A Comparative Look at the Dual and Plural Forms of Verb Inflections and Pronouns in Northeast New Guinea Papuan Languages

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1. Introduction[1]

Pronouns and verb inflections are known to be conservative. They change more slowly and do not get lost as easily as other form-meaning pairings. It is therefore natural that they should come under close scrutiny in any attempt to establish a genetic link between languages. One of the most intriguing pieces of evidence adduced in support of the Trans New Guinea hypothesis concerns the expression of the dual and plural number in such forms. In a number of Papuan languages in the highlands of Papua New Guinea and the adjacent areas to the north and east, it has been observed, a consonant alternation marks the opposition between the dual and plural forms of personal pronouns and the subject person-number inflections of the verb. In these forms "a consonant typical of the plural is replaced by another typical of the dual...In each case, the dual consonant is

[1]A first draft of this paper was circulated in April 1995. I have greatly profited from discussions with the members of the Papuan Linguistics Project jointly undertaken by the Linguistics Departments of the University of Sydney and the Research School of Pacific and Asian Studies at the Australian National University, Canberra, notably William Foley, Andrew Ingram, Meredith Osmond, Andrew Pawley, and Malcolm Ross. I am particularly indebted to Andy Pawley for sharing his ongoing research into Trans New Guinea verb morphology (1995b) and cognate sets (1997) with me. I also owe a great debt of gratitude to the many SIL researchers who made their draft dictionaries and grammar papers available to me (see the Acknowledgements at the end of the paper). Valuable comments on the final version of this paper came from Tom Dutton, Angela Terrill, Juliette Blevins, and Kevin Ford. The responsibility for all errors of quotation and interpretation remains of course mine. My best thanks go to Eva Lindström for presenting this paper to the Second International Conference on New Guinea Languages and Linguistics, Goroka 24 to 26 September 1997, which I was unfortunately unable to attend in person. The research reported here was made possible by scholarship grants from the Australian National University and the Commonwealth Ministry of Employment, Education and Training.

homorganic with, and less sonorous than, the corresponding plural consonant." (Haiman 1979: 900f).[2] In this paper, I want to explore the historical background of this consonant alternation in a group of Papuan languages that form a geographically coherent subsection of the postulated Trans New Guinea phylum.

In a number of widely separated Papuan languages throughout the northeastern part of mainland Papua New Guinea, the dual and plural forms of pronouns and verb endings differ only in a phonological feature associated with a consonantal segment. Looked at from the point of view of the whole paradigm, there is a consonantal alternation between corresponding dual and plural forms. Apart from this alternation, the forms are phonologically identical. Remarkably, the alternating consonant usually has a more sonorous realization in the plural form than in the dual form. That is to say, if a simple analysis in terms of phonological features is possible in a given language, it is the plural rather than the dual form that carries an additional feature. The following examples from six different languages illustrate the alternation in its various guises. Each of the sentences in (1) through (6) has a free pronoun as subject and its predicate is an inflected verb form that agrees with the pronoun in person and number. The alternating consonants marking the distinction between dual forms (1-6a) and plural forms (1-6b) are bolded.

1) **Kâte** [Eastern Huon, FH] (author's fieldnotes)

(1a)	*Yahe yu-kopire***ʔ**.	(1b) *Yaŋe yu-***ŋ**gopie**ŋ**.
	3DU be-PRES:3DU	3PL be-PRES:3PL
	'They two are there.'	'They all are there.'

[2]Haiman tried to make a link between this phenomenon and the observation that the dual endings of some languages contain /ʔ/. He mentions a process of consonant coalescence in Yagaria that changes a sequence of, e.g., /ʔ/ and /m/ into /b/ and suggests that, historically, such a phonological process might have produced the consonant alternation in question (1979 and 1980: xlii ff). However, there is no evidence for the reconstruction of /ʔ/ in the phonology of the common ancestor of the Papuan languages of Northeast New Guinea, nor indeed in the phonology of most of the proto-languages that are its descendants. Consequently, there is no basis for the assumption that a syntagmatic process of the sort outlined by Haiman played any role in the genesis of the alternation. As I will argue in this paper, there is a simple paradigmatic explanation of the historical origin of the alternation.

2) **Yau** [Uruwa, FH] (Wegmann 1996a, § 1.4.2.3)

(2a) *Not ... ə-taha-mot.* (2b) *Non ... ə-naha-mon.*
1DU go.up-DU:REM.FUT-1DU 1PL go.up-PL:REM.FUT-1PL
'We two will go up (there).' 'We all will go up (there).'

3) **Kewa**, Eastern [Engan, ENGH] (Apoi Yarapea, pers. com.)

(3a) *Ípú Mendi pua-pe.* (3b) *Ímú Mendi pua-me.*
3DU Mendi go-PT:3DU 3PL Mendi go-PT:3PL
'They two went to Mendi.' 'They all went to Mendi.'

4) **Kobon** [Kalam, ENGH] (Davies 1981: 159)

(4a) *Nipe hol ar-nab-ul.* (4b) *Nipe hon ar-nab-un.*
3SG 1DU go-FUT-1DU 3SG 1PL go-FUT-1PL
'He and I will go.' 'He and we will go.'

5) **Nobonob** [Mabuso, MA] (Schuetz 1941, p. 16)

(5a) *a a-kulah* (5b) *ag a-kulag*
3DU talk-FUT:3DU 3PL talk-FUT:3PL
'They two will talk.' 'They all will talk.'

6) **Siroi** [Rai Coast, MA] (Wells 1979: 102, 68)

(6a) *sile ... il-key* (6b) *sine ... il-gey*
1DU come-1DU:PT 1PL come-1PL:PT
'We two came.' 'We all came.'

As these examples show, the place of articulation of the alternating consonants varies from language to language. In Kâte (1) and Nobonob (5) they are velars, in Yau (2) and Kobon (4), dentals, and in Kewa (3), bilabials. Siroi (6), finally, has alternating velars in the verb endings and dentals in the pronoun. As for the feature in which the dual and plural forms differ from each other, it can be seen that the plural consonants in all languages carry one of the highly sonorous features of nasality or voicing. In Yau (2) and Kewa (3) the phonological contrast involves voiceless oral stops in the dual and homorganic nasals in the plural forms. The initial consonant of the verb ending alternates between a voiceless stop in the dual and a prenasalized stop in the plural in Kâte (1), and between a voiceless stop and a voiced stop in Siroi (6). In the Siroi pronoun and in Kobon (4) we see an alternation between /l/ in the dual and /n/ in the plural. In this last case, the alternation cannot be pinned down to a single phonological feature and the sonority correlation between dual and plural forms is exceptionally inverted.

The languages from which examples (1) through (6) were taken are all spoken in the northeastern part of the island of New Guinea (see the map in the Appendix). According to the classification by Wurm (1982), the Papuan languages of this area subdivide into three large groups: the Finisterre-Huon stock (FH), the East New Guinea Highlands stock (ENGH), and the Madang-Adelbert Range subphylum (MA).[3] Each of these groups is made up of a number of subgroups or families of languages. In general, the interrelationship of the member languages of these low-level families is obvious and uncontroversial. The genetic unity of the three larger groupings or stocks mentioned above, on the other hand, has not gone unchallenged. Foley (1986) took a cautious stance toward all proposals of genetic relationships that went beyond the lowest level of families with somewhere between five and twenty-five member languages.[4]

Wurm (1975, 1982) included the FH, ENGH and MA stocks in an even larger grouping, the Trans New Guinea phylum, to which he assigned two thirds of the estimated total of around 750 Papuan languages. Evidence of the existence of a far-flung group of interrelated languages stretching all across the New Guinea mainland had first been presented by McElhanon and Voorhoeve (1970) who undertook a direct comparison of two newly recognized groups of languages spoken in opposite parts of New Guinea, viz. the Central and South New Guinea stock and the FH stock. In a recently published paper, Pawley (1995) examined the Trans New Guinea cognate sets proposed by McElhanon and Voorhoeve and found that recurrent sound correspondences can indeed be

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[3]I will follow the well-known classification of Papuan languages in Wurm & Hattori (1981) and Wurm (1982) in my references to the genetic affiliation of individual languages. I largely agree with this classification as far as the area under study in this paper is concerned. Undoubtedly, a few reassignments and some changes in subgrouping will eventually have to be made. None of these, however, should affect the ultmate genetic unity of all the twenty-plus language families compared in this paper, which is all I am concerned with. My only reservation concerns the following languages for which no data was available to me: Abaga (FH), Kenati (ENGH), Wiru (ENGH), and the Waibuk family (ENGH?). Where individual researchers found it necessary to give the language they are studying a different name from the one used in the aforementioned reference works, I adopt their choice. For all such new language names, a cross-reference to the nomenclature in Wurm (1982) can be found in the legend to the map in the Appendix.

[4]Foley's conservative assessment of the literature trying to establish wider genetic groupings befits a state-of-the-art report, and it is clear that it was meant to be understood in that sense. In fact, in the same book Foley himself (1986: 245-62) presents cogent evidence for a genetic relationship between the Huon Peninsula languages (FH) and the Kainantu and Gorokan languages (ENGH) as well as the Dani and Wissel Lakes language families of Irian Jaya.

detected among them. Pawley added MA cognates to the list, thus extending the lexical comparisons to two of the three language stocks to be studied in this paper. He presented upwards of twenty etymologies, mostly involving nominal stems, that link the FH and MA stocks with each other. It is the main aim of this paper to provide further evidence of a genetic relationship between the Papuan languages covering the northeastern part of New Guinea, i.e., the approximately two hundred languages assigned to the FH, ENGH, and MA stocks of the postulated Trans New Guinea phylum.

For the sake of convenience, I will use the label Northeast New Guinea Papuan languages (NENG) to refer to the totality of languages included in the three stocks just mentioned. This label is not meant to imply that the FH, ENGH, and MA stocks are more closely related to each other than to any other language family outside the area of study. I am not concerned here with the delimitation of the Trans New Guinea phylum or the establishment of its higher-level subgroups. Rather, I want to draw attention to a genetic feature uniting a geographically coherent section of putative Trans New Guinea languages. Many more languages will have to be studied before it can be said whether this feature goes back to such a remote ancestral language as the postulated Proto Trans New Guinea.

Section 2 gives a more detailed description of the consonant alternation between dual and plural forms in three languages, one from each of the three NENG stocks. In Section 3, a diachronic account of the development of this alternation will be presented along with a survey of the inflectional endings cross-referencing person and number of the subject in NENG languages. An old inflectional pattern will be identified in these endings which holds the key to an understanding of the independent development of the alternation we are concerned with in different parts of the NENG language area. In Sections 4 and 5, I will propose reconstructions of some Common NENG verb stems and endings. The verb etymologies presented in Section 4 are supposed to provide independent evidence of the genetic unity of the languages dealt with in this paper, thus paving the way for the reconstruction of a part of the Common NENG paradigm of different subject medial verb endings in Section 5.

2. Consonant alternation in dual and plural forms

Apart from its significance from a historical comparative point of view, the consonant alternation between dual and plural forms of pronouns and verb endings that we briefly met in the introduction is worth studying in its own right. In this section we will have a detailed look at three geographically widely separated languages in which its presence is particularly pervasive: Kâte (Eastern Huon, FH), Kewa (Engan, ENGH), and Siroi (Rai

Coast, MA). It must be said from the outset that these languages are not representative of the general manifestation of the alternation within their stocks but rather represent extremes of elaboration and generalization. In few other languages has it been so systematically developed.

A consonant alternation between dual and plural forms of the same person category is found through all paradigms of final verb endings in Kâte (Eastern Huon, FH). There are two paradigms which lack a tense/mood marker. The endings of the far past tense and the immediate hortative mood consist only of distinctive person-number formatives. These recur in combination with specific tense/mood markers to form other tenses and moods. Table 1 gives the dual and plural forms of these two least marked final verb paradigms (Pilhofer 1933: 26ff).

Table 1: Dual and plural verb endings in **Kâte** (Eastern Huon, FH)

(a) **far past:**			Ø DU *N* PL	(b) **hortative:**			Ø DU *N* PL
	DU	PL			DU	PL	
1st	*-pe?*	*-mbeŋ*	*-peC*	1st	*-na?*	*-naŋ*	*-naC*
2nd/3rd	*-pi?*	*-mbiŋ*	*-piC*	2nd/3rd	*-ni?*	*-niŋ*	*-niC*

In all Kâte verb paradigms there are only two distinct forms in the dual and plural, the second and third person forms being identical. The two dual forms of the far past tense in Table 1 (a) differ from the corresponding plural forms in their consonants. The difference manifests itself both in the initial and the final consonantal segment of these monosyllabic endings. The glottal stop /ʔ/ and the velar nasal /ŋ/ that fill the final consonant position in the dual and the plural endings, respectively, are the only consonants permitted in syllable final position. Therefore, if we assume that the final consonant in these endings is underlyingly an empty C, the association of nasality (*N*) with this C can only be realized as /ŋ/, as in the plural forms of the verb endings in Table 1. Assuming further that a laryngeal and a supralaryngeal tier must be recognized, the absence of any specification for a supralaryngeal feature (*ø*) leads to a default realization /ʔ/ of this C, as in the dual forms of Table 1. The dual and plural formatives can thus be thought of as consisting of the supralaryngeal features *ø* and *N*, respectively, plus an ending final empty C with which these features associate. As shown in the rightmost column of Table 1 (a), these features associate with the initial consonant of the endings as well. Added nasality turns underlying /p/ into /mb/ in the plural, whereas it stays unchanged in the dual.

The same account holds for the endings of the immediate hortative in Table 1 (b). That the initial consonant in them does not alternate between dual and plural forms is easy to understand taking into consideration the nature of this consonant. The association of nasality with a fully specified /n/ in the plural forms produces no change of this segment. Stipulating a vacuous outcome of the association of *N* with the initial consonant of the hortative endings allows us to capture a generalization. The supralaryngeal features *ø* and *N*, representing dual and plural formatives, always associate with both the very first and the very last C of final verb endings. The forms shown in (7) illustrate the application of this rule to endings that contain a tense/mood marker in addition to the person-number component.

7a) Kâte: past irrealis

	DU	PL
1st	*-tsa-pe?*	*-ndza-peŋ*
2nd/3rd	*-tsa-pi?*	*-ndza-piŋ*

7b) Kâte: present tense

	DU	PL
1st	*-ko-pere?*	*-ŋgo-peneŋ*
2nd/3rd	*-ko-pire?*	*-ŋgo-pieŋ*

The past irrealis in (7a) is made up of the mood marker *-tsa* and a person-number component that is identical with the endings of the far past tense we saw in Table 1 (a). Here it is the initial consonant of the mood marker that gets prenasalized in the plural forms, whereas the initial /p/ of the person-number component inside the ending remains unchanged. In the present tense in (7b), likewise, the present tense marker *-ko* occupying the first position in the ending becomes *-ŋgo* in the plural.

Note that the number formatives *ø* DU and *N* PL are redundant in the present tense (7b) while they contribute the only marking of dual and plural number in the past irrealis (7a). The present tense endings contain an additional set of formatives that also differentiate between dual and plural number, the 'threefold desinence' partials *-re* DU, *-ne* 1st PL, and *-e* 2nd/3rd PL (cf. Section 3). In (8) these formatives are set off from the rest of the endings by hyphens.

8a) Kâte: near past

	DU	PL
1st	*-pe-re-?*	*-mbe-ne-ŋ*
2nd/3rd	*-pi-re-?*	*-mbi-e-ŋ*

8b) Kâte: different subject medial

	DU	PL
1st	*-pe-re*	*-pe-ne*
2nd/3rd	*-pi-re*	*-pi-e*

(8a) repeats the endings of the present tense minus the tense marker *-ko*. This gives the endings of the near past tense. A comparison with the endings of the far past tense given above in Table 1 (a) shows that the threefold desinence partials just mentioned

distinguish the near past from the far past tense. In the near past tense, too, dual and plural number are marked twice, as the formatives *ø* DU and *N* PL associating with the first and last consonants of the endings are also present. But these are not simply redundant, as a look at the forms in (8b) shows. They distinguish the near past tense from sequential different subject medial verb forms. Medial verb forms, alone of all verb endings, lack the number formatives *ø* DU and *N* PL. As can be seen in (8b), they also lack the syllable final C at the end with which these features associate in final verb endings.

Table 2: Kâte personal pronouns, dual and plural

	DU	PL	Ø DU N PL
1st	<nâhe> *nɔe*	*nɔŋe*	*nɔCe*
2nd	<ŋohe> *ŋoe*	*ŋoŋe*	*ŋoCe*
3rd	<jahe> *yae*	*yaŋe*	*yaCe*

The dual and plural forms of the personal pronoun in Kâte differ from each other in a minimal way that is strongly reminiscent of the consonant alternation in final verb forms just discussed. As shown in Table 2, all plural forms are bisyllabic and have an intervocalic /ŋ/. In contemporary Kâte, the dual forms have the same phonological shape as the corresponding plural forms except that they lack this /ŋ/ (see the righthand column under DU in Table 2). This gives rise to a sequence of vowels in the body of these pronouns. Around the turn of the century when Kâte orthography was devised and the spelling of these pronouns was fixed, there must have been an /h/ between the two vowels in the dual pronouns (see the orthographic representation in the lefthand column). Indeed, some older speakers in the inland villages of Fioo and Qârângko still sound an /h/ in these forms in careful pronunciation.

We can try to derive the alternation between /h/ in the dual and /ŋ/ in the plural forms using the same formatives *ø* DU and *N* PL as in the verb forms. Since the glottal stop does not occur intervocalically within morphemes, /h/ is the only candidate that fits the properties of a surface realization of a C with no specification for a supralaryngeal feature. For the majority of speakers who never pronounce an /h/ in these forms, it would have to be deleted by a readjustment rule. A rule deleting word internal occurrences of /h/ is independently needed for the description of word composition and would have just the desired effect. This leaves us only with a minor problem. In this account, the realization of the association of nasality with a syllable initial C is /N/. This means that the velar

nasal /ŋ/ must be considered the general default nasal in Kâte, syllable initially as well as finally. While I am not aware of any counterevidence against such an assumption, I do not have any further evidence to substantiate it either.

The next language to be discussed is Kewa (Engan, ENGH) which is spoken at the opposite end of the area under study, in the Southern Highlands Province (see the map in the Appendix). Whereas the alternation in Kâte involved a C with no specification for place of articulation at the end of verb endings and in the middle of pronouns, in Kewa the alternating consonants are always bilabials. (9) illustrates the alternation between dual and plural forms in two final verb paradigms.

9. **Kewa**, Western dialect [Engan, ENGH] (Franklin 1971: 38ff)

9a) past tense, egocentric

	DU	PL
1st	*-pa*	*-ma*
2nd/3rd	*-pe*	*-me*

9b) present tense, altrocentric

	DU	PL
1st	*-tepa*	*-tema*
2nd/3rd	*-tepe*	*-teme*

A look at the forms of the past tense in (9a) and the present tense in (9b) shows that Kewa verb paradigms follow the same construction principle as those of Kâte. The same formatives that on their own expound the past tense recur in the present tense, together with a tense marker *-te*. The alternation occurs in the initial consonant of these person-number formatives and does not affect anything else in the endings. An alternation between /p/ in dual forms and /m/ in plural forms is found in all tenses, in egocentric and altrocentric paradigms alike. The bilabial place of articulation of the initial consonant of the non-singular person-number formatives is an invariable part of them. In its surface realisation, this consonant alternates between oral and nasal resonance depending on the number expressed.

10a) Kewa: personal pronouns

	DU	PL
1st	*sáá*	*niáá*
2nd	*nipú*	*nimú*
3rd	*nipu*	*nimuū*

10b) Kewa: different subject medial

	DU	PL
1st	*-pona*	*-mona*
2nd	*-lipina*	*-limina*
3rd	*-na*	*-na*

In the personal pronouns (10a), the same type of alternation can be observed in the second and third person dual and plural forms, but not in the first person forms which bear no particular resemblance to each other. In Kewa, too, the different subject medial verb forms (10b) stand apart from the final verb forms in a noticeable feature. There are

distinct endings for all three persons in the dual and plural, though the third person forms of all three numbers are conflated. But, unlike Kâte, in Kewa the medial verb endings show the same type of consonant alternation as the final verb forms in the first and second person in which dual and plural forms are differentiated.

In comparison to Kâte, the consonant alternation between dual and plural pronouns and verb endings in Kewa presented a rather uniform picture. The third language to be introduced here, Siroi (Rai Coast, MA), resembles Kâte in that the alternation affects consonants with different places of articulation and targets the consonants at both ends of the endings. Consider the endings of the two final verb paradigms in Table 3 (Wells 1979: 40ff).

Table 3: Dual and plural verb endings in ***Siroi*** (Rai Coast, MA)

(a) past tense:			Ø DU *[vc]* PL	(b) apprehensive:			Ø DU *[vc]* PL
	DU	PL			DU	PL	
1st	*-keŋ*	*-geŋ*	*-keŋ*	1st	*-pekik*	*-bekig*	*-pekik*
2nd/3rd	*-naik*	*-naig*	*-naik*	2nd/3rd	*-pekaik*	*-bekaig*	*-pekaik*

The dual and plural endings of the past tense in Table 3 (a) contain each a velar stop and a nasal consonant. It can be seen that the velar stop becomes voiced in both the 1st PL and the 2nd/3rd PL forms whereas the nasal consonant remains unchanged. The same kind of alternation occurs in the endings of the apprehensive mood in Table 3 (b). Voiced stops in the plural endings correspond to plain stops with the same place of articulation in the dual endings. Here, both the initial and the final stop in the endings alternate, whereas the stop in the middle of the endings remains unchanged. Note that the alternating velar stops in the past tense forms in Table 3 (a) also stand at the border of the endings, the one in the first person forms at the beginning, the other at the end.

Throughout the verb paradigms of Siroi it can be found that the consonant alternation between dual and plural endings affects either the first consonant of the ending, its last consonant, or both of them. Stops at either border of an ending change, nasal consonants and semi-vowels do not change. If we attribute the invariability of the latter consonants to their inherent phonological nature, we can say that in Siroi, too, the alternation generally involves both the initial and the final consonant of an ending. The features *ø* DU and *[voicing]* PL associate with the very first and the very last consonant of an ending and produce a change in those consonants of the plural form which can assimilate the feature *[voicing]*.

The behavior of the alternation in Siroi is an exact parallel of what we have seen above in Kâte. In both languages the consonants affected by the alternation stand at the border of the verb endings, but stops in the interior of the endings are not affected. The plural endings can be derived from the dual endings by adding nasality (Kâte) or voicing (Siroi) to the consonants bordering the endings. Thus, Siroi also parallels Kâte with respect to the unusual direction of this derivation.

11) **Siroi** [Rai Coast, MA]
(Wells 1979: 19)

	SG	DU	PL
1st	*ye*	*sile*	*sine*
2nd	*ne*	*tale*	*tane*
3rd	*nu*	*nale*	*nane*

12) **Tauya** [Brahman, MA]
(MacDonald 1990: 67)

	SG	PL
1st	*ya*	*sen*
2nd	*na*	*ten*
3rd	*ne*	*nen*

A look at the personal pronouns of Siroi (11) shows that the consonant alternation in them cannot be described in terms of the same phonological feature as the verb endings, i.e. voicing. Rather, there is an alternation between /l/ in the dual and /n/ in the plural in the forms of all three persons.

Finally, I want to point out an interesting detail from a language that has lost the dual number. MacDonald (1990) reports that the plural forms of the personal pronoun in Tauya (Brahman, MA) show a quite singular morphophonemic behavior, which leads her to posit underlying forms of them with a final /n/ (12). These pronominal forms are then the only morphemes in the language with a syllable final consonant, and MacDonald (1990: 67) states that "most of the phonological processes which affect the personal pronouns apply in no other environments". The same statement could be made about the person-number composites of Kâte. Nowhere else in the language but in the plural forms of the personal pronoun and final verb endings does nasality behave like a suprasegmental feature.

3. The 'threefold desinence' pattern

Returning to the consonant alternations discussed in the introduction, a word of correction is in order. An alternation between the dual and plural forms of all persons does not appear in all of the languages for which example sentences were given in (1) through (6). In Kobon, the alternation between /l/ in the dual and /n/ in the plural is in fact limited to the first person non-singular forms. If the Kobon sentences in (4) were transposed into the second or third person, no such alternation could be found. Consider the paradigm of the remote past tense given in (13).

13) **Kobon** [Kalam, ENGH] (Davies 1981: 166): remote past

	SG	DU	PL
1st	*-nə*	*-lo*	*-no*
2nd	*-na*	*-lə*	*-be*
3rd	*-a*	*-lə*	*-la*

A comparison of the dual and plural endings of the same person in (13) shows that only the first person endings are minimally differentiated from each other by the consonants /l/ and /n/. The same opposition does not recur between the non-singular endings of the second and third person. Thus, Kobon represents a different type of language from the one we focussed on in Section 2. There we had a closer look at three languages in which an identical consonant alternation could be observed between the dual and plural forms of all persons.

When we extend our view over the whole NENG area, we find languages that follow the pattern of Kâte and the other languages discussed in Section 2 and others that follow the more restricted pattern of Kobon. Yet other languages are a mixture of the two in that a consonant alternation is found in all non-singular forms of the personal pronoun, but only in the first person forms in verb endings. The map in the Appendix shows the geographical distribution of these two patterns in pronouns and verb endings and the different combinations encountered. As far as verb endings are concerned, it can be seen that there are considerably more languages that show a minimal consonant opposition only in the first person forms than show it in all non-singular forms. I will argue here that this pattern is not only the more frequent but also the older of the two. The historical development that leads from a Kobon type of pattern to the pattern manifested by Kâte can be inferred from a comparison of Kâte with other Huon Peninsula languages.

14) **Ono** [Western Huon, FH] (Wacke 1930/31: 165): far past

	SG	DU	PL
1st	*-ko-le*	*-ko-te*	*-ko-ne*
2nd	*-ko-ne*	*-ko-it*	*-ko-i*
3rd	*-ke*	*-ko-it*	*-ko-i*

15) **Kobai** [isolate, FH] (McElhanon 1973: 66): past tense

	SG	DU	PL
1st	*-pai*	*-pot*	*-pon*
2nd	*-pin*	*-pit*	*-pe*
3rd	*-i*	*-pit*	*-pe*

16) **Kâte** [Eastern Huon, FH] (Pilhofer 1933: 26): far past

	SG	DU	PL
1st	*-po*	*-pe?*	*-mbeŋ*
2nd	*-meŋ*	*-pi?*	*-mbiŋ*
3rd	*-we?*	*-pi?*	*-mbiŋ*

In the past tense paradigms of Ono (14) and Kobai (15) a minimal opposition can be observed between /t/ and /n/ in the endings of the first person dual and plural. A /t/ also occurs in the 2nd/3rd DU ending in both languages, but there is no consonant in the corresponding syllable position of the 2nd/3rd PL ending. Kâte (16) agrees with Ono and Kobai in having formally identical endings for the second and third person in both non-singular numbers. But in contradistinction to the two other languages, the Kâte 2nd/3rd PL ending ends in /ŋ/ just like the 1st PL ending. Thus, there is a constant opposition between final /?/ in all dual and final /ŋ/ in all plural endings in Kâte (16).

To arrive at the Kâte pattern from the pattern we can see in Ono (14) and Kobai (15), it was only necessary to introduce a final nasal into the conflated ending of the second and third person plural, by analogy with the first person forms. This analogical change brought about a semantically significant consonantal opposition between dual and plural endings in general. Strictly speaking, the term consonant alternation should be reserved for the kind of pattern we see in Kâte (16) where a minimal opposition can be observed between like consonants in all dual and plural forms. In Ono (14) and Kobai (15), the first person dual and plural endings containing /t/ and /n/ specify both person and number, whereas the opposition between /?/ and /ŋ/ in the Kâte non-singular endings correlates with number only. What was a local opposition within the whole paradigm thus became generalized and semantically charged. A consonant alternation between dual and plural forms was created. Once this had happened, the alternation became virulent and metastasized. From the last consonant position in the endings where it originated it spread to the first consonant and now affects both in a parallel manner (see Section 2).

A moment's reflection will convince us that any attempt to reverse the account given above runs into insuperable difficulties. Let us assume for a moment that all three languages represented in (14) to (16) originally had a consonant alternation between their dual and plural verb endings, but only Kâte (16) preserved it. We would then have to postulate that Kobai (15) lost a final /n/ from the 2nd/3rd PL ending. Obviously, this could not have been the result of a regular phonological change since /n/ was preserved in the 1st PL ending in exactly the same environment. Given that the loss of a final /n/ in the 2nd/3rd PL ending would have destroyed a semantically significant pattern of

consonantal oppositions, it is also impossible to find a morphological or semantic rationale for such a change.

The dual endings of Ono (14) might seem to offer a way out of this dilemma. As the characteristic dual consonant /t/ appears in syllable initial position in the 1st DU ending but in syllable final position in the 2nd/3rd DU ending, we could hypothesize that the corresponding plural forms were, analogously, **-*ne* 1st PL and **-*in* 2nd/3rd PL. Under these circumstances, a regular phonological change might have been responsible for the loss of the /n/ in the 2nd/3rd PL ending without affecting the same phoneme in the 1st PL ending. However, there is quite clear evidence from lexical comparisons that Ono did not in fact lose word final /n/ but rather regularly retained it (compare, e.g., Kâte *imeŋ* 'louse' and *safŋ* 'man's mother-in-law' with Ono *emen* 'louse' and *sewan* 'man's mother-in-law'). Thus we can only conclude that neither Ono nor Kobai ever had a general consonant alternation in their dual and plural verb endings.

According to the account just given, the consonant alternation between dual and plural verb endings in Kâte is a relatively recent innovation. It does not even date back to the common ancestor of the Huon Peninsula languages, but must have developed after Kâte became separated from Ono and Kobai. It follows from this account that the similarity the alternation in Kâte has with the same phenomenon in Kewa and Siroi (see Section 2) must be due to convergent development. There is no way to project the alternation back to the distant proto-language common to all three of these languages. That a consonant alternation with the same function of differentiating dual from plural forms should have developed in so widely separated languages indicates, however, that there may have been a common point of departure. In the remainder of this section, I will try to show that this is indeed the case. All NENG languages inherited first person dual and plural endings that only contrasted in the consonants */t/ and */n/. From this germ, several languages in different parts of the NENG area independently developed a consonant alternation between all dual and plural forms by analogical extension, much like Kâte did.

So far, we have focussed on the dual and plural endings of verbs. In particular, we focussed on the first person non-singular forms which are minimally differentiated by a consonantal opposition in all languages we have seen so far. Taking the whole paradigm of person-number combinations into consideration now, we will see that this opposition is part of a larger pattern spanning all three persons and numbers. We have already noticed in passing that Ono (14) and Kobai (15) have a characteristic consonant /t/ in both their dual endings. Thus, the 1st DU ending of these languages formally links up with two other endings in the paradigm. First, it stands in a relationship of opposition with the 1st PL ending, both having a consonant with the same place of articulation but

differing in their sonority. Second, the 1st DU ending is connected with the 2nd/3rd DU ending in a relationship of similarity, both containing the consonant /t/.

A twofold relationship of this sort can also be observed for the 1st PL ending. On the one hand, of course, this form is the other end of the opposition with the 1st DU form. But it also stands in a relationship of similarity with the ending of the second person singular. Going back to the paradigms of verb endings from Huon Peninsula languages in (14) to (16), we notice that the 2nd SG and 1st PL endings of Ono (14) are in fact identical: *-ne* 2nd SG and *-ne* 1st PL. In Kobai (15) and Kâte (16), the two endings differ in one segment in each language, but still show a strong overall similarity against the background of the whole paradigm: Kobai *-pin* 2nd SG and *-pon* 1st PL have different vowels, while Kâte *-meŋ* 2nd SG and *-mbeŋ* 1st PL differ in a feature of the initial consonant. The similarity between these two forms in the paradigm, involving different person as well as number categories, is much more idiosyncratic than the similarity between the two dual forms and is therefore of great significance from a historical comparative point of view.

17) **Yagaria** [Gorokan, ENGH] (Renck 1975: 93): past tense

	SG	DU	PL
1st	*-d-ue*	*-d-uʔe*	*-d-une*
2nd	*-d-ane*	*-d-aʔe*	*-d-ae*
3rd	*-d-ie*	*-d-aʔe*	*-d-ae*

18) **Awa** [Kainantu, ENGH] (Loving & McKaughan 1973: 40): near past

	SG	DU	PL
1st	*-oʔ*	*-oyaʔ*	*-onaʔ*
2nd	*-ɔnaʔ*	*-œyaʔ*	*-ɔʔ*
3rd	*-œʔ*	*-œyaʔ*	*-ɔʔ*

The similarity between the 2nd SG and 1st PL verb endings has been noticed by several researchers studying Eastern Highlands languages and one of them, John Haiman (1980), coined a name for the whole pattern I have described above. Dividing the person-number endings of Yagaria (17) up into minimal concatenative partials, Haiman (1980: xl) arrived at the following set of suffixes: *-ne* 2nd SG and 1st PL, *-/e* 1st/2nd/3rd DU, and *-e* 1st SG, 3rd SG, and 2nd/3rd PL. These suffixes express declarative mood as well as, in a rudimentary fashion, person and number.

An analysis of the sort proposed by Haiman cuts down right to the inflectional pattern we are tracing and makes it clearly visible. It obscures, however, the semantic unity between the suffixes isolated above and the preceding ablauting vowel which really expound the person-number categories in conjunction with one other. Haiman called the three declarative mood suffixes given above, as well as the suffixes for other moods which follow the same pattern, *threefold desinences*. I will adopt this name in the following with the proviso that I take it to stand for an inflectional pattern rather than a set of morphemes.

As far as Eastern Highlands languages are concerned, the inflectional pattern we are interested in can generally be isolated in terms of a morpheme analysis of the type discussed above for Yagaria. From the near past tense endings of Awa (18), for instance, we could extract the recurrent partials *-na/* and *-ya?* occuring in the 2nd SG and 1st PL forms, and in the dual forms, respectively. But an analysis along these lines does not permit us to capture the similarity between, for example, Kâte (16) *-meŋ* 2nd SG and *-mbeʃ2* 1st PL unless, of course, we extract a recurrent partial *-eŋ* from these endings. Unlike Yagaria, however, where the extraction of threefold desinence partials from the declarative mood endings in (17) is supported by their commutability with those of other moods, Kâte gives us no morphological reason to divide the aforementioned endings in two parts. Similarly, we would like to be able to recognize the mutual similrity of the dual endings in Ono (14), *-te* 1st DU and *-it* 2nd/3rd DU, without being forced to give the /t/ they have in common the status of a morpheme. It should have become clear by now that the diachronic pattern analysis I am advocating is independent of a morpheme analysis.

Haiman (1980) recognized the presence of the threefold desinence pattern in both the Gorokan and Kainantu families (ENGH) and cited it as a major piece of evidence for the genetic relationship between these two language families, a point that was reiterated in an article by Hong (1990: 144ff). Neither of these authors, however, referred back to Greenberg (1971) who was the first to call attention to the significance of this shared inflectional pattern for the genetic classification of Papuan languages. In his pioneering study, Greenberg (1971: 845ff) cited verb paradigms from Dedua (Eastern Huon, FH) and Kanite (Gorokan, ENGH) and pointed out the occurrence of a nasal consonant in the 2nd SG and 1st PL endings of these languges as well as the presence of a common consonant in the dual endings. He referred to this pattern as the 'suffix pronominal pattern' and ascribed it to three of the seven large Papuan language families he saw on the New Guinea mainland. Two of these large groupings are outside the area of study in this paper, and the third is only partially represented by the FH and ENGH stocks. As for the MA languages, it seems that Greenberg overlooked the presence of the pattern in this stock which he, too, recognized as a distinct genetic group.

19) **Utu** [Mabuso, MA] (Z'graggen 1971: 155): past tense

	SG	DU	PL
1st	*-min*	*-mur*	*-mun*
2nd	*-mun*	*-vir*	*-vi*
3rd	*-um*	*-vir*	*-vi*

20) **Bongu** [Rai Coast, MA] (Hanke 1909: 51f): present perfect

	SG	DU	PL
1st	*-man*	*-mulen*	*-mun*
2nd	*-emen*	*-balen*	*-ban*
3rd	*-en*	*-balen*	*-ban*

21) **Usan** [Pihom, MA] (Reesink 1987: 96): far past

	SG	DU	PL
1st	*-am-ei*	—	*-amin-ei*
2nd	*-amon-ei*	—	*-aman-ei*
3rd	*-amor-ei*	—	*-amir-ei*

22) **Bunabun** [Isumrud, MA] (Capell 1951/52: 194): past tense

	SG	DU	PL
1st	*-ke*	*-kin*	*-min*
2nd	*-kan*	*-kan*	*-ka*
3rd	*-ka*	*-kit*	*-kit*

The pattern we see in the non-singular forms of Utu (19) matches the one we have seen before in the two conservative Huon Peninsula languages in (14) and (15) and in the Eastern Highlands languages in (17) and (18). The 1st DU and 1st PL endings minimally oppose each other in their final consonants /r/ and /n/, the same consonant /r/ is found in both dual endings, and the 2nd/3rd PL ending lacks a consonant in the place where the 2nd/3rd DU ending has an /r/. The other Madang language, Bongu (20), shows a similar set of endings. We note that all of the endings in (20) end in /n/, and it looks as if a syllable ending in this consonant had been appended to the dual forms to make them conform to this feature of the rest of the paradigm. Disregarding this appendage in the dual forms, we see an opposition between /l/ and /n/ in the first person dual and plural endings, and an /l/ also occurs in the 2nd/3rd DU form.

There is a complication to be noted between the 1st PL and 2nd SG endings in these two languages. In Utu (19) and Bongu (20) the 1st SG form partakes of the similarity uniting the 2nd SG and 1st PL forms: an ending of the same shape *-mVn* as in the 1st PL occurs in both the 1st SG and 2nd SG. This is a variation of the basic pattern that is frequently seen in MA languages, but also occurs elsewhere. I simply note the existence of this variation here, whose age and geographical distribution needs further study. Suffice it to say that it is not widespread enough in the area under study to merit inclusion in the definition of the basic pattern.

Like most Adelbert Range languages, Usan (21) has lost the dual number. This limits of course our chances to find good reflexes of the threefold desinence pattern in which the dual forms figure so prominently. We can only note that the 2nd SG and 1st PL endings agree in showing the same sound shape *-mVn*, much as we have seen in the Madang languages in (19) and (20). Bunabun (22) is one of the few Adelbert Range languages to have retained dual verb forms. The 1st PL past tense ending *-min*, which Capell reports, is striking. This pivotal form seems not to fit into the paradigm, being the only one that does not begin with /k/. But in the present tense paradigm there is a similarly deviant 1st PL form, so that we can be fairly confident that this is not a recording error. Furthermore, the closely related language Dimir (Isumrud, MA) has the cognate ending *-min* PAST:1PL (Z'graggen 1971: 152). In Bunabun, the threefold desinence pattern has been obliterated in the dual number where three forms are distinguished. The strongest piece of evidence that remains is the final /n/ in the 2nd SG and 1st PL endings.

Next, let us look briefly at the far past tense endings of three Finisterre (FH) languages. In the paradigms in (23) through (25) the person-number formatives follow a tense marker that is an obvious cognate shared by these languages.

23) **Nek** [Erap, FH] (Linnasolo 1993, §1.2.3.3): distant past

	SG	DU	PL
1st	*-gu-t*	*-gi-mik*	*-gi-miŋ*
2nd	*-gu-ŋ*	*-gi-mik*	*-gi-liŋ*
3rd	*-gu-k*	*-gi-mik*	*-gi-iíŋ*

24) **Tuma** [Wantoat, FH] (Webb & Webb 1992, § 4.2.6.2.4.3): distant past

	SG	DU	PL
1st	*-gu-t*	*-gi-mək*	*-gu-məŋ*
2nd	*-gu-n*	*-gi-mən*	*-gu-ŋ*
3rd	*-gu-k*	*-gu-mən*	*-gu-ŋ*

25) **Yau** [Uruwa, FH] (Wegmann 1996a, § 1.4.2.1): remote past

	SG	DU	PL
1st	*-go-t*	*-go-mot*	*-go-mon*
2nd	*-go-ro?*	*-go-moro?*	*-gu-ŋ*
3rd	*-go-?*	*-go-moro?*	*-gu-ŋ*

In Nek (23), the full pattern is in evidence. The 1st DU and 1st PL forms are minimally distinguished by the final consonants /k/ and /ŋ/, and the 2nd SG ending consists of the same nasal consonant as features in this opposition in the 1st PL form. Exceptionally, all dual forms are identical. In Tuma (24) and Yau (25), the pattern has been obliterated in different parts of the paradigm. Tuma (24) has a deviant 2nd/3rd DU ending that ends in a nasal consonant instead of the expected stop. In Yau (25), the 2nd SG ending bears no similarity at all to the 1st PL ending. The consonantal opposition between the 1st DU and 1st PL endings, however, is clearly in evidence in all three of these Finisterre languages.

As I tried to show earlier in this section, this opposition was the point of departure for the development of a general consonant alternation between dual and plural verb endings in several NENG languages. Another interesting development that can be observed in languages from different NENG families is a shift in position of this opposition. We can see how the consonantal opposition between the 1st DU and 1st PL forms shifts from the final to the initial consonant of the ending when we compare the two Chimbu languages in (26) and (27).

26) **Kuman** [Chimbu, ENGH] (Trefry 1969: 53ff): imperfective interrogative

	SG	DU	PL
1st	*-a-L-o*	*-a-buL-o*	*-a-mun-o*
2nd	*-a-tin-o*	*-a-bur-o*	*-a-Lum-o*
3rd	*-a-b-o*	*-a-bur-o*	*-a-Lum-o*

27) **Ku Waru** [Chimbu, ENGH] (Merlan & Rumsey 1991: 326): perfective

	SG	DU	PL
1st	*-d*	*-buL*	*-muL*
2nd	*-n*	*-ŋL*	*-ŋ*
3rd	*-m*	*-ŋL*	*-ŋ*

The 1st DU and 1st PL endings of Kuman (26) show a sonority opposition between both consonants of the endings. In Ku Waru (27), only the first consonants oppose each other while the second is identical in both forms. It is clear from a comparison with other NENG languages that Kuman shows the older state of affairs and Ku Waru has undergone a change. In fact, a comparison of the two Chimbu languages in (26) and (27) with the three Finisterre languages discussed above in (23) to (25) shows agreement in the first person endings of all three numbers, and we can reconstruct a common set of endings for these languages: *-*t* 1st SG, *-*mut* 1st DU, and *-*mun* 1st PL.

If these reconstructions are correct, both Chimbu languages must have undergone an opposite kind of change in the past. They enhanced the sonority opposition between the 1st DU and 1st PL endings by changing the initial consonant that was originally a nasal in both forms to a stop in the 1st DU form. Ku Waru (27), in turn, has reduced the sonority opposition back to one consonant in the endings. Compared with the original forms, the opposition shifted from the final to the initial consonant of the endings in the process. If the final consonant which has become non-contrastive in Ku Waru dropped altogether, we would get the type of endings we find in Engan languages like Kewa (see Section 2). In the Engan languages (ENGH), there is only the bilabial initial element of the original endings left, but it shows the sonority opposition that was originally in the final consonants. The series of changes just described is summarized in (28).

28)	*-*mut* 1st DU	*-*mun* 1st PL	
	*-*but*	*-*mun*	(sonority opp. spreads to initial C: pre-Chimbu)
	-*buL*	-*mun*	(Kuman 26)
	-*buL*	-*muL*	(son. opp. disappears from final C: Ku Waru 27)
	*-*bV*	*-*mV*	(final C drops: Engan languages)

4. Some NENG verb etymologies

In this section, I will present etymologies for eight verb stems that are widely reflected throughout the NENG language area. To minimize the likelihood of a chance resemblance, only etymologies will be advanced for which a proto-form with at least two consonants can be reconstructed. As a word of caution, it must be said that the phonological reconstructions I offer are not more than rough approximations, mainly serving a mnemonic purpose. A reconstruction of the proto-phonology of the languages compared here is not intended and would not be possible from the limited comparative material at hand. Instead, I will use, by convention, a minimal inventory of sounds consisting of the consonants *p, t, k, m, n, w,* and *y* and the vowels *a, i,* and *u*. This

inventory almost certainly underrepresents distinctions that were relevant in the proto-language with which we are concerned, but it has the great advantage of allowing me to avoid making arbitrary decisions.

Stem final vowels are another problem that cannot be dealt with here and will therefore simply be ignored. The reconstructions to follow are all of the form CVC, or CVCVC, i.e. they consist of two or three consonants plus intervening vowels. No final vowel is posited after the last consonant of a stem, though there may well have been such a vowel in some of the stems to be reconstructed.

The following etymologies could not have been put together before the publication of John Z'graggen's (1980a-d) exemplary collection of wordlists covering all of the one hundred MA languages.[5] Data from these and other survey wordlists will be cited in square brackets indicating phonetic notation. When a cognate occurs as part of a compound or with an affixal extension that is not part of the original stem, I put the unrelated part of the word in brackets. Sometimes a cognate has more than one reflex in a language. In such cases I usually only cite the one that is closest to the proto-form, either in sound or in meaning. When a cognate is reflected in much the same way in most or many of the languages of a family, only a selection of reflexes will be given.

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[5]Apart from the dictionaries mentioned in the Acknowledgements section at the end of this paper, I also used the following wordlists: Pilhofer (1928/29) for the Eastern Huon family of FH, McElhanon (1967) for the Western Huon family of FH, Z'graggen (1974) for the Warup and Gusap-Mot families of FH, McKaughan (1973) for the Kainantu family of ENGH, Scott (1978) for the Gorokan family of ENGH, Hong (1990) for both the Kainantu and Gorokan families, and Franklin (1975) for the Engan family of ENGH.

29) Common NENG ***kum*** **'die'**

FH: Kobai um Eastern Huon: Naga [*kɔmu*], Kâte *hɔmo*, Momare *[homa]*, Dedua home Western HUON: Ono *koma* 'extinguish', Burum *kəmu* URUWA: Yau *ome ~ omb* Erap: Nek *kimi*, Urii *kum* WANTOAT: Tuma *kumən*, Wantoat *kum ~ kuŋə* Yupna: Yopno *kwə~ kəŋw*, Domung [*kum*], Nankina *kamaT* Warup: Asat *[ʌmə]* Bulgebi *[kamaŋ]*, Gwahatike *kam* Gusap-Mot: Gira *[ɛmʌ]*, Nahu [*kumo*], Rawa *kumo*

ENGH: GOROKAN: Yagaria *góvi* 'extinguish', CHIMBU: Ku Waru kubuL 'extinguish', Wahgi *kumb* 'extinguish', ENGAN: Kewa *komaa*, Enga *kumí*, Huli *[homa]*, KALAM: Kalam *kum*

MA: WANANG: Apali *hima*, Musak *[kum]* Paynamar *[gum]* JOSEPHSTAAL: Sileibi *[kumu]*, Katiati *[kum]* PIHOM: Pila *[um]*, Mauwake *um*, Kowaki *[um]*, Musar *[um]*, Koguman *[um]*, Usan *um*, Bilakura *[umo]* Ukuriguma *[um]*, Amaimon *[um]* ISUMRUD: Bunabun *[uma]* RAI COAST: Sinsauru *[hum]*, Sausi *[umi]*, Koromu *imi*, Dumpu *[kum]*, Siroi *kum*, Lemio *[kumo]*, Pulabu *[kum]*, Usino *[kum]*, Urigina *[koma]*, Danaru *[kumɛ]*, Erima *[umɛ]*, Rerau *[kum]* BRAHMAN: Biyom *[kum]*, Tauya *ʔumu*, Faita *[kum]*

Reflexes of Common NENG ***kum*** 'die' can be found in nearly all the language families under consideration. The one area that stands apart is the Eastern Highlands Province. In none of the Kainantu and Gorokan (ENGH) languages is the basic word for 'die' a reflex of this cognate: Gadsup (Kainantu) *puko[no]* 'die', Tairora (Kainantu) *utu(vido)* 'die', Fore (Gorokan) *puru* 'die', and Yagaria (Gorokan) *fili* 'die' appear to reflect a cognate that is a common innovation of these two language families. But the regular reflex of ***kum*** 'die' in Yagaria (Gorokan) *góvi* 'extinguish' is welcome evidence from the Eastern Highlands confirming the inheritance of this important cognate. The metaphorical use of ***kum*** 'die' in a collocation meaning '(the fire) extinguishes' is reflected in many languages, and sometimes the cognate survives only in this meaning, as in Ono (Western Huon, FH), Yagaria (Gorokan, ENGH), and the Chimbu languages (ENGH).

30) Common NENG ***man*** **'sit'**

FH: WESTERN HUON: Ono *met*, Nomu *[man ~ mal]* 'live', Burum *mal* 'live', Selepet *man* 'live' ERAP: Urii *mer* WANTOAT: Tuma *maŋ(iT)*

ENGH: KAINANTU: Awa *mí* 'be' (*mimin* 'sit around'), Usarufa *[ma]* 'be', Gadsup *[ba]* 'be' GOROKAN: Fore *mintí* 'be', Yagaria *bei* (*beíle bále (hu)* 'sit around'), Benabena *[mína]*, Gende *[mino]* 'be' CHIMBU: Golin *míle* 'be', Wahgi *mo ~ mi* 'be', Ku Waru *moL* 'be' KALAM: Kalam *md* 'be'

MA: JOSEPHSTAAL: Katiati *[mʉn(sʉ)]*, Pondoma *[mʉn(zira)]*, Wadaginam *[min(dra)]* MABUSO: Isebe *[bili]*, Amele *bil*, Panim *[bil]* RAI COAST: Sausi *[mɛnɛ]* 'be', Dumpu *[man]* 'be', Siroi *min(yo)* , Lemio *[mən]* 'be', Yabong *[man(so)]* 'be', Saep *[mande]* 'be', Urigina *[mən]* 'be', Danaru *[min(iu)]* 'be', Kwato *[men]* 'be', Bongu *[me:]* BRAHMAN: Isabi *[men]* Biyom *[min]* 'be', Tauya *mene* 'be (sg)'

In the Western Huon family (FH), the reflexes of the second consonant in Common ṄENG **man* 'sit' fluctuate, no doubt owing to the interference of morphophonemic processes at the boundary with the inflectional endings, such as can be synchronically observed in Nomu. In Awa (Kainantu, ENGH) and Yagaria (Gorokan, ENGH) the second consonant was preserved in an iterated form expressing distribution, though it was lost in the simple verb stem. There was a general drift in meaning toward 'be there, live, stay', but the original meaning 'sit, be around' prevailed in a few languages in all three stocks, e.g. Ono (Western Huon, FH), Yagaria (Gorokan, ENGH), and Bongu (Rai Coast, MA). In the Josephstaal languages (MA), a stem enlargement of unknown origin is in evidence. This might be the same as the enlargement we see in Siroi and some other Rai Coast (MA) languages. Siroi has an enlarged stem *minyo* 'sit' in addition to the simple stem *min* 'be'.

31) Common NENG ***mat* 'put down'**

FH: KOBAI *mal* 'plant' EASTERN HUON: Kâte *ma* 'plant', Dedua *(ho)me?* 'plant' WESTERN HUON: Ono *met* 'plant', Nomu *[met]* 'plant, bury', Burum *(kə)mət* 'plant', Selepet *(kɔ)met* 'plant' ERAP: Nek *(ki)mit* WARUP: Gwahatike *mete(te)* 'bury' GUSAP-MOT: Nahu *[mɛrɛ(ŋɔ)]* 'bury', Rawa *mere* 'bury'

ENGH: KAINANTU: Awa *már*, Usarufa *mar(áN)*, Tairora *[bato]*, Gadsup *[mand]* GOROKAN: Fore *mara* 'lay, give birth', *(a-)mará* 'plant', Yagaria *boló*, Siane *[mere]*, Asaro *[moro]*, Gende *[mra]* ENGAN: Enga *málu (pi)* 'bury'

MA: BRAHMAN: Isabi *[mɛntɛ]* WANANG: Atemple *[mi]*, Paynamar *[mʉnda]* MABUSO: Kare *[me]* 'bury', Bemal *[moit]*, Isebe *[mi]*, Panim *[mɛ]*, Samosa *[mo]* 'put, make, bury', Murupi *[mɛ]* 'put, make, give, bury', Nake *[(bu)molE]* 'bury', Garus *[mat]*, Rempi *[ma]* 'put, make, give', Nobonob *[me]* 'put, give' RAI COAST: Sausi *[mɛli]* 'plant', Urigina *[mori]* 'plant'

The original meaning of Common NENG **mat* 'put down' has been preserved in the Kainantu and Gorokan languages (ENGH) and most Mabuso languages (MA). Murupi (Mabuso, MA) *[mɛ]* 'put down, make, give, bury' unites two meaning extensions peculiar to Mabuso languages, viz. 'make' and 'give', with a special use that is elsewhere the only surviving meaning, viz. 'bury'. Another special use must have split off recently in Fore (Gorokan, ENGH) *(a-)marά* 'plant' where the third person singular object prefix became fixed to the stem in this meaning. The second consonant of **mat* 'put down' was lost in most Mabuso languages with the exception of Bemal and Garus, if those forms are accurately reported. An indubitable reflex of the second consonant shows up in Nake (Mabuso, MA) *[bu/molɛ]* 'bury'. The cognate form in Nobonob (Mabuso) *[bou/m]* 'bury' lacks such an exceptional reflex, in line with the simplex *[me]* 'put, give'.

The similarity of the sound shapes of Common NENG **man* 'sit' and **mat* 'put down' catches the eye, but appears to be fortuitous. At least, I have not met evidence suggestive of a derivational relationship between these two reconstructed lexemes. To be sure, there are a few languages in which such a relation does exist, as in Ku Waru (Chimbu, ENGH) *monsi* 'put' (< *moL* 'be') and Bongu (Rai Coast, MA) *[me:t]* 'put' (< *[me:]* 'sit'). But in all these cases the derivation is clearly of a recent nature and the derived causatives cited cannot be considered reflexes of Common NENG **mat* 'put down'.

32) Common NENG ***mut* 'throw'**

FH: EASTERN HUON: Naga *[mɔr]* 'shoot', Kâte *muru* 'shoot', Momare *[muro]* 'shoot' WESTERN HUON: Sialum *[mun ~ mul]* URUWA: Yau *mor* WANTOAT: Wantoat *mut ~ mu*C WARUP: Asat *[mall(im)]* 'throw spear, shoot', Guiarak *[mʌl]* 'shoot' GUSAP-MOT: Gira *[mul]* 'shoot', Rawa *muto* 'shoot'

ENGH: GOROKAN: Fore *[ai]múta* 'throw ash' CHIMBU: Ku Waru *mudu*

MA: WANANG: Nend *[mur (ikiyu)]* 'kill', Paynamar *[mundu]* 'shoot' JOSEPHSTAAL: Ikundun *[mundu(u)]*, Wadaginam *[mundu(g)]* PIHOM: Kowaki *[munt]* 'shoot', Abasakur *[munda(pi)]* 'kill' ISUMRUD: Waskia *(u)mor* 'hit' MABUSO: Samosa *[muřa]* 'kill', Murupi *[mura]* 'kill', Mosimo *[mora]* 'kill'

Most reflexes of Common NENG ***mut*** 'throw' appear under the heading 'shoot' in the wordlists. In Kâte (Eastern Huon, FH), for instance, *muru* means specifically 'to shoot with bow and arrow', and other verbs must be used to express 'shoot with the slingshot', or 'shoot with a spear'. However, a comparison of the word for 'bow and arrow' in Kâte and the other Huon Peninsula languages leaves one with the impression that this is a loanword. What is more, even within the Huon Peninsula family we find a language that has preserved what I assume to be the original meaning of this cognate: Sialum *[mun ~ mul]* 'throw'. Quite generally, the verbs surfacing as 'shoot' in the wordlists either resemble the Huon Peninsula word for 'bow and arrow' mentioned above, or they can be put in cognate sets that also include members meaning either 'hit' or 'throw'.

From this, the conclusion had best be drawn that the meaning 'shoot (with bow and arrow)' sprang forth from an earlier meaning 'hit (with a spear)' or 'throw (a spear)'. The latter extension, which is relevant here, can be seen in Asat (Warup, FH) where the cognate means both 'throw a spear' and 'shoot with bow and arrow'. To account for the reflexes meaning 'shoot' we must therefore posit a previous meaning 'throw a spear'. But there is little to suggest that the verb was only applicable to specific objects like spears in its original meaning. Rather, where the extension to 'shoot' has not taken place, the verb has a quite general meaning, as in Yau (Uruwa, FH) *mor* 'throw (any kind of object)'. That this was the meaning of Common NENG ***mut*** 'throw' is corroborated by direct reflexes in such widely separated languages as Wantoat (Wantoat, FH), Ku Waru (Chimbu, ENGH), and the Josephstaal (MA) languages Ikundun and Wadaginam.

33) Common NENG ***makat*** **'vomit'**

FH: KOBAI *mayl* EASTERN HUON: Kâte *mayu* WESTERN HUON: Ono *mekat* 'spittle', Selepet *mohat* GUSAP-MOT: Rawa *muge (te)* 'spit'

ENGH: KAINANTU: Awa *mugi(-sú)* (*mugá?mugár* 'belch up (food) again and again') GOROKAN: Fore (South) *migantana (pu)* CHIMBU: Ku Waru *miku (to)*, Wahgi *mek (si)* ENGAN: Kewa *maaku (rata)*, Enga *myúku(talyi)*

MA: WANANG: Apali *miŋili* JOSEPHSTAAL: Katiati *[migr̄]*, Osum *[miŋru]*, Pondoma *[migri]* PIHOM: Amaimon *[miŋil]* ISUMRUD: Dimir *[miŋali]* MABUSO: Isebe *[bohadi]*, Panim *[buhade]* RAI COAST: Saep *[mikatɛ]* BRAHMAN: Faita *[mɛŋr]*

The reflexes of Common NENG **makat* 'vomit' are simple verb stems in most languages. Some languages, however, treat them as verbal adjuncts. Seeing such combinations as Rawa (Gusap-Mot, FH) *muge te* 'spit' and Ku Waru (Chimbu, ENGH) *miku to* 'vomit', where the auxiliary that goes with the verbal adjunct starts with a /t/ (Rawa *te* 'do' and Ku Waru *to* 'hit'), one might be inclined to hypothesize that the unitary stem reflexes are the product of a univerbation of an earlier sequence of verbal adjunct plus auxiliary of this sort. However, for at least one of the languages concerned there is evidence from triconsonantal nominal stems that it regularly loses the third consonant of such stems: compare Ono [Western Huon, FH] *ŋewet* 'mother's brother's child' with Rawa *nuwe* 'mother's brother's child'. Note further that Southern Fore (Gorokan, ENGH) has a verbal adjunct with a clear reflex of the third consonant. The similarity of the consonant of the auxiliary in Rawa *muge te* 'spit' with the third consonant in Common NENG **makat* 'vomit' must therefore be regarded as coincidental.

34a) Common NENG ***nakut* 'swallow' (1)**

FH: EASTERN HUON: Kâte *nɔkɔʔ(-ne)* WESTERN HUON: Nabak *niŋgwit* YUPNA: Domung *[nʌŋgragra]* 'throat' WARUP: Gwahatike *[nukulug (ur)]* GUSAP-MOT: Nahu *[niŋgolo(ŋɔ)]*

ENGH: KAINANTU: Awa *(arœia)nawi(n)* 'swallow one's saliva' (*arœ̆ia 'saliva'*), Gadsup *[nabiʔ(teʔu)]* GOROKAN: Fore *nagintá*, Yagaria *dakei* CHIMBU: Ku Waru *neŋL* 'gorge'

MA: WANANG: Apali *nihiti (iahi)* 'hiccup' (*iahi* 'move up') MABUSO: Girawa *[niʔanɛ]* RAI COAST: Sinsauru *[nɛgutn]*, Dumpu *[niŋgud]*, Usino *[nukulakom]*, Urigina *[nuŋguro]*, Erima *[ñikulu]*, Kwato *[nugulage]*

Another unusually long verb stem is Common NENG **nakut* 'swallow'. But here a closer examination reveals that we are dealing with a compound. We get a clue to the make-up of this word when we examine Songum (Rai Coast, MA) *[hɛŋgur̄d]* 'swallow'. Songum is one of the few languages under consideration that lack a reflex of

the ubiquitous verb stem Common NENG **na* 'eat, drink'.[6] Songum has *[hɛ]* 'eat' instead, which matches the first syllable of the word for 'swallow'. The remaining part *[ŋgu̱d]*, in turn, corresponds well with what remains of **nakut* 'swallow' after subtracting **na*.

The idea suggests itself that both Songum *[hɛ/ŋgu̱d]* 'swallow' and Common NENG **na/kut* 'swallow' are compounds containing the verb for 'eat' as their first component. In Songum, the first part of the compound must have been replaced when the language lost the reflex of **na* 'eat, drink' but while the internal composition of the word was still transparent. This is no longer the case in a language like Ku Waru (Chimbu, ENGH) where the vowel in the first syllable of *neŋL* 'eat a lot, gorge' is different from that of *no* 'eat' and the remaining part is not even a possible phonological word stem. Here, the original compound has fused beyond recognition and a new monomorphemic verb stem has come into being.

A different kind of development has produced Moresada (Josephstaal, MA) *[yʌ mŋ]* 'swallow'. Again, the word for 'eat' *([yʌ])* matches the first syllable in the word for 'swallow'. But the sound shape of the remainder of the word is just as different from the cognate we are tracing as is this first part. We do, however, find a cognate for the second part of this compound in the next related language family, in Musak (Wanang, MA) *[mugu]* 'swallow'. Thus, although no cognate phonological substance is left, the compound nature of the prototype can still be observed in Moresada. Proof of the compound nature of Common NENG **na/kut* 'swallow' comes, as in the case of the Moresada compound just discussed, from reflexes of the second part of the compound functioning as a simple verb stem (34b).

34b) Common NENG ****kut* 'swallow'** (2)

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[6]The very stable cognate **na* 'eat, drink' has been noticed by all previous researchers comparing, among others, the languages dealt with in this paper (McElhanon & Voorhoeve 1970: #49; Greenberg 1971: IP #25; Wurm 1975: 255; Foley 1986: 257). Greenberg (1971: IP #65) also pointed out **man* 'sit'.

I first became aware of the following four cognates in Huon Peninsula languages when I read Pawley's (1994) paper on MA cognate sets: **kum* 'die', **man* 'sit', **makat* 'vomit', and **ka(na)* 'see'. Pawley (1997) agrees with the first three of these which he includes among his Trans New Guinea cognate sets. As far as I am aware, the etymologies for **mat* 'put down', **mut* 'throw', and **nakut* 'swallow' are here suggested for the first time.

FH: EASTERN HUON: Kâte *gbɔʔ(-ke)* WESTERN HUON: Nomu *[gbut]* WANTOAT: Tuma *ŋwərək ŋwərək (yə)* 'gurgle' GUSAP-MOT: Gira *(gut)*, Ngaing *[(gurak(gi)]*

ENGH: ENGAN: Enga *góe (le)* KALAM: Kalam *kal (ay)*

MA: WANANG: Apali *hili(vi)* JOSEPHSTAAL: Sileibi *[kundi]* PIHOM: Amaimon *[gurukum]* MABUSO: Bemal *[gulu (tɛ)]*

Reflexes of Common NENG **kut* denote the throat in a number of languages. Often the stem is enlarged to **kutak* in this meaning. The same enlargement can be seen in (34b) in Tuma (Wantoat, FH), Ngaing (Gusap-Mot, FH), and Amaimon (Pihom, MA) as well as in the compounded forms given above in (34a) in Gwahatike (Warup, FH) and the Rai Coast (MA) languages Usino and Kwato. Although the evidence is not conclusive, I assume that this enlargement originated in the nominal use of the stem and was only occasionally transferred to the verbal form.

In some languages, the throat is denoted by a nominalization of the compounded form for 'swallow', e.g. Kâte (Eastern Huon, FH) *nɔnɔkɔʔ* 'throat', Nabak (Western Huon, FH) *niŋgwigwit* 'larynx', or the Domung (Yupna, FH) reflex included in (34a). Here, the direction of the derivation is evident. The same cannot be said of Common NENG **kut* which is well attested both as a nominal stem meaning 'throat' and a verb stem meaning 'swallow'. But no matter which usage was earlier, it is clear that this stem is sound symbolic (cf. English *gulp, gargle, gorge*). In all the reflexes meaning 'throat', in particular, the sound shape of what appears to be this cognate can be seen to mutate in a manner defying conventional reconstruction. It must be emphasized, therefore, that the compound Common NENG **nakut* 'swallow' as a whole has a sufficiently arbitrary sound shape to make a good cognate. The reflexes of its second component **kut* taken alone, on the other hand, are not suitable material for the demonstration of a genetic relationship and should certainly not be used to infer regular sound correspondences. They were presented here merely to demonstrate the compound structure of **na/kut* 'swallow'.

35) Common NENG ***nak* 'look for'**

FH: KOBAI: *nag* 'hear' EASTERN HUON: Momare *[naŋke]* 'hear', Dedua *negeŋ* 'hear' WESTERN HUON: Ono *nogan* 'admire', Nomu *[nogo]* 'hear', Selepet *nɔgɔ* 'hear', Mesem *[niŋge]* 'hear' ERAP: Urii *naak* 'hear' WARUP: Gwahatike *naŋ(ken)* GUSAP-MOT: Gira *[nɛŋ]* 'watch, see'

ENGH: GOROKAN: Asaro *[-niŋg]* 'see' CHIMBU: Ku Waru *noko* 'wait for' ENGAN: Kewa *(ini) nenge (ria)* 'look around carefully' KALAM: Kalam *nŋ ~ ng* 'perceive'

MA: PIHOM: Pila *[naŋg]* 'watch' BARGAM *nag* MABUSO: Nobonob *[neg]* 'look'

The meanings attached to the reflexes of Common NENG ***nak*** 'look for' are at first sight bewildering. It is hard to imagine how a verb meaning 'hear, know', as the reflexes in Huon Peninsula languages, could come to mean 'see' or 'look', as the reflexes in Asaro (Gorokan, ENGH) and Nobonob (Mabuso, MA), or vice versa. These mutually inconvertible reflexes alone suggest strongly that the cognate entered the field of primary perception verbs from outside. The meaning 'look for, seek' attested in Gwahatike (Warup, FH) and Bargam (isolate, MA) is exactly what is needed to tie the heterogeneous reflexes in (35) together.

Transitive verb stems that can have human object referents pose special problems for reconstruction in NENG languages. Such verb stems took prefixes or proclitics cross-referencing the person and number of the object. In many contemporary languages, there is only a smallish set of basic transitive verb stems that occur with such prefixes. Often the prefixes are fused with the verb stem, and their separation already involves a diachronic analysis. In the following etymology, the original verb stem is prefixed with a hyphen when it has been extracted from object-inflected composites of this kind. Sometimes, too, there is suppletion in object-inflected verb paradigms. For the verb 'see' in (36) this is particularly the case in FH languages which usually have two stems, one for the third person singular, and another one for the other person-number combinations. The cognate we are interested in always shows up as the third person singular stem. Such forms are glossed 'see it' in (36) to mark them as suppletive.

36) Common NENG ****ka[na]*** **'see'**

FH: KOBAI *an* 'see it' EASTERN HUON: Naga *[ŋone]*, Kâte *hone*, Momare *[ŋane]*, Dedua *heŋ* 'see it' WESTERN HUON: Ono *ka* 'see it', Burum *-k*, Selepet *-k*, Nabak *-k* URUWA: Yau *a* 'see it' ERAP: Nek *kaŋ* 'see it', Urii *ka* 'see it' WANTOAT: Tuma *ka* 'see it', Wantoat *ka* 'see it' YUPNA: Yopno *ko* 'see it', Nankina *ka* 'see it' WARUP: Bulgebi *[(eg) kana]*, Gwahatike *ken* 'see it' GUSAP-MOT: Nahu *[(iɔ) keinɛ]*, Rawa *keno*

ENGH: KAINANTU: Usarufa *-onaV*, Gadsup *[-on]* GOROKAN: Fore *-ga*, Yagaria *-gó*, Benabena *[-ga]*, Gende *[-(u)ga]* CHIMBU: Golin *kane*, Wahgi *ka*, Ku Waru *kana* ENGAN: Enga *ka[de]*, Huli *[hà(ndá)]*

MA: WANANG: Apali *(i-)ga ~ (i-)gi* JOSEPHSTAAL: Sileibi *[ŋg]*, Katiati *[ŋgi]*, Osum *[-kʉ]* ISUMRUD: Dimir *[ga]*, Bunabun *[-ŋg]* PIHOM: Pila *[(wɛ)ŋg]* Moere *[-ŋk]*, Musar *[-ŋg]*, Koguman *[-gɛ]*, Usan *-g*, Bilakura *[-ge]*, Amaimon *[gi]*, Wasembo *[ge ~ gɔ]* RAI COAST: Siroi *ka(ŋger)*, Kwato *[o]*, Rerau *[ko]* 'watch', Songum *[ʔo]*

The divergent reflexes of Common NENG **ka[na]* 'see' in the languages of the Eastern Huon family (FH) exemplify the problems that prefixation and its loss create for the comparative study of transitive verb stems. Of the four Eastern Huon languages cited in (36), only Dedua has kept a paradigm with prefixal object inflection, of which *heŋ* 'see it' is the third singular form. The other three languages lost the prefixes and have an invariable verb stem. But the initial consonants of those verb stems do not correspond to each other in a straightforward manner. Whereas the Kâte and Dedua forms reflect a word initial **k*, the stem initial /ŋ/ in Naga and Momare rather looks like a reflex of Common Huon **k* in intervocalic position. It seems, therefore, that different forms became generalized in the three languages that lost the prefixes. Kâte generalized the unprefixed third singular form **kana*, but Naga and Momare continue **[PREF]-kana*, the same stem having undergone a regular sound change before dropping the object prefixes.

This little case study teaches us that it would be an illusion to expect the same degree of regularity in the sound correspondences of the stem initial consonants of transitive verbs as we find in intransitive verb stems. The effect that the original presence of object prefixes had on the phonological development of the stem initial consonant, whether the prefixes eventually got lost or are still present, must be studied separately for every transitive verb stem in every language family before the complex sound correspondences apparent in the reflexes of those stems can be unraveled. Such a detailed investigation has not been carried out for the reflexes of Common NENG **ka[na]* 'see' in (36) which must therefore be regarded as less certain than the other etymologies proposed in this section.

Finding good etymologies for transitive verbs with human object referents is further complicated by the fact that the stems expressing the most basic concepts are monosyllabic. The verb 'see' in (36) is a borderline case. There is evidence for a bisyllabic stem **kana* in the Eastern Huon, Warup and Gusap-Mot families of FH, and in the Kainantu and Chimbu families of ENGH, but the other language families, including all of the MA stock, only reflect **ka*. The monosyllabic reflexes cannot possibly be

explained by phonological loss (except for Wahgi [Chimbu, ENGH]). The erratic distribution of the bisyllabic stem form **kana* rather calls for a morphological explanation, and one can suspect that its second syllable was once a separate morpheme. But the incorporation of this syllable into the stem of the verb 'see' must go back a long time, and both Common NENG **kana* 'see' and **ka* 'see' must be reconstructed to account for the reflexes in (36).

5. NENG different subject medial verb endings

Together, the verb etymologies presented in the preceding section connect all NENG language families with each other, though no single one of them does so alone. As is only to be expected from a genetic group of this size and diversity, any single cognate can usually only be found in a part of its member families, but has disappeared from others. We are facing the same problem of irretrievable loss when we try to find cognate verb endings. But in the reconstruction of a set of verb endings the paradigmatic connection between these endings comes to our aid. We are not dealing with several independent morphemes, but rather with the constituent elements of a paradigm.

In Section 3, I surveyed the final verb endings of NENG languages and pointed out the presence of an old pattern of oppositions and similarity in them. Now, I want to put this insight to the test. It will become apparent from what follows that the same pattern is also in evidence in the different subject medial verb forms of NENG languages. In Tables 4 and 5, full paradigms of the person-number endings of different subject medial verbs will be presented for most documented NENG languages. In comparing these paradigms, I will not only be looking for agreement among the endings themselves, but also for agreement in the relations of opposition and similarity between them.

In the tables, parts of an ending that do not reflect the proto-form but are secondary accretions are put in brackets. In a number of languages, a syllable beginning with a bilabial consonant precedes the part of the ending that I count as a reflex of the original ending. I presume that that partial entered the medial verb paradigm long after the first splits ended the period of unity of the languages compared. The bilabial element in question probably originated from a past tense final verb paradigm (cf. Section 3), which is the major source of innovations entering the different subject medial verb paradigm.

It should be noted that the removal of such accretions can result in a distortion of the remaining part of the ending containing the reflex of the original ending. The non-singular endings of Kâte (Eastern Huon, FH) are a case in point. Following the synchronic analysis presented in Section 2, these endings are segmented as follows in Table 5: *-(pe)-re* 1st DU, *-(pi)-re* 2nd/3rd DU, *-(pe)-ne* 1st PL, and *-(pi)-e* 2nd/3rd PL.

A careful comparison of the Kâte forms with those of the other Eastern Huon languages (all described by Pilhofer 1927/28) suggests, however, that the correct diachronic segmentation of these forms should be: *-(pe)-re* 1st DU, *-(p)-ir(e)*2nd/3rd DU, *-(pe)-ne* 1st PL, and *-(p)-i(e)* 2nd/3rd PL. The reflexes isolated in the forms just given match those of Ono (Western Huon, FH; see Table 5). The difference between these two analyses is particularly marked in the 2nd/3rd PL form where we end up counting the wrong vowel as a reflex of the original ending if we rely on the synchronic analysis.

For hardly any other NENG language is there as much comparative data available from closely related languages as for Kâte. Therefore, a diachronic analysis of the sophistication of the one presented above for the Kâte non-singular medial verb endings can usually not be made. All that can be done is to compare the medial verb endings with the other verb endings of a language and decide on the basis of that comparison how the medial verb endings should be segmented. I followed that procedure in the analysis of the endings of all the languages represented in Tables 4 and 5, including Kâte. The Kâte example just discussed reminds us that some of the reflexes isolated in Tables 4 and 5 may have been obscured by the intervention of analogical processes.

The sources from which the data to follow was taken can be gleaned from the legend to the map in the Appendix. A few of the languages listed there are not represented in Tables 4 and 5 because they have different subject medial verb forms that do not vary for person and number. One NENG language, Siroi (Rai Coast, MA), is known not to have any kind of different subject medial verb forms at all.

Table 4: NENG different subject medial verb endings, singular

	1SG	2SG	3SG	
Common NENG	**-pa*	**-na*	*?*	DS
		FH		
	1sg	2SG	3SG	
KOBAI	*-p*	*(-m)*	*-o*	DS
EASTERN HUON				
Kâte	*-pe*	*(-te?)*	*-me*	DS:SEQ
Dedua	*-ba*	*-na*	*-u*	DS:SEQ
WESTERN HUON				
Ono	*-we*	*-no(m)*	*-ki*	DS
Nomu	*-be*	*-no*	*-e*	DS
Burum	*-bi*	*-nə(ŋ)*	*-i*	DS serial
Selepet	*(-mu/ne)*	*(-rɔ)*	*-mu*	DS
URUWA				
Yau	*(-a/ya)*	*(-i/ya)*	*-una*	DS:SEQ
WANTOAT				
Tuma	*-wa*	*(-wi)*	*-wən*	DS common
Wantoat	*-wa*	*(-wi)*	*-wən*	DS
YUPNA				
Yopno	*-bo*	*(-bi)*	*-bən*	DS:SEQ
Nankina	*-wa*	*(-si)*	*-wʌn*	DS
GUSAP-MOT				
Rawa	*(tɔ)we*	*-(to)ni*	*-to/ni*	DS

Table 4: NENG DS-medial verb endings, SG (continued)

ENGH

	1SG	2SG	3SG	
KAINANTU				
Awa	*(-ɔwa)*	*-(o)na*	*-owa*	DS far past
Usarufa	*(-ɯna)*	*-na*	*-ita*	conjunctive
GOROKAN				
Fore	*(-ó)*	*-(aːʔ)N*	*-áː*	DS contemp.
Yagaria	*(-d/u)*	*-(da)na*	*-d/i*	DS completed
Bena-Bena	*(-u)*	*(-a)*	*-i*	DS
CHIMBU				
Kuman	*-ibo*	*-in*	*-nan*	DS dependent
Ku Waru	*-ab*	*-ani*	*-piʎ*	opt./switch ref.
ENGAN				
Kewa	*(-no)*	*-ina*	*-na*	DS:SEQ
Enga	*(-ó)*	*(-é)*	*-á*	DS far past
KALAM				
Kobon	*(-nə)*	*(-ə)*	*-ə*	DS

MA

	1SG	2SG	3SG	
BRAHMAN				
Tauya	*(-e/te)*	*(-a/fe)*	*-a/te*	DS
WANANG				
Apali	*(liŋ)*	*-na*	*-ci*	DS
Nend	*(-ŋ)*	*-n*	*-z*	DS
PIHOM				
Mauwake	*(-amkun)*	*(-era)*	*-era*	DS
Usan	*(-ine)*	*(-a)*	*-a*	DS
Wasembo	*-pa*	*-(ma)na*	*-ne*	DS
MABUSO				
Nobonob	*(-pi)*	*(-pe)*	*-be*	DS:SEQ:FUT
Amele	*(-min)*	*(-m)*	*-b*	DS:SEQ
RAI COAST				
Erima	*-pe*	*-na(pe)*	*-na*	SS:FUT
Koromu	*(-i/te)*	*(-i/te)*	*-a/te*	DS realis
Bongu	*(-mes/en)*	*(-mes/en)*	*-es/en*	durative

The first person singular ending Common NENG *-*pa* is reflected by most FH languages, the Chimbu (ENGH) languages, as well as two MA languages: Wasembo (Pihom?) and Erima (Rai Coast). The reconstruction of this ending is important for the definition of the paradigm. The same or a similar ending only recurs in the hortative or optative mood of some languages, a meaning arguably deriving from an elliptic use of a medial verb form.[7] But the first person singular ending *-*pa* is alien to indicative mood tenses such as past and present. In all likelihood, this ending was unique to the different subject medial verb paradigm at an early time. It set the medial verb paradigm apart from the indicative mood final verb paradigms with which it probably shared some of the other person-number endings.[8] There is no pronominal origin in sight for this ending, either. A first person singular pronoun with a similar sound shape cannot be found anywhere in the NENG language area. We can therefore feel confident that the paradigm reconstructed here was indeed a paradigm of person-number endings, rather than a set of enclitic pronouns which over time became verb suffixes.

The second person singular ending Common NENG *-*na* has been well preserved in the Western Huon family (FH), the Kainantu, Gorokan and Chimbu families (ENGH), and the Wanang family (MA), with a few other languages in all three stocks following suit. According to the discussion in Section 3 of this paper, this ending must have been identical with, or very similar to, the ending of the first person plural. This expectation is borne out by the forms found in the language families just mentioned (cf. Table 5 for the 1st PL endings).

In the Kainantu and Gorokan languages (ENGH), the reflexes of the second person singular ending and the first person plural ending are identical with each other. In the Huon Peninsula languages (FH), however, they show different vowels, as in Dedua (Eastern Huon) *-na* 2nd SG vs. *-ni* 1st PL, or Nomu (Western Huon) *-no* 2nd SG vs. *-ne* 1st PL. The rough and probably underdifferentiated sound system in terms of which the reconstructions of these endings are cast here glosses over such a difference in vowel

[7]The Enga (Engan, ENGH) immediate imperative form *-wa* 1st SG (Lang 1973: xxxvii) is worth mentioning as the one incontrovertible reflex of a NENG different subject medial verb ending in the language.

[8]In an as yet unpublished paper, Pawley (1995b) has reconstructed a set of person-number endings of final verbs in NENG languages. Proceeding from a reconstruction of the endings common to Kalam, Kobon and the documented MA languages, he extended the comparison to languages from the two other NENG stocks as well as a number of other putative Trans New Guinea groups. The final verb endings he reconstructs for the NENG group are similar to the DS-medial verb endings I am reconstructing, except for the 1st SG form.

quality (cf. the transcription convention explained at the beginning of Section 4). It is nonetheless an open question whether these endings were homophonous or differed in their vowels. Unfortunately, the Chimbu (ENGH) and Wanang (MA) languages do not contribute anything that could help us answer this question, the former having dropped the vowel following /n/, and the latter lacking a direct reflex of the Common NENG 1st PL form. The issue must therefore be postponed until new data comes to light and the phonological history of vowels is better understood.

Table 5: NENG different subject medial verb endings, dual and plural

	1DU	2/3DU	1PL	2PL	3PL
Common NENG	*-*ta*	*-*Vt*	*-*na*	*?*	*?*
		FH			
KOBAI	*-(we)t*	*-(wi)t*	*-(we)n*	*(-p)*	*(-p)*
EASTERN HUON					
Kâte	*-(pe)re*	*-(pi)re*	*-(pe)ne*	*-(pi)e*	*-(pi)e*
Dedua	*-de*	*-e?*	*-ni*	*(-ge?)*	*(-ge?)*
WESTERN HUON					
Ono	*-te*	*-(w)it*	*-ŋe(m)*	*-(w)i*	*-(w)i*
Nomu	*-de*	*-ot*	*-ne*	*-e*	*-e*
Burum	*-zi*	*-(oh)ot*	*-in*	*(-get)*	*(-get)*
Selepet	*-(mu)t(ŋe)*	*(-mu/tɔ)*	*-(mu)n(ŋe)*	*(-ŋe/tɔ)*	*(-ŋe/tɔ)*
URUWA					
Yau	*-ta(ya)*	*(-un/ya)*	*-na(ya)*	*(-u/ya)*	*(-u/ya)*
Wantoat					
Tuma	*-da*	*(-wən)*	*-na*	*-(w)ə*	*-(w)ə*
WANTOAT	*-ta*	*-(w)ət**	*-na*	*(-wət)*	*-(w)ə*
YUPNA					
Yopno	*-do*	*-(b)əl*	*-no*	*-(b)ə*	*-(b)ə*
Nankina	*-da*	*(-wʌn)*	*-na*	*-(w)o*	*-(w)o*
Gusap-Mot					
Rawa	*-(tɔ)re*	*-(to)ri*	*(-tɔ/ye)*	*-(to)yi*	*-(to)yi*

Table 5: NENG DS-medial verb endings, DU & PL (continued)

ENGH

	1DU	2/3DU	1PL	2PL	3PL
KAINANTU					
Awa	*-(ɔwa)ya*	*-(o)ya*	*-(ɔwa)na*	*-o*	*-o*
Usarufa	*-(u)ya*	*-ya*	*-(una)na*	*-(w)a*	*-(w)a*
GOROKAN					
Fore	*(-ó)*	*(-á:)*	*-(ó)N*	*-á:*	*-á:*
Yagaria	*-(du)ʔa*	*-(d)aʔa*	*-(du)na*	*-(d)a*	*-(d)a*
Bena-Bena	*(-uʔi)*	*(-aʔi)*	*(-u)*	*-a*	*-a*
CHIMBU					
Kuman	*-(ob)uL*	*-(ib)uri*	*-(om)un*	*-(ib)i*	*-(ib)i*
Ku Waru	*-(ab)iʎ*	*-(aŋ)L*	*-(amiʎ)*	*(-aŋ)*	*(-aŋ)*
ENGAN					
Kewa	*(-pona)*	*(-lipina)**	*(-mona)*	*(-limina)*	*(-na)*
Enga	*(-ámbá)*	*(-ámbí)*	*(-ámá)*	*(-áí)*	*(-ámí)*
KALAM					
Kobon	*-lo*	*-lə*	*-no*	*(-be)*	*-(l)ə*

MA

	1DU	2/3DU	1PL	2PL	3PL
BRAHMAN					
Tauya	—	—	*-ene(te)*	*(-ane/tefe)*	*-i(te)*
WANANG					
Apali	—	—	*(-mili)*	*-(l)a*	*(-havi/ci)*
Nend	—	—	*(-liŋ)*	*(-mgi/n)*	*(-mgi/z)*
PIHOM					
Mauwake	—	—	*(-amkun)*	*(-iwkin)*	*(-iwkin)*
Usan	—	—	*-(u)ne*	*-(ar)i*	*-(ar)i*
Wasembo	*(-pua)*	*(-pia)*	*-(pu)na*	*(-pi/na)*	*(-pi/na)*
MABUSO					
Nobonob	*-(pu)t*	*-(p)et*	*(-put)*	*(-peg)*	*(-peg)*
Amele	*-(hu)l*	*-(b)il*	*-(mu)n*	*(-bil)*	*(-bil)*
RAI COAST					
Erima	*-(ya)re*	*-(nade)re**	*(-ya)*	*(-nadere)*	*(-de)*
Koromu	—	—	*(-iya/te)*	*(-iye/te)*	*-e(te)*
Bongu	*-(mus)l(an)*	*-(bes)l(an)*	*(-mus/en)*	*(-bes/en)*	*(-bes/en)*

*Wantoat: *-wət* 2DU, *-wə* 3DU; Kewa: *-lipina* 2DU, *-na* 3DU; Erima: *-nadere* 2DU, *-dere* 3DU

The consonantal opposition between the first person non-singular endings, Common NENG *-*ta* 1st DU and *-*na* 1st PL, is reflected by virtually all FH languages, Kuman (Chimbu) and Kobon (Kalam) of the ENGH stock, as well as Amele (Mabuso, MA). In the Kainantu and Gorokan languages (ENGH), analogical processes have disturbed the picture in the dual number. The Usarufa (Kainantu) ending *-[u]ya* 1st DU might contain a reflex of *-*ta*, but the glottal stop in Yagaria (Gorokan) *-[du]ʔa* 1st DU is deviant. In the latter language, a glottal stop appears in the dual endings of all tenses and may have arisen in an environment where the original dual consonant */t/ was in syllable final position.

Because of the loss of the dual number in many of the documented MA languages, the opposition we are looking for is not amply represented in that stock. In fact, the only solid piece of evidence comes from Amele (Mabuso). The Amele endings *-hul* 1st DU and *-mun* 1st PL contain clear reflexes of the Common NENG proto-forms in their final consonants. There is lexical evidence suggesting that one of the sources of Amele /h/ is an earlier */b/. If this is true for the dual ending just quoted, the Amele endings correspond perfectly to those of Kuman (Chimbu, ENGH), *-obuL* 1st DU and *-omun* 1st PL. The only other MA language with suggestive reflexes of the first person non-singular endings is Wasembo (Pihom?). But the Wasembo forms *-pu/a* 1st DU and *-pu/na* 1st PL are difficult to judge. As there is no lexical data available for this language, it is impossible to say whether a consonant has dropped from the dual form.

Finally, a possible reflex must be mentioned that I considered too indirect to be indicated in Table 5. If the explanation of the genesis of the consonant alternation between dual and plural verb endings in Engan (ENGH) languages given at the end of Section 3 is correct, the Enga forms *-ámbá* 1st DU and *-ámá* 1st PL also qualify as reflexes of the consonantal opposition between the Common NENG 1st DU and 1st PL different subject medial verb endings. The opposition between a prenasalized stop and a plain nasal consonant in these endings reflects a phonological opposition that was originally associated with a final consonant which dropped from the endings in these languages.

The evidence at hand strongly suggests that the second and third person dual were expressed by the same form. Only three languages can be found in the whole NENG area that have two different endings for these categories. These languages are marked with an asterisk in the column of the 2nd/3rd DU, and their two different dual forms are given at the end of the table.

There is good evidence that the characteristic consonant in both Common NENG dual endings was a */t/. Reflexes of this consonant are characteristic of the dual endings in Kobai (isolate, FH), the Huon Peninsula languages (FH), Rawa (Gusap-Mot, FH),

Kuman (Chimbu, ENGH), Kobon (Kalam, ENGH), and Bongu (Rai Coast, MA). It is harder to tell what the ending of the 2nd/3rd DU was made up of besides */t/. All documented languages do differentiate between a 1st DU ending and a 2nd/3rd DU ending, but in some of them the distinctive difference appears in a part of the ending that is a later accretion. When we turn to the languages with the most archaic, unextended dual endings we do not find complete agreement. The endings of Dedua (Eastern Huon, FH) *-de* 1st DU vs. *-e?* 2nd/3rd DU and Nomu (Western Huon, FH) *-de* 1st DU vs. *-ot* 2nd/3rd DU suggest the reconstruction of a suffix with the phonological shape **-Vt*; but the opposition between the two dual endings in Kobon (Kalam, ENGH) *-lo* 1st DU vs. *-lə* 2nd/3rd DU rather seems to point to a suffix of the shape **-tV* for the Common NENG 2nd/3rd DU ending. The Chimbu languages (ENGH) look like crucial witnesses, too, but I do not understand the conditions under which they developed their special laterals well enough to be able to interpret the evidence. The exact phonological shape of the 2nd/3rd DU ending still needs to be determined.

The third person endings outside the threefold desinence pattern are the most difficult to reconstruct. For the 3rd SG, there is such a variety of different forms attested that I find it impossible to identify the reflexes of the original ending. For the 2nd/3rd PL form, there are two possibilities between which I find it hard to decide. If the threefold desinence pattern in its original form looked as described in the discussion of example (19) in Section 3, we would have to reconstruct Common NENG **-a* 2nd/3rd PL. The endings of Nomu (Western Huon, FH), the Gorokan languages (ENGH), and Apali (Wanang, MA) suggest such a reconstruction. On the other hand, there is some evidence that the vowel in the non-first person non-singular endings was **i*, which would lead us to reconstruct **-it* 2nd/3rd DU and **-i* 2nd/3rd PL. The endings of Ono (Western Huon, FH), Kuman (Chimbu, ENGH), and Usan (Pihom, MA) seem to reflect such proto-forms. Clearly, more research is needed to decide this question.

As has become apparent in Tables 4 and 5, the different subject medial verb endings I reconstruct are not equally well reflected in all parts of the NENG area. For some endings, the reflexes in the MA stock are few and far between, but even in this stock reflexes could be found of all reconstructable endings. As is also to be expected from a comparison of inflectional morphology, some language families turn out to be more conservative than others. It is not too surprising to find that the languages of the Western Huon family (FH) have on the whole kept a very archaic set of medial verb endings, given that this family occupies a peripheral position both within the NENG group and on the New Guinea mainland. A remarkable fact to which I wish to draw attention here is the conservatism of the Chimbu family (ENGH) which does not lie in a peripheral geographical position. Kuman (Chimbu, ENGH) has kept clear reflexes of all medial verb endings for which I have suggested a Common NENG reconstruction.

6. Conclusion

We have come a long way from the introduction to this paper where a rather curious phenomenon pointed out by Haiman (1979) set the scene. In several widely separated languages throughout the NENG language area, it was observed, the dual and plural forms of free pronouns and verb endings differ only in a consonantal feature. Three languages that show such a consonant alternation were examined in some detail. Then I gave a historical account of the genesis of this alternation in verb endings. For one of the languages examined in detail, Kâte, I showed that the consonant alternation must be a rather recent innovation. The same reasoning, I believe, applies to the other languages concerned as well. The alternation originated from a minimal phonological opposition between the consonants in the 1st DU and 1st PL endings which is demonstrably very old. In those languages which have a consonant alternation between all dual and plural verb endings, this opposition has been analogously extended to the 2nd and 3rd non-singular forms which are usually homophonous in the languages under consideration. The appearance of a very similar looking consonant alternation in different NENG language families is thus an instance of drift: a parallel but independent development from a common point of departure.

The consonantal opposition between the 1st DU and 1st PL verb endings which gave us the key to the explanation given above proved to be part of a larger inflectional pattern spanning all three persons and numbers. Greenberg (1971) was the first to call attention to the widespread occurrence of a nasal consonant in both the 2nd SG and 1st PL verb endings in languages of the NENG area and beyond. This is another important feature of the pattern which I called, following Haiman (1980), the threefold desinence pattern. A survey of final verb endings produced evidence of the presence of this pattern or traces of it in language families from all three NENG stocks.

Before embarking on an attempt to reconstruct a whole paradigm of person-number endings, I felt it necessary to present some lexical evidence of the genetic relatedness of the languages dealt with in this paper. I proposed eight etymologies involving bi- and triconsonantal verb stems which, taken together, connect all NENG language families with each other. The insight into the pattern of oppositions and similarity connecting the person-number endings of the verb proved to be of great help for the subsequent reconstruction of a part of the Common NENG paradigm of different subject medial verb endings. The results are repeated in (37).

37) **Common NENG**: person-number endings of different subject medial verbs

	sg	du	pl
1st	***-pa***	****-ta***	****-na***
2nd	****-na***	**-Vt*	*?*
3rd	*?*	**-Vt*	*?*

Reconstruction proved to be most difficult for the 1st SG, 3rd SG, and the 2nd and 3rd PL endings, which are not tied into the network of oppositions and similarity that defines the pattern. I was able to reconstruct all of the different subject medial verb endings that are part of the threefold desinence pattern (bolded in 37). But of the contentious forms, there was only sufficient agreement among the attestations of the 1st SG ending in the different NENG families to permit a reconstruction.

After this account leading from a consonant alternation to the reconstruction of an inflectional pattern in verb endings, there remains one loose end: the personal pronouns. The consonant alternation from which we started occurs in the dual and plural forms of personal pronouns as well as in verb endings. But pronouns have not been mentioned any more after the discussion of three exemplary languages that show such an alternation. There are many more NENG pronoun sets documented than verb paradigms, and a thorough examination of them is obviously not possible within the limits of space of this paper. But such a study has in fact recently been undertaken by Ross (1995) and has produced an important finding that must be briefly mentioned here.

Ross surveyed the personal pronouns across most of the language families that have been assigned to the Trans New Guinea phylum. He observed that the MA languages reflect a set of pronominal stems that is different from the one found in the FH stock and various other Trans New Guinea groups. Nevertheless, he found a striking similarity in the way many MA and FH languages form the dual and plural forms of personal pronouns from these stems. To account for this agreement, he suggested reconstructing a pronominal plural suffix Proto Trans New Guinea **-gi* or **-ŋi* and a dual suffix **-li* (1995: 149).

If a pair of number suffixes of this sort could be posited for Common NENG personal pronouns, this would offer an attractive explanation of the development of an alternation between homorganic consonants in some NENG languages and, in particular, it would go some way towards explaining why there are considerably more NENG languages with an alternation in their pronouns than with an alternation in their verb endings. There only needed to be a shift in the place of articulation of the consonant of one of these suffixes to make both coincide in their place of articulation. Such a shift would have had analogical support from the 1st DU and 1st PL verb endings.

The major challenge for Ross' proposed reconstructions comes in the form of a handful of languages that show a minimal consonantal opposition only in the first person non-singular forms, but not in the second and third person forms (see the map in the Appendix). Here, we are facing the same problems I pointed out in the discussion of examples (14) through (16) in Section 3 of this paper. The disappearance of either or both of the postulated number suffixes from the second and third person non-singular forms could not be due to a regular phonological change since the same suffixes were retained in the first person forms. Furthermore, the putative loss would have destroyed a semantically significant consonantal opposition. It seems, then, that a scenario of possible changes must be found that has the virtues of Ross' hypothesis and at the same time avoids these problems.

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Abbreviations

DU	dual	PL	plural
ENGH	East New Guinea Highlands	PRES	present
FH	Finisterre-Huon	PT	past
FUT	future	REM	remote
MA	Madang-Adelbert Range	SG	singular
N	nasality	VC	voicing
NENG	Northeast New Guinea		

APPENDIX: DUAL AND PLURAL FORMATION IN NORTHEAST NEW GUINEA PAPUAN LANGUAGES

FINISTERRE-HUON

1 **Kobai** [=Kovai] (McElhanon 1973)

HUON PENINSULA

Eastern Huon

2 **Kâte** (Pilhofer 1933)

3 **Dedua** (Ceder 1990)

Western Huon

4 **Ono** (Wacke 1930/31)

5 **Nomu** (Suter 1996)

6 **Burum** (K & S Olkkonen 1983)

7 **Selepet** (McElhanon 1972)

FINISTERRE

Uruwa

8 **Yau** (Wegmann 1996a)

Erap

9 **Nek** (Linnasolo 1993)

10 **Urii** (T Webb 1967)

Wantoat

11 **Tuma** [=Irumu] (R & L Webb 1992)

12 **Wantoat** (Davis 1964)

Yupna

13 **Yopno** [=Kewieng] (Reed 1988)

14 **Nankina** (C & P Spaulding 1994)

Warup

15 **Gwahatike** [=Dahating] (An 1996b)

Gusap-Mot

16 **Rawa** (N & D Toland 1991)

EAST NEW GUINEA HIGHLANDS*

Kainantu [=Eastern]

17 **Awa** (Loving & McKaughan 1973)

18 **Usarufa** (Bee 1973)

Gorokan [=East-Central]

19 **Fore** (Scott 1978)

20 **Yagaria** (Renck 1975)

21 **Benabena** (Young 1971)

Chimbu [=Central]

22 **Kuman** (Trefry 1969)

23 **Ku Waru** [=Hagen] (Merlan & Rumsey 1991)

Engan [=West-Central]

24 **Kewa** (Franklin 1971)

25 **Enga** (Lang 1973)

Kalam

26 **Kobon** (Davies 1981)

*To keep the number of patterns encoded in the map down to a manageable size, some compromises had to be made in coding certain languages. The Kewa non-singular pronouns, for in-stance, were given the same coding as those of languages showing a consonant alternation in all persons, even though only the second and third person pronouns do so in Kewa (cf. example 10a in Section 2). Here, the fact that an alternation can be observed outside the first person forms was taken to be significant. In verb endings, several languages have in fact different patterns in different tense/mood categories. In such cases, I chose the coding appropriate for the most frequently recurring patterns.

MADANG-ADELBERT RANGE

ADELBERT RANGE

Brahman

27 **Tauya** (MacDonald 1990)

Wanang

28 **Apalç** [=Emerum] (Wade 1989)

29 **Nend** [=Angaua] (Harris 1990)

Piho

30 **Mauwake** [=Ulingan] (Kwan 1980)

31 **Usan** [=Wanuma] (Reesink 1987)

32 **Wasembo** (McElhanon 1975)

Isumrud

33 **Bunabun** (Capell 1951/52)

34 **Dimir** (Z'graggen 1971)

35 **Bargam** [=Mugil] (Hepner 1986)

MADANG

Mabuso

36 **Nobonob** [=Garuh] (Schuetz 1941)

37 **Utu** (Z'graggen 1971)

38 **Amele** (Roberts 1987)

Rai Coast

39 **Erima** (Roberts 1997: 145)

40 **Koromu** [=Kesawai] (Priestley 1983)

41 **Bongu** (Hanke 1909)

42 **Siroi** (Wells 1979)

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