehensive, and represents no more than an arbitrary selection, based on frequency or linguistic significance. I generally avoid protoforms that can be easily linked to an already well-established POc or PNCV reconstruction (they appeared in sections 1 through 5), and prefer to list here words that were developed particularly in northern Vanuatu. By so doing, I do not claim that these etyma are found exclusively in the Torres and Banks Islands—in fact, Tryon (1976) and Clark (in prep.) often show evidence of cognate forms further south—but that either a phonetic or a semantic peculiarity, or simply their importance in the vocabulary, make them worthy of mention here. It is likely that other cognate forms will be found in other languages of the Pacific.

All reconstructions are invariably stressed on their penultimate: e.g., °*taˌmaraˈɣai*. In general, the consonant inventory used for these premodern northern Vanuatu forms matches that of POc, with a few differences: POc *p > °*β*; POc *k > °*ɣ*; POc *ⁿr > °*ⁿd*; POc *j > °*s*; POc *R > °*r*; POc *q > Ø. All voiced stops must be understood as prenasalized (see fn. 6). Whenever useful, I use numbered tags in order to select, for each modern form, either one out of several reconstructed protoforms (as in #55 or #86), or one out of several meanings (as in #111 or #151).

(#1) °**abena** 'instrumental anaphoric (with it); inanimate oblique anaphoric (at/about… it); Existential predicate' [< PNCV *abe-na 'his/her/its body' (?)]: LHI *pæn*; VLW *bɛn*; LMG *pan*; VRA *bɛnɛ*; MSN *pɛn*; MTA *apena*; NUM *abɛnɛ*; MRL *bɪn*.

(#2) °**aia** 'locative anaphoric (there); inanimate oblique anaphoric (at/about… it); Existential predicate': HIU *iə*; LTG *ɪ*; MTP *aɪ*; VRA *aɪ*; VRS *aɪ*; MTA *aia*; DRG *aɪ*; KRO *iɪ*; OLR *iɪ*; LKN (*ɪhɪ*).

(#3) °**alasi** '*Semecarpus vitiensis*': MTP *nɛ-lɛh*; VRA *lɛs*; VRS *lɛs*; MTA *las*; DRG *walaːs*; LKN *ælæh*.

(#4) °**aliŋa-gu** 'my voice' [POc *qaliŋa-]: HIU (*nə*) *yŋɔ-k*; LTG (*nə*) *lŋe-k*; MTP *na-lŋɛ-k*; VRA *n/ɛlŋɔ-k*; VRS *ɛlŋœ-k*; MSN *ɛlŋɔ-k*; MTA *lŋa-k*; NUM *na-lŋa-k*; DRG *lŋaː-k*; OLR *lɪŋɪ-k*; LKN *ɛlŋa-k*; MRL *nɵ-liŋɔ-k*.

(#5) °**aloa** 'sun': LTG *elo*; VLW *n-lɔ*; MTP *na-lɔ*; VRA *luɔ*; VRS *lɔ*; MSN *lɔ*; MTA *loa*; NUM *w/alɔ*; DRG *lɔ*; OLR *lɔ*; LKN *alɔ*; MRL *n-alɔ*.

(#6) °**arasu** 'far, remote': LHR *yœs*; VLW *yɛh*; MTP *yɛh*; VRS *arœs*; MSN *arɔs*; MTA *aras*; NUM *aras*; DRG *araːs*; KRO *ar͡ɛas*; OLR *ras*; LKN *rah*.

(#7) °**asi** 'song': LTG *ɛh*; LHI *n-æh*; VLW *n-ɪh*; MTP *n-ɛh*; LMG *n-ɛs*; VRA *n/ɛs*; VRS *œs*; MSN *ɛs*; MTA *as*; NUM *w/ɛs*; DRG *aːs*; KRO *͡ɛas*; OLR *n/ɪs*; LKN *æhæh*; MRL *n-ɛs*.

(#8) °**awua** ~ °**auwa** 'turtle' [PNCV *ʔaβua]: LTG *eɣoə*; LHI *ow*; MTP *na-ʊ*; LMG *n-ʊw*; VRA *n/uwʊ*; VRS *ʊw*; MSN *ʊw*; MTA *uwa*; NUM *w/ʊw*; DRG *ʊw*; KRO *ʊw*; OLR *n/ʊw*; LKN *aʊw*; MRL *n-ʊw*.

(#9) °**baeɣo** 'breadfruit, *Artocarpus*' [PNCV *baeko; see (#15)]: LTG *pɛɣ*; LHI *pæ*; VLW *n-bɛɣ*; MTP *nɛ-bɛɣ*; LMG *n-pɛɣ*; VRA *biɛɣ*; VRS *biɪɣ*; MSN *pɛx*; OLR *pɛː* ; LKN *pɛɣ*.

(#10) °**baɣabaɣaloa** 'swallow, *Collocalia* sp.' [PNCV *kabakaba 'swiftlet']: MTP *baɣbaɣlɔ*; VRA *baɣbaɣluɔ*; VRS *baɣbaɣlʊ*; MSN *paɣpaɣlɔ*; MTA *paɣpaɣaloa*; NUM *baɣbaɣlɔ*; DRG *baɣbaɣlɔ*; LKN *paɣpaɣlɔ*.

(#11) °**balago-mʷotu** 'squirrelfish, *Sargocentron spiniferum*' [lit. 'broken (fruits? of) *Ficus wassa*']: MTP *na-mlak-ŋ͡mʷɪt*; MTA *palako-ŋ͡mʷot*; DRG *blak-ŋ͡mʷʊt*; OLR *palak-ŋ͡mʷɪt*; LKN *palak-ŋ͡mʷɪt*.

(#12) °**bala**[1] ~ °**balati**[2] 'take (stones+) with tongs' [PNCV *bala-ti 'wattled structure']: MTP *bal*[1]; VRS *bal*[1]; MTA *pala*[1] ~ *palat*[2]; NUM *balɛt*[2]; DRG *blaːt*[2]; LKN *pælæs*[2].

(#13) °**balu** 'steal': LHI *pɔl*; VLW *bɛl*; MTP *bɛl*; VRA *bɔl*; VRS *bœl*; MSN *pɔl*; MTA *pal*; NUM *bal*; DRG *baːl*; KRO *b͡ɛal*; OLR *pal*; LKN *pal*; MRL *bɵl*.

(#14) °**baso** 'finish; do completely; then; all': HIU *pa*; LTG *pah*; VLW *bah*; MTP *bah*; MTA *paso*; NUM *bas*; DRG *bas*; KRO *bas*; OLR *pas*; LKN *pah*; MRL *bas*.

(#15) °**batau** 'breadfruit, *Artocarpus*' [PNCV *bataβu; see (#9)]: MTP *na-mtɛ*; MTA *patau*; NUM *bata*; DRG *bta*; MRL *bʊtʊ*.

(#16) °**bei** 'fresh water' [PNCV *bei]: HIU *pe*; LTG *pe*; LHI *pe*; VLW *nɪ-bɪ*; MTP *nɪ-bɪ*; LMG *pɪ*; VRA *bɪ*; VRS *bɪ*; MSN *pɪ*; MTA *pei*; NUM *bɪ*; DRG *bɪ*; KRO *bɪ*; OLR *pɪ*; MRL *nɪ-bɪ*.

(#17) °**bewu** '*Dioscorea bulbifera*': HIU *pew*; LTG *pew*; LHI *pew*; MTP *nɪ-bɪw*; VRA *wʊ/bɪw*; MSN *pɪw*; MTA *pewu*; NUM *bɪw*; MRL *nɪ-bɪw*.

(#18) °**biɣ**(**i**,**u**) 'eat meat': MTP *biɣ*; LMG *piɣ*; VRA *biɣ*; VRS *biɣ*; MSN *pix*; MTA *piɣ*; DRG *biɣ*; LKN *piɣ*; MRL *biɰ*.

(#19) °**biriŋ**(**i**,**u**) 'help, join (s.o.); with': LHI *piyiŋ*; VLW *biyiŋ*; MTP *biyiŋ*; LMG *piriŋ*; VRA *biriŋ*; VRS *biriŋ*; MSN *piriŋ*; MTA *piriŋ*; DRG *briŋ*; LKN *piriŋ*.

(#20) °**buɣoro** 'woven food-chest standing above fire for storing almonds and dried breadfruit': VLW *nɔ-bɔɣɔr*; MSN *pɔɣɔr*; MTA *puɣoro*; NUM *buɣɔr*; DRG *bɣɔr*; OLR *puɣɔy*; LKN *puɣɔː* ; MRL *bʊɣʊr*.

(#21) °**bula-gu** 'possessive classifier for farming valuables (pig, garden+)': VRS *bülœ-k*; MSN *pɔlɔ-k*; MTA *pula-k*; DRG *blʊ-k*; OLR *pulɛ-k*; LKN *pula-k*; MRL *nɞ-bʉlɞ-k*.

(#22) °**bʷaɣare** 'porcupine fish, *Diodon* sp.' [PNCV *bʷakaʀe]: MTP *na-k͡pʷɣay*; VRA *k͡pʷaɣar*; VRS *k͡pʷaɣar*; MSN *k͡pʷaɣar*; MTA *k͡pʷaɣare*; DRG *k͡pʷɣar*; LKN *k͡pʷaɣæː*.

(#23) °**bʷa[ɣ]u-gu** 'my knee' [PNCV *bʷau-]: LTG *kʷəɣʉ-k*; MTP *nu-k͡pʷu-k*; VRS *k͡pʷøü-k*; MSN *k͡pʷuɣu-k*; MTA *k͡pʷau-k*; DRG *nɣarta/k͡pʷu-k*; LKN *huwu/k͡pʷaɣʊ-k*; MRL *nʉ-kʷʉ-k*.

(#24) °**bʷa[ɣ]uro** '*Dioscorea bulbifera*': LMG *k͡pʷʊɣʊr*; VRA *k͡pʷurʊ*; VRS *k͡pʷʊʊr*; MSN *k͡pʷʊɣʊr*; MTA *k͡pʷauro*; MRL *nɵ-kʷɵr*.

(#25) °**bʷaleŋa** 'disappear, be lost': VLW *g͡bʷɛlɛŋ*; MTP *k͡pʷɛlɛŋ*; LMG *k͡pʷalaŋ*; VRS *k͡pʷi͡liaŋ*; MTA *k͡pʷaleŋa*.

(#26) °**bʷaraŋa** 'hole': HIU *kʷʀ̆aŋə*; LTG *kʷəreŋə*; LHI *kʷɔyaŋ*; LHR *k͡pʷayaŋ*; VLW *n-g͡bʷayaŋ*; MTP *na-k͡pʷyaŋ*; VRA *k͡pʷaraŋa*; VRS *k͡pʷaraŋ*; MSN *k͡pʷaraŋ*; MTA *k͡pʷaraŋa*; DRG *k͡pʷarŋa*; OLR *k͡pʷayŋɪn*; LKN *k͡pʷaːŋɪn*.

(#27) °**bʷaratu** 'flying-fox': HIU *kʷʀ̆ɔt*; LTG *kʷərɔt*; LHI *kʷɔyɔt*; LHR *k͡pʷœyœt*; VLW *n-g͡bʷɛyɛt*; MTP *na-k͡pʷyɛt*; LMG *k͡pʷɔrɔʔ*; VRA *k͡pʷaraʔ*; VRS *k͡pʷœrœt*; MSN *k͡pʷɔrɔt*; MTA *k͡pʷarat*; NUM *k͡pʷarat*; DRG *k͡pʷraːt*; MRL *kʷarat*.

(#28) °**bʷariɣi** 'today' [PNCV *bʷariki]: LHI *kʷiyi*; VLW *g͡bʷiyiɣ*; MTP *k͡pʷiyiɣ*; LMG *kiri*; VRA *k͡pʷiri*; VRS (*ɣark͡pʷɛ*); MSN (*ɣark͡pʷɛ*); MTA *k͡pʷariɣ*; NUM *a/k͡pʷiri*; DRG *k͡pʷri*; KRO *k͡pʷiri*; OLR *k͡pʷiriː* ; LKN *k͡pʷiriɣ*; MRL *kʷɛriɰ*.

(#29) °(**bʷatu**)**bʷatu-manu** '*Myzomela cardinalis*' [lit. 'head of bird']: MTP *nɪ-k͡pʷɪt-mɛn*; VRA *k͡pʷɛtk͡pʷɛt-mɛn*; VRS *k͡pʷøtk͡pʷøtü-mɛn*; MTA *k͡pʷat-man*; DRG *wa/k͡pʷtik͡pʷti-maːn*; LKN (*k͡pʷætk͡pʷætæ-mæh*).

(#30) °**bʷer**(**e,o**) '*Sterculia vitiensis*': MTP *nɛ-k͡pʷɛy*; VRA *k͡pʷɪr*; VRS *k͡pʷɪr*; MSN *k͡pʷɛr*; LKN *k͡pʷɛː*.

(#31) °**bʷero** 'mushroom; (slang) glans' [PNCV *bʷero 'mushroom']: VLW *n-g͡bʷɛy*; MTP *nɛ-k͡pʷɛy*; VRA *k͡pʷɪr*; VRS *k͡pʷɪr*; MSN *k͡pʷɛr*; MTA *k͡pʷero*; DRG *k͡pʷɛr*; LKN *k͡pʷɛː* ; MRL *nɪ-kʷɪr*.

(#32) °**bʷeta** 'taro (generic term)' [PNCV *bʷeta]: HIU *kʷetə*; LTG *kʷɛtə*; LHI *kʷæt*; LHR *k͡pʷɛt*; VLW *n-g͡bʷɛt*; MTP *nɛ-k͡pʷɛt*; LMG *n-k͡pʷaʔ*; VRA *k͡pʷɛʔɛ*; VRS *k͡pʷiat*; MSN *k͡pʷɛt*; MTA *k͡pʷeta*; NUM *k͡pʷɛt*; DRG *k͡pʷɛt*; KRO *k͡pʷɛt*; OLR *k͡pʷɛt*; LKN *k͡pʷɛt*; MRL *nɪ-kʷɪt*.

(#33) °**bʷeti** 'be finished; completely; then; all': VLW *g͡bʷɪt*; MTP *k͡pʷɪt*; LMG *k͡pʷɪʔ*; VRA *k͡pʷɪʔ*; VRS *k͡pʷɪt*; MSN *k͡pʷɪt*; MTA *k͡pʷet*.

(#34) °(**bʷi**)**bʷilo** 'mangrove, *Rhizophora*': LTG *t̺ʉrə/kʷilə*; MTP *nɪ-k͡pʷɪk͡pʷɪl*; VRA *k͡pʷik͡pʷilɪ*; VRS *k͡pʷɪk͡pʷɪl*; MTA *k͡pʷik͡pʷilo*; DRG *ɣaːrɣɪr-k͡pʷɪl*; KRO *ɣɛar-k͡pʷɪl*; LKN *k͡pʷik͡pʷil*.

(#35) °**bʷoe** 'pig' [PNCV *boe]: LTG *kʷo*; VLW *nɔ-g͡bʷɔ*; MTP *nɔ-k͡pʷɔ*; VRA *k͡pʷʊ*; VRS *k͡pʷʊ*; MSN *k͡pʷɔ*; MTA *k͡pʷoe*; NUM *k͡pʷɔ*; DRG *k͡pʷɔ*; KRO *k͡pʷɔ*; OLR *k͡pʷɔ*; LKN *k͡pʷɔ*.

(#36) °**bʷolo** 'surgeon fish, *Acanthurus* sp.': MTP *nɔ-k͡pʷɔl* ~ *nɔ-k͡pʷɔlk͡pʷɔl*; VRA *k͡pʷʊl*; VRS *k͡pʷʊl*; MTA *k͡pʷolo*; DRG *wa/k͡pʷɔl*; LKL *k͡pʷɔl*.

(#37) °**bʷona** '*Ducula pacifica*, k.o. pigeon': LTG *kʷɔnə*; MTP *nɔ-k͡pʷɔn*; VRA *k͡pʷɔnɔ*; VRS *k͡pʷɔn*; MTA *k͡pʷona*; DRG *k͡pʷɔn*; LKN *k͡pʷɔn*.

(#38) °**bʷoro-gu** 'my ears' [PNCV *bʷero-]: VRS *k͡pʷørø-k*; MSN *k͡pʷʊrʊ-k*; MTA *k͡pʷoro-k*; NUM *k͡pʷɔrɔ-k*; DRG *k͡pʷrʊ-k*; MRL *nʊ-kʷʊrʊ-k*.

(#39) °**daeru** 'coconut crab, *Birgus latro*' [PNCV *daweʀu]: MTP *na-diy*; VRA *diɪr*; VRS *dɪr*; MSN *nɪr*; MTA *naer*; DRG *ŋ/dɪr*; KRO *dɪr*; OLR *t͡ʃɪy*; LKN *t͡ʃɪː*.

(#40) °**da**[**ɣ**]**o** 'do, make': HIU *ta*; LTG *t̺a*; LHI *da*; LMG *ta*; VRA *da*; VRS *da*; MSN *naɣ*; MTA *na*; NUM *da*; DRG *daw*; KRO *daw*; OLR *t͡ʃaw*; MRL *da*.

(#41) °**damu** 'yam (generic term)' [PNCV *damu]: LHI *dɔŋ*; LHR *n-dæm*; LMG *n-tæm*; VRA *dɔm*; VRS *dæm*; MSN *nɔm*; MTA *nam*; NUM *dam*; DRG *daːm*; KRO *d͡ɛam*; OLR *t͡ʃɪm*; LKN *t͡ʃam*; MRL *nɵ-dɵm*.

(#42) °**dani** 'ablative prep./conj.: from; away; because; lest; than': LTG *t̺ɛn*; VLW *dɛn*; MTP *dɛn*; LMG *dɛn*; VRA *dɛn*; VRS *dɛn*; MSN *nɛn*; MTA *nan*; NUM *dɛn*; DRG *dɪn*; KRO *dɛn*; OLR *t͡ʃɪn*; LKN *t͡ʃɛn*; MRL *nɛn*.

(#43) °**dau-** 'leaf': LHI *dœ-*; MTP (*n-yɛ*); MTP (*na-yɔ*); LMG *n-tø*; VRA *dʊ-*; VRS *dø-*; MSN *nɔ-*; MTA *nau-*; NUM *dɔ-*; DRG *daː-*; KRO *d͡ɛa-*; OLR *t͡ʃa-*; LKN *t͡ʃa-*; MRL *dʊ-* ~ *dɔ-*.

(#44) °**dau-talise** '*Lutjanus gibbus*, k.o. snapper' [lit. 'leaves of *Terminalia* (due to yellow color)']: MTP *na-baw yɔ-tlɪs*; VRA *dʊ-ʔilisɪ*; VRS *da-talɪs*; MTA *no-salte*; DRG *da-tlɪs*; KRO *da-tɪlɪs*; LKN *t͡ʃa-talɪh*.

(#45) °**dilit**(**i,u**) '*Caranx* spp.': MTP *na-nlit*; VRA *diliʔ*; KRO *dilit*; OLR *t͡ʃilit*; LKN *t͡ʃilit*.

(#46) °**diŋa** 'reach; until': VLW *dɪŋ*; MTP *dɪŋ*; LMG *taŋ*; VRA *diŋɪ*; VRS *dɪŋ*; MSN *niŋ*; MTA *nŋa*; NUM *diŋ*; DRG *dɪŋ*; KRO *dɪŋ*; OLR *t͡ʃɪŋ*; LKN *t͡ʃɪŋ*; MRL *d͡ɛaŋ*.

(#47) °**do**[**mi**]**domi** 'think; worry' [PNCV *domi 'think (about), love']: HIU *ttɵm*; LTG *t̺əmt̺͡oəm*; LHI (*den*); VLW (*dɔdɔn*); MTP *dɪmdɪm*; VRA *dʊdʊm*; VRS *dødøm*; MSN *nʊnʊm*; MTA *nonom*; NUM *dʊdʊm*; DRG *dʊm*; OLR *t͡ʃɪt͡ʃɪm*; LKN *t͡ʃɪːt͡ʃɪm*; MRL *dɵd͡ʊɵm*.

(#48) °**domʷea**[1] ~ **domʷae**[2] ‘*Pipturus argenteus*’: VLW *n-ɣɛŋ͡mʷɛ*[1]; MTP *na-ɣŋ͡mʷɛ*[1]; VRA *dɛŋ͡mʷiɛ*[1]; VRS *diŋ͡mʷi͡a*[1/2]; MTA *noŋ͡mʷae*[2].

(#49) °**dumʷei** ‘link between tens and units’: MTP *na/nŋ͡mʷɛ*; VRA *dɪŋ͡mʷɪ*; VRS *dɪmɪ*; MSN *nɛŋ͡mʷɛ-ɣi*; MTA *n(u)ŋ͡mʷei*; NUM *diŋ͡mʷin*; DRG *dɔŋ͡mʷin*; OLR *t͡ʃɪŋ͡mʷin*; LKN *t͡ʃiŋ͡mʷin*; MRL *dɘŋʷɪ*.

(#50) °**esu** ‘live, be alive’: LTG (*ah*); MTP *ɪh*; LMG *ɪs*; VRA *ɪs*; VRS *ɪs*; MSN *ɪs*; MTA *es*; NUM *ɪs*; DRG *ɪs*; OLR *ɪs*; LKN *ɪs*; MRL *ɪs*.

(#51) °**ɣaban[i,e]** ‘[*n*] sail’ [PNCV *kabani]: LTG *ɣəpɛn*; MTP *na-ɣban*; VRA *ɣɛbɛn*; VRS *ɣɛbɛn*; MSN *ɣɛpɛn*; MTA *ɣapan ~ ɣapane*; MRL (*ɣɔm*).

(#52) °**ɣabu** ‘just, only; Restrictive’: VRS *ɣɛm*; MSN *ɣɔp*; MTA *ɣap*; NUM *am*; MRL *ɣɔm*.

(#53) °**ɣale** ‘lie, deceive’ [PNCV *kale ‘tease, joke, deceive’]: LHI *ɣal*; VLW *ɣal*; MTP *ɣal*; VRA *ɣal*; VRS *ɣi͡al*; MSN *ɣal*; MTA *ɣale*; DRG *ɣal*; KRO *ɣal*; OLR *ɣal*; LKN *ɣæl*; MRL *ɣɛl*.

(#54) °**ɣaria**[1] ~ °**garia**[2] ‘*Cordyline terminalis*’ [PNCV *garia]: HIU *ti-ʀ̆eɣiə*[1]; LTG *hɔ-ɣriə*[1]; LMG *tɛ-ɣiri*[1]; VRA *ɣiriɪ*[1]; VRS *da-ɣarɪ*[1]; MTA *karia*[2]; NUM *dɔ-kiri*[2]; DRG *krɪ*[2]; LKN (*kæhræ*).

(#55) °**ɣaoβa**[1] ~ °**gaoβa**[2] ~ °**oβa**[3] ‘reef heron, *Ardea sacra*’: LTG *ɣɔβə*[1]; MTP *na-ɣɔp*[1]; LMG *n-ɔβ*[3]; VRA *ɣiɔwɔ*[1]; VRS *ɣʊʊw*[1]; MTA *kaoβa*[2]; DRG *kɔβ*[2]; OLR *n/ɔβ*[3]; LKN *ɣaɔβ*[1]; MRL *nɔ-kɔp*[2].

(#56) °**ɣasali** ‘knife’: VLW *na-ɣasɛl*; MTP *na-ɣasɛl*; LMG *n-ɣasɛl*; VRA *ɣasɛl*; VRS *ɣasɛl*; MTA *ɣasal*; NUM *ɣasɛl*; OLR *ɣasal*; LKN *ɣahæl*; MRL *ni-ɣisɛl*.

(#57) °**ɣaβa** ‘fly with flapping wings’ [PNCV *kaka(βa)]: LTG *ɣaβə*; MTP *ɣap*; LMG *ɣaβ*; VRS *ɣaβ*; MSN *ɣaɸ*; MTA *ɣaβa*; DRG *ɣaβ*; KRO *ɣaβ*.

(#58) °**ɣa-βaruru** ‘great bean vine’: LTG *ɣɔβərʉʀ*; MTP *na-ɣapɣuɣ*; VRA *ɣaβurur*; VRS *ɣaβœrür*; MTA *ɣaβarur*; OLR *ɣaβuruɣ*; LKN *ɣaβaruː*.

(#59) °**ɣaβuru** ‘house’: VRS *ɣøβür*; NUM *ɣuβur*; DRG *ɣβur*; KRO *ɣuβur*; OLR *ɣaβuɣ ~ ɣuβuɣ ~ βuβuɣ*.

(#60) °**ɣa[w]e** ‘liana, vine; rope’: LTG *ɣaw*; VLW *na-ɣaɣa*; MTP *na-ɣaɣɣa*; LMG *n-ɣaɣa*; VRA *ɣaɣa*; VRS *ɣa*; MSN *wɔ/ɣa*; MTA *ɣae*; DRG *waɣɛt/ɣa*; KRO *wɣɛt/ɣa*; LKN (*ɣ*)*awutæ/ɣæ*; MRL *nɛ-ɣɛ*.

(#61) °**ɣaɣa** ‘kava’: HIU *ɣa*; LTG *ɣi*; LHR *n-ɣa*; VLW *na-ɣa*; MTP *na-ɣa*; LMG *n-ɣa*; VRA *ɣiɛ*; VRS *ɣɪ*; MSN *ɣɛ*; MTA *ɣea*; DRG *ɣɛ*; KRO *ɣɛ*; OLR *ɣɛ*; LKN *ɣɛ*.

(#62) °[**ɣi]da-ru[a]** ‘1st incl dual’ [PNCV *kida-rua]: HIU *tøʀ̆ø*; LTG *t̥or*; LHI *ɣinyo*; VLW *dʊɣʊ*; MTP *dʊ ~ dʊɣʊ*; LMG *ɣatru*; VRA *ɣiduʊ*; VRS *dʊrʊk*; MSN *ninrʊ*; MTA *nara*; DRG *daːr*; KRO *du ~ duru*; OLR *t͡ʃʊrʊ*; LKN *wʊt͡ʃʊ*; MRL *dʊrʊ*.

(#63) °**ɣoari** ‘root’ [PNCV *kawa(ri), POc *kawaRi]: LTG *ɣərəh*; VLW *n-ɣ͡ɪɣi*; MTP *nʊ-ɣʊɣi*; LMG *n-ɣœr*; VRA *ɣʊri*; VRS *ɣɛri*; MTA *ɣari*; DRG *ɣari*; KRO *ɣ͡ɛar*; OLR *ɣaɣ*; LKN *ɣiːɣiː*; MRL *ɣɔɛr*.

(#64) °**ɣoro** ‘[*adv.*] (so as to) surround, cover, obstruct, prevent, protect…’ [PNCV *koro]: HIU *ʀ̆ʊɣ*; LTG *ɣʊr*; LHI *ɣɛɣ*; VLW *ɣɔɣ*; MTP *ɣɔɣ*; LMG *ɣɔr*; VRA *ɣʊr*; VRS *ɣʊr*; MSN *ɣɔr*; MTA *ɣoro*; NUM *ɣɔr*; DRG *ɣɔr*; KRO *ɣɔr*; OLR *wɔɣ*; LKN (*tu*)*wɔː*; MRL *ɣɔr*.

(#65) °**ɣunu-gu** ‘spouse’: VLW *ɣini-ŋ*; MTP *i/ɣni-k*; VRA *ɣunu-k*; VRS *ɣünø-k*; MSN *ɣunu-k*; LKN *wunu-k*.

(#66) °**galo** ‘go up, climb up; crawl; enter, exit; upward’ [PNCV *galo]: HIU *kaɣ*; LTG *kal*; LHI *kal*; VLW *gal*; MTP *kal*; LMG *kal*; VRA *kal*; VRS *kal*; MSN *kal*; MTA *kalo*; NUM *kal*; DRG *kal*; KRO *kal*; OLR *kal*; LKN *kal*; MRL *kal*.

(#67) °**gama-ru[a]** ‘1st excl dual (indep. pronoun)’: HIU *kamaʀ̆ø*; LTG *kəmɔr*; LHI *mæyo*; VLW *gɛmyʊ*; MTP *kamyʊ*; LMG *kamarʊ*; VRA *kamaduʊ*; VRS *kʊmʊrʊk*; MSN *kɛmɛmrʊ*; MTA (*kara*); NUM *kamar*; DRG *kmaːr*; KRO *kɛm͡ɛar*; OLR *kɪmɪɣ*; LKN *ɣamaː*; MRL *kamar*.

(#68) °**gamuyu** ‘2nd plural (indep. pronoun)’ [PNCV *gamuyu]: HIU *kimi*; LTG *kəmi*; LHI *kimi*; VLW *gimi*; MTP *kimi*; LMG *kimi*; VRA *kɪmi*; VRS *kɪmi*; MSN *kimi*; MTA *kamiu*; DRG *kmi*; KRO *kimi*; OLR *kimi*; LKN *ɣamu*; MRL *kɛmi*.

(#69) °**gelu** ‘back, backward, again; Reflexive’: LHI (*lek*); MTP (*lɔk*); LMG *kɪl*; VRA *kɪl*; VRS *kɪl*; MSN *kɪl*; MTA *kel*; NUM *kɪl*; DRG *kɪl*; KRO *kɪl*; OLR *kɪl*; LKN *kɪl*; MRL *kɪl*.

(#70) °**gore** ‘horizontal slit drum’ [PNCV *[k,g]ore ‘make musical sound’]: LTG *kor*; LHI *kɛykɛy*; MTP *nɔ-kɔy*; VRS *wʊkʊr*; MSN *wɔkɔr*; MTA *kore*; DRG *wkɔr-duŋ*; KRO *wkɔr*; OLR *wɔkɔy*; MRL *wɵkɵr*.

(#71) °**gula-gu** ‘my back’: HIU *kyɔ-k*; LTG *kile-k*; MTP *nɪ-klɛ-k*; LMG *kɔlɔ-k*; VRA *kɔlɔ-k*; VRS *külœ-k*; MSN *kɔlɔ-k*; MTA *kula-k*.

(#72) °**guʀio**[1] ~ °**gio**[2] ‘dolphin’ [PNCV *guʀio ‘porpoise’]: HIU *kʷʀ̆e*[1]; LTG *kʷuriə*[1]; MTP *nɪ-kɪ*[2]; VRS *kɪ*[2]; MSN *kɪ*[2]; MTA *kio*[2]; NUM *wi/ki*[2]; KRO *kɪ*[2]; OLR *kɪ*[2]; LKN *kɪ*[2]; MRL *nɛ-kɛ͡a*[2].

(#73) °**la[β]i** ‘take, receive; give’ [PNCV *la[β]i, POC *alap]: HIU (*ɔyə*); LTG (*ɔlə*); VLW *lɛ*; MTP *lɛp*; VRA *lɛ*; VRS *lɛ*; MSN *lɛ*; MTA *laβ*; NUM *lɛ*; DRG *la*; OLR *la*; LKN *lœ*; MRL *lɛ*.

(#74) °**lado** ‘name of a chiefly rank’: VLW *wɛ/lan*; MTP *wɛ/lan*; MTA *lano*; LKN *la͡tʃ*.

(#75) °**laβea-tea** ‘six’: LTG *liβisə*; LHI *lɛβɛtœ*; MTP *lɛβɛtɛ*; VRA *liβiʔiɛ*; VRS *lɛβɛtɪ*; MSN *lɛβɛtɛ*; MTA *laβeatea*; NUM *tɛ-lɛβɛtɛ*; DRG *sɔ-lβitɛ*; OLR *lɛβɛtɛ*; LKN (*lɛ-tuwa*).

(#76) °**lawe** ‘blenny fish, *Ecsenius* sp.’: MTP *nɪ-k͡pʷɪt/law*; VRA *law*; MSN *law*; MTA *lawe*; DRG *law*; OLR *law*; LKN *law*.

(#77) °**leasi** ‘change; translate; replace’: LTG *l͡iɛ*; VLW *lɛh*; MTP *lɛh*; VRS *liɛs*; MTA *leas*; DRG *lɪs*; LKN *βa/lɪh*.

(#78) °**liwoa** ‘big’: HIU *iwɵ*; LTG *ləwo*; LHI *lɔwɔ*; VLW *ɣɛ/lwɔ*; MTP *liwɔ*; LMG *lɔwɔ*; VRA *luwɔ*; VRS *lüwʊ*; MSN *lɔwɔ*; MTA *lwoa*; DRG *lwɔ*; KRO *luwɔ*.

(#79) °**lolo-bʷoŋi** ‘be ignorant; forget’ [lit. ‘mind in night’]: LTG (*liɔnəkʷəŋ*); VLW *lɔl͡gbʷɪŋ*; MTP *lɔl͡kpʷʊŋ*; LMG *lɪl͡kpʷʊŋ*; MTA *lolo͡kpʷoŋ*.

(#80) °**lolo-marani** ‘be intelligent; remember, understand, know’ [lit. ‘mind in daylight’]: HIU *yɵymər̆en*; LTG *lolmərɛn*; VLW *lɔlmɛyɛn*; MTP *lɔlmɛyɛn*; VRA *lʊlmaran*; VRS *lʊlʊmɛrɛn*; MSN *lɔlmɛrɛn*; MTA *lolomaran*; DRG *llɔmraːn*; LKN *lɔlmaːrɛn*; MRL *lɔlmɛrɛn*.

(#81) °**lolo-na** ‘its inside; his/her mind’: HIU *yɔ-nə*; LTG *liɔ-nə*; LHI *lɔ-n*; VLW *n-lɔlɔ-n*; MTP *na-lɔ-n*; LMG *lølø-ɣi*; VRA *lɔlɔ-ɣi*; VRS *lɔlɔ-n*; MSN *lɔlɔ-n*; MTA *lolo-na*; NUM *na-llɔ-n*; DRG *llɔn*; KRO *lɔ-n*; OLR *lɔlɔ-n*; LKN *lɔlɔ-n*; MRL *nɔ-llɔ-n*.

(#82) °**lotu** ‘mashed breadfruit’: VLW *n-lɪt*; MTP *nɪ-lɪt*; LMG *n-løt*; VRS *løt*; MSN *lʊt*; MTA *lot*; NUM *lʊt*; DRG *lʊt*; MRL *nɵ-lɵt*.

(#83) °**lumaɣaβi** ‘young unmarried boy’: HIU *yʉməyɔβ*; LTG *lʉməɣaβ*; VLW *lʊmɣɛp*; MTP *lʊ͡ŋmʷɣɛp*; MSN *lʊmɣɛɸ*; MTA *lmaɣaβ*; DRG *lʊmɣaːβ*; KRO *lʊmɣ͡ɛaβ*; MRL *lʊmɣɛp*.

(#84) °**madu-gu** ‘my nose’: HIU *miti-k*; LTG *mət̪ʉ-k*; MTP *ni-mdi-k*; VRA *midi-k*; VRS *mødü-k*; MSN *munu-k*; MTA *manu-k*; DRG *mdu-k*; LKN *ma͡tʃɔ-k*; MRL *nɵ-mɵdʉ-k*.

(#85) °**madua** ‘orphan’: VLW *wɔ/mdʊ*; MTP *wɔ/mdʊ*; VRS *mʊdʊ*; MTA *manua*; DRG *mdʊ* ‘hungry’; LKN *wɪ/ma͡tʃʊ*.

(#86) °**maɣarosa**[1] ~ °**mamarosa**[2] ~ °**maɣarosina**[3] ~ °**mamarosaɣi**[4] ‘sad, sorry’: HIU *βɔy/mamər̆ɵ*[2]; LTG *məɣarhinə*[3]; LHI *maɣaysen*[3]; VLW *maɣaysɪn*[3]; MTP *maɣaysɪn*[3]; LMG *maɣarsan*[3]; VRA *maɣarsinɪ*[3]; VRS *mamarsɛɣ*[4]; MSN *mamarsɛɣ*[4]; MTA *maɣarosa*[1]; NUM *maɣʊrʊs*[1]; DRG (*matnɛrɔβ*); KRO *mamrɔs*[2]; OLR *mamrɔs*[2]; LKN *mamrɔh*[2]; MRL (*mɪtnarɔp*).

(#87) °**maɣ[a,e]se-gu** ‘myself, on my own’: LTG *maɣi-k*; MTP *mahɣɪ-k*; LMG *masɣɪ-k*; VRS *masɣɪ-k*; MSN *masɣɪ-k*; MTA *maɣase-k* ~ *maɣese-k*; NUM *maɣɛsɛ-k*; DRG *maysɪ-k*; OLR *ŋ͡mʷaːsɪ-k*; LKN *ŋ͡mʷahɣɪ-k*.

(#88) °**maɣatea** ‘old woman’: LHI *matœ*; MTP *maɣtʊ*; VRA *maɣʔiɛ*; VRS *maɣtɛ*; MSN *maɣtɛ*; MTA *maɣatea*; DRG *maɣtɛ*; OLR *maːtɛ*; LKN *maɣtɛ*.

(#89) °**m[aɣ]u-gu** 'general possessive classifier': LHI *mu-k*; VLW *n-mi-g-is*; MTP *na-mu-k*; LMG *mu-k* ~ *muɣu-k*; VRA *mu-k*; VRS *møɣü-k*; MSN *muɣu-k*; MTA *ŋ͡mʷo-k*; NUM *mu-k*; DRG *mu-k*; KRO *mu-k*; OLR *mu-k*; LKN *mɔ-k*; MRL *mʉ-k*.

(#90) °**maɣumaɣui** 'work, make effort': LTG *mə(ɣ)mʉɣʉ*; LHI *muɣu*; VLW *muɣumɣu*; MTP *muwumwu*; MSN *muwmuwu*; MTA *mawmawui*; DRG *mumɣu*; KRO *muɣmuɣu*; OLR *mu:muɣu*; LKN *muɣmuɣu*.

(#91) °**man[i,u]tabu** '*Ptilinopus tannensis*' [lit. 'sacred bird' (?)]: MTP *nɛ-mɛntɛk͡pʷ*; MTA *mantap*; DRG *ma:nta:b*; LKN *mæntap*.

(#92) °**maranaɣa** 'village chief': HIU *maʀ̆ənaɣə*; LTG *marənaɣə*; VLW *mayanaɣ*; MTP *mayanaɣ*; VRA *maranaɣa*; VRS *maranaɣ*; MSN *maranax*; MTA *maranaɣa*; DRG *mranɣa*; OLR *maranaɣa*; LKN *maranaɣa*; MRL *marnaɰ*.

(#93) °**marau-gu** '(my) maternal uncle; (my) nephew': LTG *merʉ-k*; VLW *n-mɔyu-ŋ*; MTP *mɔyu-k*; VRA *maru-k*; VRS *marü-k*; MSN *marɔu-k*; MTA *marau-k*; DRG *maru-k*; LKN *maru-k*.

(#94) °**marawa** 'spider; name of a spirit': HIU *məʀ̆awə*; LTG *mərawə*; VLW *n-mayaw*; MTP *na-myaw*; VRA *marawa*; VRS *maraw*; MSN *maraw*; MTA *marawa*; DRG *mraw*; KRO *maraw*; OLR *maraw*; LKN *maraw*.

(#95) °**maraya** 'moray, eel' [PNCV *maraya]: LTG *məri*; VLW *n-maya*; MTP *na-mya*; VRA *mɛriɛ*; VRS *marɪ*; MTA *marea*; DRG *mrɛ*; KRO *mɛrɛ*; OLR *mɛrɛ*; LKN *marɛ*; MRL *nɛ-mɛrɪ*.

(#96) °**maraya bʷoe** 'giant moray, *Gymnothorax* sp.' [lit. 'eel pig']: MTP *na-mya k͡pʷɔ*; VRA *mɛriɛ k͡pʷʊ*; VRS *marɪ k͡pʷʊ*; MTA *marea k͡pʷoe*; DRG *mrɛ k͡pʷɔ*; KRO *mɛrɛ k͡pʷɔ*; OLR *mɛrɛ k͡pʷɔ*; LKN *marɛ k͡pʷɔ*.

(#97) °**maremare** 'hard, strong; stubborn': LTG *mərmer*; VLW *maymay*; MTP *maymay*; VRA *marmar*; MTA *maremare*; NUM (*mmartiɣ*); DRG *marmar*; KRO *marmar*; OLR *maymay*; LKN *marmar*; MRL *mɛrmɛr*.

(#98) °**marosi** 'want, like': LHI *ne-myes*; VLW *n-muyus*; MTP *nɛ-myʊs*; LMG *mʊrʊs*; VRA *mʊrʊs*; VRS *mørøs*; MSN *mʊrʊs*; MTA *maros*; NUM *mʊrʊs*; DRG *mrʊs*; KRO *mʊrʊs*; OLR *mɪrɪs*; LKN *maɪs*; MRL *mɵrɵs*.

(#99) °**mataβa**(**si**) 'morning': HIU *mətaβə*; LTG *mətaβə*; LHI *matap*; VLW *mtap*; MTP *lɛ-mtap*; LMG *maʔaβ*; VRA *maʔaβ*; MSN *mataɸ*; MTA *mataβa*; OLR *matβas*; LKN *matpæh*.

(#100) °**matu[ɣ]i**[1] ~ °**matu**(**e,a,o**)[2] 'dry coconut, coconut tree': HIU *mʉtʉ*[1]; LTG *mətʉ*[1]; LHI *miti*[1]; LHR *mit͡ʃi*[1]; VLW *n-mitiɣ*[1]; MTP *na-mtiɣ*[1]; LMG *n-miʔiɣ*[1]; VRA *miʔiɣ*[1]; VRS *mʊtʊ*[2]; MSN *mʊtʊ*[2]; MTA *matiɣ*[1]; NUM *mutu*[1/2]; DRG *mtʊ*[2]; OLR *mutu*[1]; LKN *matu*[1]; MRL *na-matʊ*[2].

(#101) °**matu[ɣ]itu[ɣ]i** '*Areca catechu*': MTP *nɔ-wɔlmtiɣtiɣ*; LMG *ɣalmiʔiɣʔiɣ*; VRA *wʊɣal/miʔiɣʔiɣ*; DRG *wal/mtutu*; KRO *mututu*; LKN *matutu*; MRL *mɛtiɰtiɰ*.

(#102) °**maβatoa** 'name of a dance': MTP *na-maptɔ*; MSN *maɸtɔ*; MTA *maβatoa*; DRG *maβtɔ*; LKN *maβtɔ*.

(#103) °**m**[w]**ab**[w]**u** 'put down, lay s.t.': VLW *mʊŋ*; MTP *ŋ͡mʷʊk*; LMG *mɔp*; VRA *mɔm*; VRS *mɛm*; MSN *mɔp*; MTA *map*; MRL *mɔm*.

(#104) °**m**[w]**ab**[w]**usaɣi** 'breathe; take rest' [PNCV *mabu-si]: LTG *məkʷhɛ*; LHI *mɔksœ*; LHR *mʷɔŋsɛ*; MTP *ŋ͡mʷʊkhɛɣ*; LMG *møpsɛ*; VRA *mɔmsɛ*; VRS *mɛmsɛɣ*; MSN *mɔpsɛ*; MTA *ŋ͡mʷapsaɣ*; DRG *ma:bsɪɣ*; KRO *mɛmsɛ͡aɣ*; OLR *mɪpsa:*; LKN *mahpæɣ*.

(#105) °**mʷagaru** 'flying-fish, *Exocetus*': LTG *ŋʷəkɔr*; VLW *n-ŋ͡mʷɛgɛɣ*; MTP *na-ŋ͡mʷkɛɣ*; VRS *ŋ͡mʷœkœr*; MTA *makaru*; DRG *ŋ͡mʷka:r*; KRO *ŋ͡mʷɛkɛ͡ar*; OLR *ŋ͡mʷɔkay*; MRL *ŋʷɔkɔr*.

(#106) °**mʷai** 'sea snake, *Laticauda semifasciata*': LHI *ŋʷæ*; MTP *nɛ-ŋ͡mʷɛ*; VRA *ŋ͡mʷɛ*; VRS *ŋ͡mʷɛ*; MSN *ŋ͡mʷɛ*; MTA *ŋ͡mʷai*; NUM *ŋ͡mʷɛ*; DRG *wɔ/ŋ͡mʷa*; LKN *ŋ͡mʷæ*.

(#107) °**mʷalamʷala** 'young unmarried girl' [PNCV *mʷala(mʷala) 'naked' (?)]: HIU *ŋʷəɣəŋʷaɣə*; LTG *ŋʷələŋʷelə*; VLW *ŋ͡mʷalŋ͡mʷal*; MTP *ŋ͡mʷalŋ͡mʷal*;

VRS *ŋ͡mʷalŋ͡mʷal*; MSN *ŋ͡mʷalŋ͡mʷal*; MTA *ŋ͡mʷalaŋ͡mʷala*; NUM *ŋ͡mʷalaŋ͡mʷal*; DRG *ŋ͡mʷalŋ͡mʷal*; KRO *ŋ͡mʷalŋ͡mʷal*; OLR *ŋ͡mʷalŋ͡mʷal*; LKN *ŋ͡mʷalŋ͡mʷal*; MRL *ŋʷalŋʷal*.

(#108) °**mʷara[ɣi]** '*Chalcophaps indica*, k.o. dove': MTP *na-ŋ͡mʷay*; LMG *ŋ͡mʷɛrɛɣ*; VRA *ŋ͡mʷaraɣ*; VRS *ŋ͡mʷɛrɛɣ*; MTA *ŋ͡mʷara*; DRG *wɔ/ŋ͡mʷraːɣ*; LKN *ŋ͡mʷæræɣ*.

(#109) °**mʷatiga** 'purple swamphen, *Porphyrio porphyrio*': LMG *ŋ͡mʷaʔak*; VRA *ŋ͡mʷiʔikɪ*; VRS *ŋ͡mʷatɪk*; MTA *ŋ͡mʷatika*; DRG *ŋ͡mʷsɪk*; LKN *ŋ͡mʷasɪk*.

(#110) °**mʷasa** 'goatfish, *Mullidae* spp.' [see (#154)]: MTP *na-ŋ͡mʷah*; VRA *ŋ͡mʷasa*; VRS *ŋ͡mʷas*; MTA *ŋ͡mʷasa*; OLR *ŋ͡mʷas*; LKN *ŋ͡mʷah*.

(#111) °**m[ʷ]asawa[i]** 'empty space, place; moment'[1]; 'garden'[2] [PNCV *masawa 'space, sky, open sea']: LHI *mɔsɔ*[1]; VLW *n-mahɪ*[1]; MTP *mahɪ*[1]; VRS *masawrɛ*[1]; MSN *masawrɛ*[1]; MTA *masaoi*[1]; DRG *ŋ͡mʷsa*[2]; KRO *ŋ͡mʷas*[2]; OLR *ŋ͡mʷɪsŋ͡mʷɪs*[2]; LKN *ŋ͡mʷɪhŋ͡mʷɪh*[2]; MRL *mɵsɵ*[1].

(#112) °**mʷele-dolu** 'a hundred' [lit. 'a whole *Cycas* palm']: LHI *ŋʷɛldel*; MTP *ŋ͡mʷɛldɪl*; LMG *ŋ͡mʷɛltøl*; VRA *ŋ͡mʷɛldʊl*; VRS *ŋ͡mʷøldøl*; MSN *ŋ͡mʷɛlnʊl*; MTA *ŋ͡mʷelnol*; NUM *ŋ͡mʷɛldʊl*; DRG *sɔ-ŋ͡mʷlɛdʊl*; OLR *ŋ͡mʷɪlɪt͡ʃʊl*; LKN *ŋ͡mʷɪlɪt͡ʃɪl*.

(#113) °**mʷera** 'child' [PNCV *mʷera 'child']: LTG *ŋʷerə*; LHI *sus/ŋʷɛy*; VLW *nɛt/ŋ͡mʷɛy*; MTP *nɪt/ŋ͡mʷɛy*; VRA *ŋ͡mʷɛrŋ͡mʷɛrɛ*; VRS *ŋ͡mʷirŋ͡mʷi͡ar*; MSN *ŋ͡mʷɛrŋ͡mʷɛr*; MTA *rɛrɛ/ŋ͡mʷera*; NUM (*ŋ͡mʷaŋ͡mʷŋ͡mʷari*); DRG *ŋ͡mʷɛrŋ͡mʷɛr*; LKN (*miːni*); MRL *nʊ-lʊ/ŋʷɪr*.

(#114) °**nanara** '*Pterocarpus indicus*': LTG *ni͡erə*; VLW *na-nay*; MTP *na-nay*; VRA *nanara*; VRS *nanar*; MSN *nanar*; MTA *nanara*; DRG *nnar*; LKN *nanaː*.

(#115) °**nau** '1st SG free pronoun' [PNCV *nau]: HIU *nɔkə*; LTG *nɔkə*; LHI *nɔ*; VLW *nɛ*; MTP *nɔ*; LMG *nɔ*; VRA *nɔ*; VRS *nɔ* ~ *na*; MSN *na*; MTA *nau*; NUM *na*; DRG *na*; KRO *na*; OLR *na*; LKN *na*; MRL *nɔ*.

(#116) °**nigo** '2nd SG free pronoun' [PNCV *nigo]: HIU *ikə*; LTG *nikə*; LHI *nek*; VLW *nɪŋ*; MTP *nɪk*; LMG *nak*; VRA *nikɪ*; VRS *nɪk*; MSN *nɪk*; MTA *niko*; NUM *nɪk*; DRG *nɪk*; KRO *nɪk*; OLR *nɪk*; LKN *nɪk*; MRL *n͡ɛak*.

(#117) °**oraora** 'play; game': VRA *ɔrɔrɔ*; VRS *ɔrɔr*; MSN *ɔrɔr*; MTA *oraora*; NUM *ɔrɔr*; DRG *ɔrɔr*; KRO *ɔrɔr*; LKN *ɔːˀɔː*; MRL *ɔrɔr*.

(#118) °**raga** '[*v.*] lift up; [*adv.*] up, upward; immediately; (take) away/off…': HIU *ʀ̆akə*; LTG *rakə*; LHI *yak*; VLW *yaŋ*; MTP *yak*; LMG *rak*; VRA *raka*; VRS *rak*; MSN *rak*; MTA *raka*; MRL *rak*.

(#119) °**raŋo-gu** 'my legs/feet': HIU *ʀ̆ɵŋɵ-k*; LTG *rəŋo-k*; LHI *yeŋe-k*; LHR *yœŋœ-k*; VLW *nɪ-yɪŋɪ-ŋ*; MTP *na-yŋɪ-k*; VRA *rʊŋʊ-k*; VRS *røŋø-k*; MSN *rʊŋʊ-k*; MTA *raŋo-k*; DRG *rŋʊ-k*; KRO *rʊŋʊ-k*; LKN *rɔŋɔ-k*; MRL *rɵŋʊ-k*.

(#120) °**raŋoraŋo** '*Acalypha* spp.': MTP *na-yaŋyaŋ*; VRA *raŋraŋ*; VRS *raŋraŋ*; MTA *raŋoraŋo*; DRG *w/raŋraŋ*; LKN *raŋraŋ*.

(#121) °**raβe**[1] ~ °**reβe**[2] 'pull': HIU *ʀ̆aβ*[1]; LTG *raβ*[1]; LHI *yɛp*[2]; LHR *yep*[2]; VLW *yɛp*[2]; MTP *yap*[1]; LMG *rɛβ*[2]; VRA *rɛβ*[2]; VRS *rɛβ*[2]; MSN *rɛɸ*[2]; MTA *raβe*[1]; NUM *rɛβ*[2]; DRG *rɛβ*[2]; KRO *rɛβ*[2]; OLR *rɛβ*[2]; MRL *rɪβ*[2].

(#122) °**reŋasi** '*Charmosyna palmarum*, k.o. parrot': MTP *na-yŋɛs*; VRA *rɛŋɛs*; VRS *rɛŋɛs*; MTA *reŋas*; DRG *wa/rŋaːs*; LKN *t͡ʃæŋæh*.

(#123) °**riɣa** 'swell; fat, big': MTP *yɪɣ*; VRA *riɣɪ*; VRS *rɪɣ*; MSN *rɪx*; MTA *riɣa*; DRG *rɪɣ*; KRO *rɪɣ*; OLR *rɪː*; LKN *rɪɣ*; MRL *rɪɰ*.

(#124) °**ririɣo** 'porpoise; whale': VRA *ririɣɪ*; VRS *rɪrɪɣ*; MSN *rɪrɪɣ*; MTA *ririɣo*; DRG *rriɣ*; OLR *ririː*; LKN *ririɣ*; MRL *nɛ-rɛr͡eaɰ*.

(#125) °**riβitaɣi** 'near, close': HIU *ʀ̆əβtɔɣ*; LTG *rəβtɛ*; LHI *yiptœ*; LHR *yipt͡ʃe*; MTP *yiptɛɣ*; LMG *rɪβʔɪ*; VRA *rɔβʔɛ*; VRS *riβtɛɣ*; MSN *riɸtɛ*; MTA *riβtaɣ*; NUM *riβtɛ*; DRG *βriɣtɪɣ*; KRO *βirita*; OLR *riβtaː*; LKN *riɣtæɣ*.

(#126) °[**ro**]**roŋo** 'quiet, silent; sacred' [PNCV *roroŋo 'be quiet, pay attention']: LTG *rərɔŋ*; VLW *yɔŋ*; MTP *yɔŋ ~ yɔyɔŋ*; VRA *rɔrɔŋ*; VRS *rɔrɔŋ*; MSN *rɔrɔŋ*; MTA *roŋo ~ roroŋo*; DRG *rɔŋ*; LKN *rɔrɔŋ*; MRL *rɔrɔŋ*.
(#127) °**rowou** 'bonito, *Thunnus* sp.': LTG *rəwə*; MTP *na-ywɪ*; MTA *rowou*; DRG *rwʊ*; KRO *rʊwʊ*; OLR *rɪwɪ*; LKN *rɪwɪ*.
(#128) °**rowo** '[*direc.*] out, outward; seaward': HIU *ꭆow*; LTG *row*; LHI *yɔw*; VLW *yɔ*; MTP *yɔw*; LMG *rɔw*; VRA *rʊw*; VRS *rʊw*; MSN *rɔw*; MTA *rowo*.
(#129) °**saɣe**₁ 'up, upward; upwind, toward southeast' [POc *sake 'go upward, go southeast']: HIU *tɪ/iaɣ*; LTG (*i*)*aɣ*; LHI *ha*; VLW *ha*; MTP *haɣ*; LMG *saɣ*; VRA *saɣ*; VRS *si͡aɣ*; MSN *saɣ*; MTA *saɣe*; NUM *sa*; DRG *saɣ*; KRO *saɣ*; OLR *saː* ; LKN *haɣ*; MRL *sɛ͡aɰ*.
(#130) °**saɣe**₂ 'sit, stay' [POc *sake 'go upward']: HIU *saɣ*; LTG *haɣ*; LHR *saɣ*; VLW *haɣ*; MTP *haɣ*; VRA *saɣ*; VRS *si͡aɣ*; MSN *saɣ*; MTA *saɣe*; NUM *sa*; DRG *saɣ*; KRO *saɣ*; OLR *saː* ; LKN *haɣ*; MRL *sɛ͡aɰ*.
(#131) °**salaɣoro** 'secret; secret meeting place in the bush for men during initiation rituals': LTG *hɔləɣor*; VLW *n-halɣɔy*; MTP *na-halɣɔy*; VRS *salɣʊr*; MSN *salɣɔr*; MTA *salaɣoro*; DRG *salɣɔr*; KRO *salɣɔr*; OLR *salɣɔy*; LKN *salwɔː*.
(#132) °**saraβi** 'rub, stroke': LTG *hərɛβ*; LHI *heyœp*; VLW *hɪyɪp*; MTP *hɛyɛp*; LMG *sœrœβ*; VRA *saraβ*; VRS *sœrœβ*; MSN *sɛrɛɸ*; MTA *saraβ*; NUM *saraβ*; DRG *sraːβ*; KRO *sɛrɛ͡aβ*; LKN *hærœβ*; MRL *sɛrɛp*.
(#133) °**sari** '[*n.*] spear' [PNCV *sari 'to spear, thrust']: LTG *hɛr*; MTP *n-ɪsɛy*; VRA *sɛr*; VRS *sɛr*; MTA *sar*; DRG *sri/tʊk*; KRO *tɛ͡aβ/sɛ͡ar*.
(#134) °**saru** 'put on, wear (clothes+)': LTG *hɔr*; LHI *hɔy*; MTP *hɛy*; MTA *sar*; DRG *saːr*; LKN *saː*.
(#135) °[**sa**]**sae** 'different': HIU *a*; LTG *ha*; LHI *tɣa/ha*; MTP *haha ~ tɛɣ/ha*; LMG *sɛsa*; VRA *sisiɛ*; VRS *sisi͡a*; MSN *sasa*; MTA *sasae*; NUM *sɪsɪ*.
(#136) °**sasa-gu** 'my name': HIU *yɔ-k*; LTG *ie-k*; LHI *na-he-k*; VLW *nɛ-hɛhɛ-ŋ*; MTP *na-hɛ-k*; VRA *sɔ-k*; VRS *siœ-k*; MSN *sɔ-k*; MTA *sasa-k*; NUM *na-ssi-k*; DRG *ssaː-k*; OLR *sasi-k*; LKN *haha-k*; MRL *nɵ-ssɵ-k*.
(#137) °**saumʷa** 'parrotfish, *Scarus* sp.': HIU *sɵŋʷə*; LTG *həŋʷə*; LHI *sɔŋ*; MTP *na-hʊ͡ŋmʷ*; VRA *su͡ŋmʷʊ*; VRS *sʊ͡ŋmʷ*; MSN *sʊ͡ŋmʷ*; MTA *sau͡ŋmʷa*; DRG *sʊŋ*.
(#138) °**sili** 'darkness': MTP *sil*; VRS *sil*; MSN *sil*; MTA *sil*; NUM *sil*; DRG *sil*; KRO *sil*; OLR *sil*; LKN *hil*; MRL *sil*.
(#139) °**siriβi** 'waterfall': MTP *na-syip*; VRS *sɪriβ*; MTA *siriβ*; DRG *sriβ*; OLR *siriβ*; LKN *hiriβ*; MRL *siriw*.
(#140) °**somu** 'shell money' [PNCV *zomu]: MTP *nɪ-sɪm*; VRS *søm*; MSN *sʊm*; MTA *som*; DRG *sʊm*; OLR *sɪm*; LKN *hɪm*.
(#141) °**subʷe** 'initiation ceremony in graded society' [PNCV *subʷe]: HIU *sʉkʷə*; LTG *hʉkʷə*; VLW *nʊ-sʊ͡ŋmʷ*; MTP *nʊ-sʊ͡kpʷ*; VRA *su͡kpʷʊ*; VRS *sʊ͡kpʷ*; MTA *su͡kpʷe*; DRG *β/sʊk*; KRO *βʊ/sʊk*; LKN *βa/sʊk*.
(#142) °**sura** 'entrance of Hell': VLW *wʊ/sʊy*; MTP *wʊ/sʊy*; VRS *wɪrɪ/sʊr*; MTA *sura*; DRG *wrɪ/sʊr*; KRO *wɪrɪ/sʊr*; OLR *wɪrɪ/sʊy*; LKN *wɔrɛ/hʊː*.
(#143) °**suβusuβu** 'bathe, wash (o.s.)': LTG *həhʉ*; MTP *suwsuw*; VRA *siwsiw*; VRS *süβsüβ*; MSN *suwsuw*; MTA *suɣsuɣ*; NUM *suwsuw*; OLR (*suwa*); LKN (*huwæ*); MRL *sʉwsʉw*.
(#144) °**suwe** 'downward; toward northwest': LHI *how*; VLW *hʊ*; MTP *hʊw*; LMG *sʊw*; VRA *suwʊ*; VRS *sʊw*; MSN *sʊw*; DRG *swɪl*; LKN *hʊw ~ sɪwɪl*; MRL *sʊw*.
(#145) °**tabia** 'wooden dish': LTG *təpiə*; MTP *na-tbɪ*; LMG *n-ʔɪpɪ*; VRA *ʔibiɪ*; VRS *tabɪ*; MSN *tɪpɪ*; MTA *tapia*; NUM *tibi*; DRG *tbɪ*; OLR *tɪpɪ*; LKN *tapɪ*; MRL *tabɛ͡a*.
(#146) °**tabʷale** 'grouper fish': MTP *na-t͡kpʷal*; VRA *ʔa͡kpʷal*; VRS *ti͡kpʷi͡al*; MTA *ta͡kpʷale*; DRG *t͡kpʷal*; KRO *ta͡kpʷal*; LKN *ta͡kpʷæl*.
(#147) °**tabʷeli** 'go down, downhill': VLW *tɪ͡gbʷɪl*; MTP *tɪ͡kpʷɪl*; LMG *ʔɪ͡kpʷɪl*; VRA *͡kpʷɪl*; VRS *tɪ͡kpʷɪl*; MSN *tɪ͡kpʷɪl*; MTA *ta͡kpʷel*; NUM *tɪ͡kpʷɪl*; OLR *tɪ͡kpʷɪl*.

(#148) °[**ta-**]**b^w^onaɣi** 'cuttlefish, *Sepia* sp.' [lit. 'shy person']: LTG *k^w^ak^w^unɛɣ*; MTP *na-tatak͡p^w^nɛt*; MTA *tak͡p^w^onaɣ*; DRG *w/tak͡p^w^naːɣ*; OLR *k͡p^w^ɪnɪː* ; LKN *k͡p^w^ɔnk͡p^w^ɔnæɣ*; MRL *tɔkna.*
(#149) °**taɣere**[**ɣere**][1] ~ °**tageregere**[2] 'swiftlet, *Rhipidura fuliginosa*' [PNCV *takere 'fantail']: MTP *na-tɣɛɣɣɛɣ*[1]; VRA *wʊ/tɛɣɛrɣɛr*[1]; VRS *tɪɣɪr*[1]; MSN *tɛɣɛr*[1]; MTA *taɣere*[1]; NUM *wɛtakɣɛrɛɣɛrɛ*[1/2]; DRG *wtakɣɛrɣɛr*[1/2]; LKN *takɛːkɛː*[2].
(#150) °**taɣuru** 'behind; afterward' [PNCV *takuʀu 'back, behind, after']: HIU *tiʀ̆iɣ*; LTG *təɣʉr*; MTP *tiɣiy*; VRS *tøwür*; MSN *ɣɔr/tuwur*; MTA *taɣir ~ tawur*; DRG *twur ~ tawri*; LKN *tawuː*.
(#151) °**taluɣo** 'morning[1]; tomorrow[2]': LHI *talow*[2]; LHR *talow*[2]; VLW *talʊw*[2]; MTP *talʊw*[2]; LMG *ʔalʊw*[2]; VRA *ʔaluwʊ*[2]; VRS *tʊlʊw*[2]; MSN *talʊw*[2]; NUM *talʊw*[1]; DRG *talʊw*[2]; OLR *talʊw*[2]; LKN *talʊw*[2]; MRL *tʊlʊ*[1].
(#152) °**ta-maraɣai** 'old man' [lit. 'quivering person']: LHI *tamayɣæ*; VLW *tamayɣɛ*; MTP *tamayɣɛ*; VRA *ʔamarɣa*; VRS *tamarɣɛ*; MSN *tamarɣɛ*; MTA *tamaraɣai*; DRG *tmarɣa*; LKN *tamaːɣæ*; MRL *tɛmɛrɣɛ*.
(#153) °**tano-i** 'place for (s.t.)': HIU *tɵnɵ*; LTG *tənə*; VLW *n-tɔnɔ*; MTP *na-tnɔ*; VRA *ʔɔnɔ*; VRS *tønø*; MSN *tɔnɔ*; MTA *tano*; NUM *tɔnɔ*; DRG *taːnɛ*; OLR *tɔnɔ*; MRL *tɛn*.
(#154) °**taŋitaŋi** 'goatfish, *Mullidae* spp.' [see (#110)]: MTP *nɪ-tɪŋtɛŋ*; VRS *tɛŋtɛŋ*; MTA *taŋtaŋ*; DRG *taːŋtaːŋ*; LKN *tæŋtæŋ*.
(#155) °**tari** 'a thousand': LTG *tɛr*; MTP *tɛɣ*; VRA *ʔɛr*; VRS *tar*; MTA *tar*; DRG *taːr*; OLR *tar*; MRL *tɛr*.
(#156) °**taru** 'cover; bake food in stone oven overnight': HIU *tɔʀ̆*; LTG *tɔr*; VLW *tɛɣ*; MTP *tɛɣ*; VRA *ʔɔr*; VRS *tœr*; MSN *tɔr*; MTA *tar*; MRL *tɵr*.
(#157) °**tasisi** 'small bird, prob. *Lichmera incana*': MTP *na-tsis*; VRS *wɪ/tɪsisis*; MTA *tasis*; NUM *tisis*; DRG *wa/tsis*; LKN *tistisis*.
(#158) °[**ta**]**tarisa** ~ °[**sa**]**sarita** 'equal, identical, sufficient': LTG *tatəriha*; LHI *ttares*; VLW *haytɪyɪh*; MTP *haytɪyɪh*; LMG *ʔaras*; VRA *ʔirisɪ*; VRS *sasarɪt*; MSN *tatɪrɪs*; MTA *sasarta*; DRG *tatrɪs*; MRL *ttar͡ɛas*.
(#159) °**tauri** ~ °**tori** 'hold in ones hands': HIU (*təʀ̆ɔɣ*); LTG *tər*; LHI *tey*; VLW *tɪy*; MTP *tɪy*; MSN *tʊr*; MTA *taur*; NUM *tɪr*; DRG *tur*; KRO *tʊr*; MRL *tɵr*.
(#160) °**tauwe**₁ 'conch shell, *Charonia tritonis*' [PNCV *taβui; POC *tapuʀi]: LTG *təwə*; MTP *na-tʊ*; VRS *tʊw*; MSN *tʊw*; MTA *tawe*; DRG *tʊw*; OLR *tʊw*; LKN *taʊ*; MRL *nɵ-tʊ*.
(#161) °**tauwe**₂ 'mountain' [PNCV *taβua]: LTG *təwə*; MTP *na-tʊ*; LMG *ʔʊw*; VRA *ʔuwʊ*; VRS *tʊw*; MSN *tʊw*; MTA *tawe*; DRG *tʊw*; KRO *tʊw*; OLR *tʊw*; LKN *taʊw*.
(#162) °**tawa**[**ɣa**]**si** 'flower': LTG *təwɛh*; LHI *tɔwæh*; LHR *n-tawsi*; VLW *n-tɪwɪh*; MTP *na-tawhi ~ na-twɛh*; LMG *wɛs*; VRA *ʔawas*; VRS *tɛwɛs ~ tawaɣas*; MTA *tawaɣasi*; NUM *taβaɣɛs*; DRG *twaːs*; KRO *tɛw͡ɛas*; OLR *tawas*; LKN *tawæh*.
(#163) °**terit**(**i,u**) 'urchin fish, *Diodon* spp.': VRS *tɪrɪt*; MTA *terit*; DRG *trit*; OLR *tirit ~ wʊ/tɪritrit*; MRL *nɛ-tɛrit*.
(#164) °**toɣo** 'wild cane, *Miscanthus floridulus*': HIU *toɣ*; LTG *toɣ*; VLW *nɔ-tɔɣ*; MTP *nɔ-tɔɣ*; LMG *n-ʔœɣ*; VRA *wʊ/ʔʊɣ*; MTA *toɣo*; DRG *wa/tɔɣ*; KRO *wɔ/tɔɣ*; OLR *wʊ/tɔː* ; LKN *tɔɣ*.
(#165) °**tomaɣo** 'sweet yam, *Dioscorea esculenta*': LTG *təmeɣ*; LHI *tɔma*; MTP *nɔ-tɔmaɣ*; LMG *n-ʔamaɣ*; VRA *ʔɔmaɣ*; VRS *tamaɣ*; MSN *tamaɣ*; MTA *tomaɣo*; DRG *wa/tmaɣ*; OLR *wɔ/tamaː* ; LKN *tamaɣ*.
(#166) °**tua-gu** 'my fellow; me and X': MTP (*i/tan*); VRA *ʔɔ-k*; VRS *tœ-k*; MSN *tɔ-k*; MTA *tua-k*; NUM *ta-k*; DRG *tʊ-k*; LKN *tɪ-k*; MRL *tɔ-k*.
(#167) °**tuara** 'another; one… the other one; a, indefinite article': VRS *tʊar*; MSN *tʊar*; MTA *tuara*; NUM *tuar*; DRG *tuar*; KRO *tuar*; OLR *tay*; LKN *tɔː*; MRL *tuar*.
(#168) °**tuatua-gu** 'my opposite-sex sibling': HIU *tutβɔ-k*; LTG *səse-k*; LHI *tetɔ-k*; MTP *tɪtɛ-k*; VRA *ʔɔwɔ-k*; VRS *tütüœ-k*; MSN *tutuɔ-k*; MTA *tutua-k*; DRG *tutaː-k*; KRO *tɛt͡ɛa-k*; OLR *tati-k*; LKN *tata-k*; MRL *tɵtɵ-k*.

(#169) °**tubu-gu** 'my grandparent; my grandchild' [POc *tubu-]: LTG *tukʷu*; MTP *i/tk͡pʷu-k*; VRA *ʔubu-k*; VRS *tübü-k*; MSN *tupu-k*; MTA *tupu-k*; NUM *tubu-k*; DRG *tbu-k*; KRO *tubu-k*; LKN *tupu-k*.

(#170) °**tubʷei** 'cultivated garden': LHI *tekʷe*; VLW *n-tɪg͡bʷɪ*; MTP *nɪ-tk͡pʷɪ*; LMG *ʔɪk͡pʷɪ*; VRA *ʔɪk͡pʷɪ*; VRS *tük͡pʷɪ*; MSN *tuk͡pʷɪ*; MTA *tk͡pʷei*; OLR *tuk͡pʷɪ*.

(#171) °**tumus**(**i**,**u**) ~ °**sumut**(**i**,**u**) 'picot, *Siganus* sp.': VRA *ʔumus*; MTA *sumut*; DRG *smut*; LKN *tumuh*.

(#172) °**tur**[**i**,**u**](**ɣi**) 'body, trunk; the real, main, very X; really': HIU *tiʀ̆*; LTG *sir*; MTP *tiy*; VRA *ʔir*; VRS *türɣü*; MTA *tur ~ turia-*; DRG *tru ~ turɣi*; KRO *turu*; OLR *tiriː* ; LKN *tiriɣ*; MRL *tʉr*.

(#173) °**tuwa**[**l**]**e** 'one': LTG *tʉwe*; LHI *βe-twa*; LHR *βu-t͡ʃuwa*; MTP *βi-twaɣ*; VRA *fʊ/wal*; VRS *tiwi͡al*; MSN *tawal*; MTA *twale*; NUM *ti-twal*; DRG *su-twal*; KRO *βu-twal*; LKN *tuwa*; MRL *tʉwɛl*.

(#174) °**un**(**i**,**u**) 'drink': LTG *ʉn*; VLW *in*; MTP *in*; LMG *in*; VRA *in*; MTA *un*; OLR *un*; LKN *un*.

(#175) °**ulusu-i** 'top of (tree); end': VLW *n-lisi*; MTP *n-ulsi*; VRS *ilsi*; MSN *ulsu*; MTA *ulus*; NUM *lus*; DRG *lʊs-ɣi*; LKN *uhli*; MRL *n-ulsi*.

(#176) °**βage-gu** 'my thigh': LTG *wɔke-k*; VLW *nɪ-βɪgɪ-ŋ*; MTP *na-pkɪ-k*; VRA *fɪkɪ-k*; VRS *βɪkɪ-k*; DRG *βkɪ-k*; LKN *βakɛ-k*.

(#177) °**βala-gu** 'my (inner) mouth': LTG *βəle-k*; LHI *βɔlɔ-k*; LHR *βœlœ-k*; MTP *na-plɛ-k*; VRS *βœlœ-k*; MSN *βɔlɔ-k*; MTA *βala-k*; NUM *fala-k*; DRG *βlaː-k*; LKN *βala-k*; MRL *nɵ-βɵlɔ-k*.

(#178) °**βaraba** 'twins': LTG *βərepə*; MTP *na-pyam*; VRA *βaraba*; VRS *βaram*; MTA *βarapa*; LKN *βarap*.

(#179) °**βara-gu** 'my chest; my liver': HIU *βɔʀ̆ɔ-k*; LTG *βəre-k*; MTP *na-pyɛ-k*; MSN *βɔrɔ-k*; MTA *βara-k*; NUM *fara-k*; DRG *βraː-k*; LKN *βaːrɪ-k*; MRL *nɵ-βɵrɔ-k*.

(#180) °**βarusi** 'ask, enquire': LTG (*βəβɛrʉr*); MTP *βɪhiy*; VRS *βørüs*; MSN *βɔrus*; MTA *βarus*; NUM *βarus*; DRG *βaːrus*; OLR *βurus*; LKN (*βaːβuh*); MRL *βɵrʉs*.

(#181) °**βaso**[**ɣi**] 'to plant (taro+)' [POc *pasoq]: MTP *βah*; VRA *βas*; VRS *βas*; NUM *βɪsɪ*; DRG *βsʊɣ*; KRO *βʊsʊɣ*; OLR *βusɪː* ; LKN *βahʊː*.

(#182) °[**βa**]**tanau** 'teach, learn': HIU *βɔtənɔ*; LTG *βətənɔ*; MTP *βatnɛ*; VRA *ʔana*; VRS (*βɔ*)*tɔnɔ*; MTA *βatanau*; KRO *βatna*; OLR *βatna*; LKN *βatna*; MRL *βʊtnʊ*.

(#183) °**βeta**[**ɣ**]**e** 'already; completive aspect': VLW *βataɣ*; MTP *βataɣ*; LMG *βaʔa*; VRA *faʔa*; VRS *βiti͡a*; MSN *βataɣ*; MTA *βeta*; NUM *fata*; MRL *βita*.

(#184) °**βetali** 'banana (generic term)' [PNCV *βetali]: HIU *βətɔy*; LTG *βətel*; LHI *βetœl*; LHR *βɛt͡ʃɛl*; VLW *n-βɛtɛl*; MTP *na-ptɛl*; LMG *n-βɛʔɛl*; VRA *faʔal*; VRS *βɛtɛl*; MSN *βɛtɛl*; MTA *βetal*; NUM *fɛtɛl*; DRG *βtaːl*; KRO *βɛt͡ɛal*; OLR *βatal*; LKN *βætæl*; MRL *ni-βitɛl*.

(#185) °**βeβe-gu** 'my mother': MTP *i/βɪ-k*; VRA *fɛfɛ-k*; MTA *βeβe-k*; NUM *ra/ffɪ-k*; DRG *ββɪ-k*; KRO *i/ββɪ-k*; OLR *βiβɪ-k*; LKN *βɛβɛ-k*; MRL *i-ffɪ-k ~ i-βɛp*.

(#186) °**βilo**[**ɣ**]**i** 'umbrella leaf, *Licuala* sp.': VLW *n-yɛlplɔɣ*; MTA *β*(*i*)*loɣ*; DRG *daː-βlʊ*; KRO *d͡ɛa-βlʊ*; MRL *dʊ-βlʊɰ*.

(#187) °**βina** 'shoot (arrow)' [PNCV *βana-i]: LTG *βiniə*; VLW *βɪn*; MTP *βɪn*; VRS *βɪn*; MSN *βɪn*; MTA (*βene*); DRG *βɪn*; KRO *βɪn*; OLR *βinɪ*; LKN *βinæ*.

(#188) °**βini**[**ti**] 'skin; bark' [PNCV *βunu-ti 'skin, husk, rind']: LHI *βin*; VLW *ni-βini*; MTP *ni-pni*; LMG *n-βin*; VRA *fin-ɣi*; VRS *βinti*; MSN *βinti-ɣi*; MTA *βini- ~ βiniti-*; NUM *fni*; DRG *βni*; LKN *βinŋi*; MRL *βʉni*.

(#189) °**βuruβuru bilaɣe** '*Plectorhynchus orientalis*' [lit. '…(striped like) rail bird']: MTP *wuywuy bɪlaɣ*; VRA *wurwur balaɣ*; MTA *wurwur pilaɣe*; DRG *βirβir blaɣ*; KRO *ɣɔrɣɔr bɪlaɣ*; OLR *wuywuy pilaː* ; LKN *wuːwuː pilaɣ*.

(#190) °**βusi** 'hit; kill': HIU *wu*; LTG *wuh*; VLW *wih*; MTP *wuh*; VRA *fus*; VRS *βus*; MSN *βus*; MTA *βus*; DRG *βus*; KRO *βus*; OLR *βus*; LKN *βuh*; MRL *βʉs*.

(#191) °**βutoβuto** 'puffer fish, *Tetraodontidae* spp.': MTP *nʊ-wʊtwʊt*; VRA *futfutʊ*; VRS *wʊtwʊt*; MTA *wutowuto*; DRG *βʊtβʊt*.
(#192) °**walu[su]** ~ °**walu-gu** '(my) brother-in-law; (my) sister-in-law': LTG *wəlʉ-k*; VLW *wulus*; MTP *wulus* ~ *wuluk*; VRA *wulu-k*; VRS *wøliis* ~ *rœl/wœl*; MSN *wulu-k*; MTA *walu* ~ *walu-k*; MRL *rɔ/wɵl*.
(#193) °**weda** 'rain': HIU *wetə*; LTG *wɛt̪ə*; VLW *n-wɛn*; VRA *wɛdɛ*; VRS *wi͡an*; MSN *wɛn*; MTA *wena*.
(#194) °**wia** 'good': HIU *wiə*; LTG *ɣɛ/wiə*; VLW *ɣɛ/wɪ*; MTP *wɪ*; LMG *wi*; VRA *wiɪ*; VRS *wɪ*; MSN *wɪ*; MTA *wia*; DRG *wɪ*; KRO *wɪ*; OLR *wɪ*; LKN *wɪ*; MRL *wɛ͡a*.
(#195) °**wisi** 'owl': LTG *wih*; LHI *wis*; MTP *ni-wis*; VRA *wis*; VRS *wis*; MTA *wis*; NUM *wis*; DRG *wis*; OLR *wis*; LKN *wis*; MRL *ni-wis*.
(#196) °**wota** 'be born': HIU *wɔtə*; LTG *wɔtə*; MTP *wɔt*; VRA *wɔʔɔ*; VRS *wɔt*; MSN *wɔt*; MTA *wota*; DRG *wɔt*; KRO *wɔt*; OLR *wata*; LKN *wɔtæ*; MRL *wɔt*.
(#197) °**wotaɣa** '*Barringtonia edulis*': LTG *wətaɣə*; MTP *na-wtaɣ*; VRA *waʔaɣ*; VRS *wʊtaɣ*; MSN *wataɣ*; MTA *wotaɣa*; DRG *wtaɣ*; LKN *wɔta*; MRL *na-watauɰ*.

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