Palauan Velar Nasals and the Diachronic Development of PMP Noun Phrases: A Response to Blust

Lawrence A. Reid

UNIVERSITY OF HAWAI‘I

This paper is a response to the account by Robert Blust (in the December 2009 issue of this journal) of the origin of the Palauan velar nasals that are found at the beginning of otherwise vowel-initial words and at the end of some Palauan numerals. His claim that they are an “epenthetic” sound change rather than the result of morphological reanalysis is shown to be incorrect. Each of the three objections that Blust raised to the morphological solution of the “mysterious” Palauan velar nasals is shown to be unfounded. It is shown that they are probably fossilized clitic velar nasal ligatures having the same source as those that are found as enclitics on nominal specifiers from Tagalog ang to Malay yang. The paper also responds to Blust’s claims that my earlier reconstruction of Proto-Malayo-Polynesian (PMP) phrase-marking forms and their historical development involve changes unparalleled in historical phonology. A detailed account is provided of what is known about PMP noun phrase structure (especially those with numeral heads), the forms that introduce NPs, and the evidence for reconstructing an attributive marking “ligature” *na (alternating with *=n and *=a) with subsequent changes to *=ŋ and *=ŋa, changes that are commonly found in other languages and that have also left their mark on Palauan.

1. INTRODUCTION. In a recent issue of this journal, Robert Blust (2009b) provides a valuable account of the historical phonology of Palauan. His analyses clearly explain much of what brought about the strange shapes of many Palauan lexical items. But the article also contains an account of what he believes to be the origin of Palauan velar nasals that appear on the beginning of otherwise vowel-initial words. An unexpected velar nasal also appears on the end of some words. He concludes that “all of the evidence that we have points to this being a sound change rather than a result of

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1. This paper was written while I was a visiting researcher (June 1, 2009–May 31, 2010) in the Monsoon Asia and Multiculturalism Project, National Tsing Hua University, Hsinchu, Taiwan. I wish to express my warm thanks for the generous support provided and for the opportunity to continue my research on the historical development of Austronesian languages. My thanks go also to Jason Lobel, Malcolm Ross, John Wolff, and Elizabeth Zeitoun for comments on an earlier version of the paper, none of whom can be held responsible for any of the claims I have made, and also to Hsiu-chuan Liao for helpful discussion and for providing numerous references during the writing of the paper and for careful editing of the final version.

Oceanic Linguistics, Volume 49, no. 2 (December 2010) © by University of Hawai‘i Press. All rights reserved.
morphological reanalysis or the fossilization of an affix” (2009b:332). He thus refers to the velar nasal as an epenthetic consonant, and claimed as its motivation that it innovated a constraint against vowel-initial words. He could find no explanation of why, unique among Austronesian languages, it was the velar nasal /ŋ/ that was “chosen as the vehicle” for expressing this constraint.

In making the claim that the “epenthetic” nasal could not have been the result of morphological reanalysis, he cites the suggestion originally made by Pätzold (1968:21–22) that the nasal in question came about through metanalysis, that is, the splitting of a form into segments that were not original to it. Pätzold had concluded that in vowel-initial bases, the nasal of the “article” *aj (which he compared to Tagalog ay ‘common noun specifier’), was reassigned to the base by analogical wrong division. It should be noted that the Palauan common noun phrase marker is a.

Blust notes that “in some ways this offers the simplest solution to the problem, or at least the solution for which it is easiest to understand a motivation.” Nevertheless, he rejects it primarily on the basis of the following three “problems” (Blust 2009b:325).

1. The morphological solution assumes that, wherever an analogical wrong division was possible, it was followed to a false conclusion, as with a norange > an orange, but not a narwhal > an arwhal.

2. The morphological solution assumes that a grammatical marker *aj can be reconstructed for a language that was ancestral to both Tagalog (hence Proto-Philippines) and Palauan. In fact, no such form has ever been proposed.

3. The morphological solution may be a priori plausible for nouns, but it is problematic for verbs, and especially for pronouns.

Having stated his objections to the morphological solution, and hoping to avoid a “future counterproposal that would require refutation,” Blust then spent considerable space responding to an anonymous referee who defended the morphological solution and who took issue with each of these points. Unfortunately, Blust has not understood or has misrepresented the claims that were made in the articles that were cited in the review. His critique, although flawed, has nevertheless forced me to take a closer look at my past analyses (and at the way they were presented) and at the evidence that has accumulated since I last wrote on these topics. With the realization that this evidence supports the claims I have made about the morphological development of noun phrases in Malayo-Polynesian languages, and that Blust was wrong in rejecting the morphological solution to the Palauan forms with unexpected initial velar nasal onsets, he has given me the reason to write the counterproposal that he was trying to avoid.

In the following sections of this paper, each of the objections that Blust has made to the morphological solution will be addressed. In section 2, the objection cited in problem (2) above will be addressed, since the details are relevant to my response to his first objection, which will appear in section 3. In section 2, the claims that I have made about the structure of Proto–Malayo-Polynesian (PMP) noun phrases and their diachronic development will be restated and hopefully clarified, claims that have not been seriously challenged in print since they were first published over thirty years ago. In particular, the “sound changes” that I have been “forced to appeal to” that “have no parallels elsewhere in the [sic] historical phonology” will be addressed and accounted for.
In section 3, evidence will be presented that suggests that the capture of a ligature from a preceding noun phrase marker has occurred in several verifiable instances in western Austronesian languages. Although Blust objects to some of the details of the instances that were cited in the review, details that I will defend below, he conceded that such a process has in fact occurred. He states, “although it is not common, then, for metanalysis to be a regular change, it can be regular, as it apparently is in Kimaragang Dusun and perhaps Subanen” (2009b:326). Nevertheless he decided that his first objection to the morphological solution (problem 1 above) still stood, an objection that had become irrelevant with his acceptance of the evidence for its occurrence elsewhere in western Malayo-Polynesian languages.

In section 4, my response will be provided to Blust’s problem (3), that if the morphological solution to Palauan initial η- were the correct one, we would not expect to find it attached to pronouns and verbs, since its source would be a common noun marker and would not have preceded these word classes.

Finally, in section 5, I discuss the reconstruction of some of the PMP terms for numerals, which although not counter to any claim made by Blust in his paper under discussion, is relevant to the claims made in section 2 of this paper.

2. PMP NOUN PHRASES AND THEIR DIACHRONIC DEVELOPMENT. In his first objection to the morphological solution, Blust sets up a “straw horse,” which he then proceeds to demolish. He says,

the morphological solution assumes that a grammatical marker *an than can be reconstructed for a language that was ancestral to both Tagalog (hence Proto-Philippines) and Palauan. In fact, no such form has ever been proposed. In the closest approximation to such a reconstruction, Ross (2002:51, 2006:525) has proposed *a, which he initially labeled a “specific phrase marker” for common nouns that are conceived as present to the hearer, and later labeled a “nominative case marker” for common nouns (2009b:325)

This is a “straw horse” in that such an assumption is completely unnecessary, and neither I nor anyone else has assumed it. It reflects the position taken by Blust in a number of

2. I reject the claim that the parent of Philippine languages was a “Proto-Philippines” (Reid 1982; Zorc 1986; Blust 1991, 2005b), a claim that has taken on a life of its own. The term now forms part of the Ethnologue (Lewis 2009), and is commonly referred to in recent works on Philippine languages (Robinson 2008:24; Lobel and Riwarung 2009:410; and others). This is despite its speculative source in a language extinction that supposedly eradicated all Philippine languages from Batanes to the Sulu archipelago as the result of an all-powerful expanding dialect spoken by farmers in a search for more agricultural land, some 3500 years ago, and from which all current Philippine languages supposedly developed. But there has never been any phonological, morphological, or syntactic evidence presented for a “Proto-Philippines” that would distinguish it from Proto–Malayo-Polynesian (or from Proto–Extra-Formosan, as I have commonly referred to the ancestor of all non-Formosan Austronesian languages). The only evidence that has been provided is lexical, evidence that any comparatist recognizes as the weakest form of evidence for any subgrouping. As Ross (2005:11, 13) notes, “just as there was no ‘Proto Formosan’, there would also have been no ‘Proto Philippine’” and “… in the absence of phonological and grammatical innovations, I remain skeptical that a Proto Philippine ever existed”. Pawley (2006:18–19) also provides several arguments against a Proto-Philippines, noting that “reconstructions of PPt [Proto-Philippine] phonology and morphology yield systems virtually identical to those reconstructed for PMP.”
cases in which he has proposed reconstruction of monosyllabic forms on the basis of what turn out to be, on closer examination, “false morphological friends” (pairs of paradigmatic morphemes in two languages or dialects that look or sound similar but differ in meaning: Schulze 2004), or “false morphological cognates” (pairs of paradigmatic morphemes in the same or different languages that are similar in form and meaning but have a different historical source).

Blust further muddies the waters with the convenient fiction of labeling Tagalog ay “a nominative case marker,” citing Ross (2006). But Ross doesn’t even mention Tagalog in the cited paper, and since Tagalog ay introduces common noun phrases that are not only grammatical subjects (“ pivots”), but simple responses to questions, fronted topics, and nominal predicates, one would assume that Ross would have labeled it a neutral phrase marker, as he does elsewhere for phrase markers that do not mark case (Ross 2006:524). The general claim about noun phrase markers that Ross made in that paper, which was not noted by Blust, and is important in the context of the claims that I am making here (see 2.2 below), is that “we see such case-marker + determiner sequences arising cyclically in the histories of Philippine-type languages as a case-marker suffers attrition of its earlier function, and its form is reanalyzed as a caseless determiner” (2006:530).

My objection to Blust’s “straw horse” is that for the morphological solution to be valid, one need only assume that the same processes of change that brought about Tagalog ang from the forms reconstructed for PMP phrase markers could also have resulted in a pre-Palauan *aŋ, or more precisely *aŋŋ, since metanalysis was not involved. At that point in time, the velar nasal was not necessarily part of an otherwise indivisible unit. In order to discuss these, it is necessary first to reformulate what I now believe the evidence reveals about the structure of PMP noun phrases, and about the forms that need to be reconstructed, from which the multiplicity of noun phrase markers found in Malayo-Polynesian (MP) languages today must have developed (see 2.1). In the following sections, I will discuss evidence for each of the processes that have affected the markers of nominative/absolute noun phrases; these include the unmarking of the case of the phrase (2.2), and the factors that affected vowel grade choice (2.3). Finally, in 2.4, I will outline the evidence for my claims regarding the form of the “ligature,” which Blust comments on as follows: “the key element in this chain of speculation is the lexically specific change of *n to *ŋ” which,

3. See, for example, Blust’s equating of the ku and mu endings on first person inclusive plural pronouns (=taku and =tamu) in some Philippine languages with genitive first and second person singular pronouns, respectively =ku and =mu, and my response (Reid 2009a, 2009b).

4. See, for example, Blust’s reconstruction of Proto-Austronesian (PAN)*na ‘genitive plural personal noun marker’ as the “simple” explanation of forms with similar form and function in Amis and some Central Philippine dialects (2005a, 2009a:445), and my response (Reid 2007, 2009c; see also Ross 2006:530 and Zeitoun 2009); and also Blust’s reconstruction of a fixed vowel reduplicative pattern, PAN *C,a-, for a variety of meanings (Blust 1998, 1999), probably all of which must be the result of analogical change of C1V1- processes (Reid 2009d; see also Zeitoun, Teng, and Ferrell forthcoming).

5. Although clumsy, the use of the double term nominative/absolute reflects, on the one hand, the claim that Proto– Malayo-Polynesian was probably, like most Philippine languages, an ergative language (see Liao 2004 and the references cited therein), hence absolute, and on the other hand, the tradition in both Formosan and Philippine linguistic descriptions of labeling the case of the grammatical subject of a sentence as nominative (for the reasons underlying this choice, see Reid and Liao 2004:435).
with the other changes that would have resulted in a pre-Palauan *aŋ, constitute “a dramatically irregular development that strains all credibility!”

2.1 THE STRUCTURE OF PMP NOUN PHRASES. I have discussed the structure of the noun phrase in PMP (and some of its daughter subgroups) in a number of papers (Reid 1978, 1979, 2000, 2002, 2006a, 2006b, 2007, 2009a,c), each building on, and in some cases modifying, the conclusions and terminologies of earlier papers, as our general understanding of the processes of change has grown.

This section is in response to Blust’s misrepresentation of what is presented in Reid (2002). Blust states, referring to this paper, that “the derivation of Tagalog ay from *ná na (> *a na > *aŋa > *aŋ > ay) involves at least three sporadic changes that have no obvious motivation.” The first of these changes (“the demonstrative *na reduced to *a”) can be found nowhere in my 2002 paper. In figures 1 and 2, I show the dependency stemmas that originally appeared in Reid (2000), and that were cited in Reid (2002). The first details the structure and forms of the Proto–Malayo-Polynesian (or Proto–Extra-Formosan) phrase(s) that I claimed gave rise to Bontok nan dakól ‘the big one’. The caseless specifier nan clearly developed from a reconstructed demonstrative plus prepositional ligature sequence *ná na. The second details the structure and (pre-Tagalog) forms that gave rise to the equivalent Tagalog structure, ay malaki. I made it explicit that the forms from which I then believed Tagalog ay developed were *ya (*i ‘nominative’ + *a ‘demonstrative’) + *ŋa ‘ligature’.

The point of presenting the stemmas in this way was to show that the dependency structure and form classes of the pre-Tagalog phrase were the same as those shown for the PMP phrase from which the Bontok noun phrase developed, and that the endpoint of

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**FIGURE 1. PROTO–EXTRA-FORMOSAN**

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*ŋa
[N]  *na
[+dmns]  [P]  *dakól
        [rltv]  [N]  [prdc]

* From Reid 2000, cited in Reid 2002:301; Nom = nominative; dmns = demonstrative; rltv = relative; prdc = predicative.
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**FIGURE 2. PRE-TAGALOG**

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*a
[N]  *ŋa
[+dmns]  [P]  *malaki
        [rltv]  [V]  [sttv]

* From Reid 2000, cited in Reid 2002:303; sttv = stative.
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the grammaticalization processes that operated on these forms resulted in what I labeled as “nominal specifiers,” which were the syntactic heads of their phrases, and did not fit the typological characteristics of “determiners,” an analysis that is entirely consistent with that provided for Tagalog ang by Himmelmann, who refers to such forms as “specific articles” (Himmelmann 1991:15, 1998:333–36, 1999:236, 2006:8). I did not claim, nor imply, that the demonstrative that constituted the lexical head of the phrase in Tagalog developed from the same demonstrative that constituted the lexical head of the Bontok phrase. Clearly, a wide range of demonstrative forms could occur in this position. For Bontok, I could have used the sequence *sa na (from which Bontok san ‘unmarked-recognitional common noun specifier’ has developed: Reid 2006a:16), or *di na (from which Northern Kankanaey din ‘unmarked antededated common noun specifier’ has developed: Reid 2006a:22). Similarly for the pre-Tagalog phrase, I could have used *u instead of *a, since Tagalog still uses demonstratives distinguished by these vowels: thus Tagalog iyán ‘medial demonstrative’ vs. iyón ‘distal demonstrative’ and its genitive counterpart niyón.6

Having said this, Blust’s claims partly match some of the suggestions that I made in Reid (1978) in my first attempts at reconstructing “Proto-Philippine construction markers” and accounting for their development in the daughter languages. At that time, I did not recognize the need to reconstruct a PMP *a demonstrative, considering it to be a development from the well-attested *na demonstrative. But by Reid (2000), as is clear from figure 2, I was no longer making that claim. One would hope that when critiquing someone’s analyses, the criticism should be based on the latest published formulations and terminology, not on outdated publications, especially when the criticism comes from someone who has never attempted to provide any explanation for the historical processes that have brought about the plethora of forms that are found.

The sets of forms that must have instantiated the various structural positions in the PMP noun phrase are still not definitively understood, although some preliminary attempts have been made (for example, Reid 1978, 1979; Plessis 1996:2; Ross 2002:51, 2005:16, 2006:525–26, etc.). However, any attempt at a full reconstruction, as I attempted to show in Reid (2006a), can only proceed after careful “bottom-up” reconstruction of the structure of noun phrases from a wide variety of constituent subgroups within Malayo-Polynesian, a study that has only just begun (Reid 2006a for Central Cordilleran, Himes 1998 and Liao 2009 for Southern Cordilleran, and so on). Only then can one understand the factors that have resulted in the irregular developments that permeate the systems, and begin to distinguish between independent and shared innovations, drift, and direct inheritance.

We know that it is probably necessary to distinguish sets of case-marking forms that occurred in the initial position of the phrase string, such as *n ‘ergative/genitive’, *s ‘oblique’, and *d ‘locative’, which combined with vowels that could be interpreted as specifying semantic features of the lexical head that they preceded, such as *i ‘personal

6. Inherited forms in Tagalog that contained *u in the final syllable are represented in the common orthography today with the vowel o.
7. The forms that reflect an initial *n generally mark both the agent of a transitive sentence, hence ergative, and the nominal possessor within a noun phrase, hence genitive. The tradition in Philippine (and Formosan) linguistics is to label both functions as ‘genitive’.
noun specifier’ or *a ‘common noun specifier’. Similar distinctions have been described for various Formosan languages, such as Amis (Liu 1999, for example.), have been reconstructed for PAN (Ross 2006:530), and are widespread in MP languages. In addition, there were sets of monosyllabic forms that were deictic demonstratives marking at least three spatial dimensions, and possible temporal dimensions as well. We also know that both demonstratives and common nouns could be followed by an attributive construction that had the structure of a relative clause,8 introduced by a “relative” preposition, commonly known in the literature as a “ligature,” and which I have claimed (and will justify below) had the form of *na or *=n following a vowel, but *=a following a consonant. The details of these claims are argued in Reid (2006a), and need not be repeated here. What needs to be repeated, however, is the recognition that the great variety of forms that are found in today’s languages, some of which Blust took pains to list in a vain attempt to refute the possibility of a morphological solution to the Palauan /ŋ/ problem (Blust 2009b:325), are the result of a number of very common and well-known phonological and grammaticalization processes, processes that strike Blust as “dramatically irregular developments, that strain all credibility.”

2.2 UNMARKING OF PMP NOMINATIVE/ABSOLUTIVE NOUN PHRASES. Comparing the wide range of forms that introduce nominative/absolutive NPs in Philippine languages, there is clear evidence from common noun marking in many languages, as well as from the forms of demonstratives and frozen forms, that nominative/absolutive NPs were probably case-marked with *ʔi,9 a form that probably had two realizations: *=y when following a vowel-final word and *ʔi when following a consonant final form. With attrition of its case-marking function (Ross 2006:530), it typically appears as y when forming part of one of the common noun nominal specifiers, such as Tagalog yung. I distinguish this *ʔi, which probably introduced nonspecific common noun phrases,10 and which was typically immediately followed by either a vocalic specifier such as *a or *u, or one of the spatial demonstratives, from two other morphemes of the same shape. One, *ʔi, introduced nominative/absolutive personal nominal and pronominal phrases (such as Ivatan yaken ‘1SG personal pro-

8. In much of the recent literature on such constructions, they are considered to be nominalizations (Shibatani 2008, 2009, for example).
9. There is an issue as to whether or not PMP had a phonemic glottal stop on otherwise vowel-initial words. Certainly in many Philippine languages, including Tagalog and other Central Philippine languages, initial glottal stops are both phonetically and phonologically present (Schachter and Otaes 1972:19; French 1988; Himmelmann 2005a:117, 2005b:353). There is a clear phonetic distinction, for example, between the initials of demonstratives, such as Tagalog iyon /ˈiyʊn/ ‘distal demonstrative’ and yung /ˈyuŋ/ ‘common noun specifier’. Also, initial glottal stop is maintained when prefixed with a consonant final prefix, such as Tagalog mag-ingat /ˈmag.ʔi.ɲaː/ ‘make a noise’, from ingat /ˈiŋaː/ ‘noise’, as well as in CVC-reduplicated forms, such as Bontok ep-epat /ˈɛp.ʔɛpʰaːt/ ‘four only’. Despite the fact that glottal stop has been lost in many MP languages, there is enough such evidence to consider that glottal stop formed part of the phonological system of PMP and that all nonclitic forms had an initial consonantal onset (see also Zorc 1982).
10. Evidence for this primarily consists of the retention, across the family, of *=y on existential verbs, which typically require an indefinite nominative NP to follow them, such as Bontok wad-ay/wa=*y ‘positive existential’, Cebuano na?a=y/wa=*/y ‘positive/negative existential’, and the like (Zorc 1977:84–86; Reid 1978:53; Tanangkingsing 2009:108–11).
noun’, etc.), and which also occurred as the vocalic specifier of personal genitive and locative noun phrases, *ni and *di, respectively (such as Ivatan niaken ‘GEN.1SG personal pronoun’, diaken ‘LOC.1SG personal pronoun’, etc.); the other, *?i, introduced proper noun locative phrases; both of these have reflexes throughout the family, from Formosan to Oceanic languages.11

In table 1, I present evidence for the claim that nominative/absolutive common NPs were probably introduced by *?i in PMP; and that loss of case-marking resulted in either complete loss of the initial syllable of *?iya or *?iyu, giving *ya or *yú, respectively (depending on the choice of the nominal specifier or demonstrative that followed it), or simply *?a or *?u. In most Philippine languages, these forms not only introduce nominative/

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* Ilokano iţi presently only marks oblique common noun phrases. Noun phrases that are not case-marked are marked by either ti or diay. Historically, iţi also marked nominative/absolutive NPs.

11. That the vowel *i may itself have functioned in PMP to mark a specific common noun, distinct from *a and *u, is also possible: some languages still maintain a distinction between all three vowels in their demonstrative system, and a number of languages, as can be seen in table 1, have either inherited *?i, with this function, or have extended it from its earlier nonspecific reference, since nominative/absolutive NPs generally require their exponents to be interpreted as either definite or specific.
absolutive common NPs, but also specific common noun predicates and fronted common noun topics, whether or not their reference is to clause-internal nominative or genitive NPs. Ivatan is one of the few languages that have a distinct form for fronted common noun topics and specific common noun predicates (and also for topicalized pronouns) (Reid 1978:36), but whether the distinction is reconstructible to PMP is uncertain, so that the forms reconstructed and labeled as nominative/absolutive in table 1 may have also introduced other, noncase-marked, common noun phrases.

The data in table 1 are organized according to the subgroup affiliation of the language in which the form occurs. Forms are listed without initial glottal stops, but are otherwise phonemic. In a number of languages, the presence of a given form is restricted to (or specifies) a feature of a following term; thus in Ivatan, a Bashic language, a high front vowel only occurs in certain demonstratives, while a high back vowel marks a following common noun.

In Proto–Malayo-Polynesian, then, and in the parent languages of the subgroups that developed from it, one of the forms that marked specific common nouns was *?iya, probably alternating with *ya, as it must have been in Proto-Greater Central Philippines (PGCP1) and in the parent of the language that developed into Tagalog. This is the form that is also reflected in a number of Tagalog’s sister languages within GCP1: Mamanwa (a conservative first order branch of the group), Aklan, Mansaka, Tagakaulo, and other languages of the Central Philippines and Mindanao, as well as the languages of Palawan, including Central Tagbanwa, and Kalamianen (in some ways a phonologically conservative subgroup of MP). Further to the north, the same form is maintained in the Northern Cordilleran languages of northern Luzon as a neutral case nominal specifier, and in Balangao of the Central Cordilleran group as a formative marking neutral case demonstratives (Reid 2006a:30), as well as in the Sambalic languages (Antworth 1979:7). And beyond that, in Formosa itself, Ross (2006:525) reconstructs Proto-Amis *iya ‘neutral case marker’, and in other languages of the East Formosan group, we find Kavalan ya/a (Li 1996:77) and Basay a (Li 1996:169, 1999:646) with the same functions. Favorlang (a Western Plains language) also has ya as a nominative marker.

The loss of the initial on-glide in Tagalog and other languages that exhibit forms beginning with either a (as in Kavalan, some Sambalic languages, and not coincidentally Palauan) or u (as in the case of the different dialects of Amis and the Bashic languages) must be the result of the commonly accepted morphological change by which grammatical subjects tend to lose their case-marking (as noted by Ross 2006:530), hardly a “dramatically irregular development.”

2.3 FACTORS INFLUENCING CHOICE OF VOWEL GRADE. In addition to marking with *a, resulting in forms such as *ya ‘specifier of nominative/absolutive specific common nouns’, *na ‘specifier of genitive/ergative common nouns’, and *sa ‘specifier of oblique common nouns’, a corresponding set of forms having the vowel *u occurred. While forms with *a were probably the default, those marked with *u probably specified nouns that had some temporal or spatial distance from the speaker. Ross (2006:35), citing a range of data from both Formosan and Philippine languages, suggests that the difference between them could have been present vs. absent, or proximal vs. dis-

12 Maybe also not coincidentally, Vasay is the local name of the main municipality in the Batanes Islands, otherwise known as Basco (Yamada 2002:2).
tal. There was clearly a semantically light noun *nu (not case-marked) that meant simply ‘thing’, which could be possessed by genitive pronouns (for example, Amis *nu=maku ‘my thing, mine’), and which formed the base of a wide range of question forms in Formosan and Philippine languages, such as Tagalog /&taw/ ‘what’, and so on (Reid 2007:250). This may have provided the analogical source of the *u marking on case-marked specifiers. The problem with determining the functions of these forms, as Ross makes clear, is the conflicting evidence found across the family.

In many languages, the features that conditioned the choice of vowel in the nominal specifier have been lost, with either one vowel or the other being generalized to all case-marked forms, or one vowel being maintained before lexical nouns, with the other restricted to one or another of the demonstratives. It is clear that the choice of what I have termed “vowel grade” in such phrase markers is often the result of analogical change, with one vowel spreading through the paradigm as a result of apparently having a common vocalic template applied to it, in a type of “long-distance vowel harmony,” to influence the vowels of other forms occurring in the same clausal context. This has resulted in forms with identical functions in even closely related and geographically adjacent dialects sometimes having different vowels (Reid 2006b).

Other factors that have resulted in the conflicting evidence include homophony of the enclitic forms of different full forms, such as *s=s ‘nominative personal noun specifier’ (full form *si), and *s=s ‘oblique indefinite noun specifier’ (full form either *su or *sa), resulting in the development of homophony of the full forms themselves.13 Borrowing of forms between adjacent languages with different phonological histories has also been identified as another cause of such evidence (see Reid 2006a for extensive discussion of such changes in Northern Philippine languages).

2.4 THE DEVELOPMENT OF THE PMP LIGATURE. Another of Blust’s “dramatically irregular developments” in “this chain of speculation” that must be addressed is “the lexically specific change of *n to *ŋ,” that is, what appears on the surface to be a change of the form of the ligature from a PMP *na to a pre-Tagalog *ŋa, which appears in figure 2 in 2.1.14 It is necessary, at this point, to briefly outline what is meant by the term LIGATURE and to review the forms that have been proposed as reconstructions for it in PMP. The term continues a tradition that traces back to the very earliest Spanish grammars of Philippine languages, in which the form was recognized as a special syntactic category and was known as ligatura or ligadura ‘ligature’ (Ridruejo 2005). In languages across the family, especially in Taiwan and the Philippines, relative clauses and other modifying structures such as complement clauses are introduced by a form, the ligature, which is often homophonous with one of the forms that also specify noun phrases, and that appears in other contexts as a demonstrative. In several Formosan lan-

13. For example, see the development of the Balangao personal noun specifier ah from earlier *si ~ *s (Balangao =h), because of homophony with the enclitic form of the oblique preposition *as ~ *s (Balangao ah ~ =h) (Reid 2006a).

14. While taking care to correctly refer to the change of /na/ to /ŋa/ as a “lexically specific change,” Blust (2009:328) also refers to it as an /n/ to /ŋ/ “sound change” that I have been “forced to appeal to” that has no parallel elsewhere in historical phonology, apparently unaware of the sound change in the northwest dialect of Mekeo, a language belonging to the Papuan Tip Cluster, in which all coronals, including /n/, became velars (Blevins 2009:270).
guages (Pazeh, Saisiyat, Paiwan, Amis, and Kavalan), the form is simply a (Ross 2006:525), as in (1), and it has been reconstructed as such for PAN, at least as the ligature that links numerals in a multiplicative relationship, as in (2).\footnote{Dahl (1981:52), however, suggests that the form of the ligature (Dahl’s “linker”) differs so much in Formosan languages that none of them is reconstructible to PAN.}

(1) **PAZEH\footnote{Abbreviations occurring in the literal translation line of example sentences follow the Leipzig Glossing Rules, with the following additions: ABIL, abilitative; AG, agent; COMM, common; CTR, contra-expectation; EXST, existential; LIG, ligature; MEDL, medial; NS, nominal specifier; NCM, nominal case marker; NSPC, nonspecific; PAT, patient; PERS, personal; PROX, proximal; R, reals; SCM, syntactic category marker for nominals; SPC, specific. Language and subgroup name abbreviations are: AKL, Aklanon; BIK, Bikol; BLK, Bululakawon; BON, Bontok; CAP, Capiznon; DSP, Dispolohon; GCPP, Greater Central Philippines; GUB, Gubat; HIL, Hiligaynon/Ilonggo; IFC, Ifugao; ILK, Ilokano; ITB, Itbayaten; JA1, Jaun-Jaun; KAL, Kalagan; KAM, Kamayo; MAN, Mansaka; MAS, Masbatenyo; MP, Malayo-Polynesian; N-S, Northern Samareño; PAN, Proto-Austroasiatic; PGCPP, Proto-Greater Central Philippines; PMP, Proto-Malayo-Polynesian; POE, Proto-Oceanic; pre-BAN, pre-Banton; S-L, Samar-Leyte; SOQ, Sorosongan; SUR, Sisaonon; TAG, Tagalog; TSG, Tausug; WAR, Waray.}**

Yaku hapet yamini dusa a rakihan.
‘I like these two LIG child’

(2) **PROTO-AUSTRONESIAN NUMERAL CONSTRUCTIONS**

\begin{itemize}
\item *duSa a puluq ‘twenty’
\item *telu a puluq ‘thirty’
\item *Sepat a puluq ‘forty’
\item *lima a puluq ‘fifty’
\item *enem a puluq ‘sixty’
\item *pitu a puluq ‘seventy’
\item *walu a puluq ‘eighty’
\item *Siwa a puluq ‘ninety’ (Zeitoun, Teng, and Ferrell forthcoming)
\end{itemize}

In languages in the Philippines and further south, a variety of forms is found, including \textit{na}, \textit{nya}, and several enclitic forms, =\textit{a}, =\textit{n}, and =\textit{η}.\footnote{A number of other forms are found, often restricted to specific construction types, such as reflexes of PMP *=\textit{an}, which have become a general ligature in some Kalinga languages, but which in Bontok languages primarily link a speech verb with a direct quotation. These ligatures will not be considered further in this paper.} An extensive account of the “subordinating ligature” constructions in which such forms occur first appeared in Foley (1976), with discussion of the types that occurred in Tagalog, Palauan, Ilokano, Toba Batak, Tolai, Wolio, and Malagasy. For PAN, he reconstructed a “subordinating ligature” *\textit{nya}, with a variant *-\textit{η} occurring after vowels.

Other proposed reconstructions have generally favored a form with an initial velar nasal, as originally proposed by Wolff (1967:72–74) for the parent of the Central Philippine languages and cited by Zorc (1977:230): “the shape of the markers with final \textit{n} ... which are probably cognate with forms which have final \textit{η} in other languages, indicates a change of \textit{η} to \textit{n} under certain conditions; ... what the conditions are is not clear.”

Blust (1974) went beyond Wolff and reconstructed a ligature with an initial velar nasal for PAN. “Apart from the *ni phrase, at least one other feature of organization transcending the level of the word can be reconstructed and assigned with equal confidence to Proto-
Austronesian. Thus the use of a linker reflecting *ŋa to connect two numerals in a multiplicative relationship is attested in a number of widespread Austronesian languages” (Blust 1974:7). But just as his “first step” was a self-admitted false step (Blust 2005a), he stumbled on his second step, in that there are no ligatures with a velar nasal in Formosan languages in either “numerals in a multiplicative relationship” or other attributive structures. He attempted to remedy this error in Blust (2009a), in which he reconstructs it only to PMP, “Tetun sa-n-ulu reflects a numeral ligature *ŋa that is widespread in AN [Austronesian] languages outside of Taiwan; … the PMP word [for ‘10’] is *sa-ŋa-uluq … ‘one group of ten’” (Blust 2009a:269), but he provides no explanation for the “sporadic lexical change” of *ŋa to an alveolar nasal in Tetun, nor for a considerable number of other Austronesian languages that have an alveolar nasal in such numeral constructions, sometimes assimilating to =m. Dahl noted “the numerals from 20 to 90 are generally formed with *uluq preceded by the numerals from 2 to 9,” with a nasal (most often m) as a linker in between (1981:53). He, however, drew attention (as Blust did not do) to several ligatures such as Chamorro na, Sangir n, and Gorontalo lo, which all must be ultimately from a PMP *na.

In Reid (1978), when I still believed in a Proto-Philippines and was no doubt influenced by Wolff’s and Blust’s reconstructions, I reconstructed a PPH ligature *ŋa, alternating with *ŋay or *ŋa, but by Reid (1983), I had modified the reconstruction to a position close to that which Blust is challenging. PMP *na following vowels, and *ŋa following consonants, a reconstruction that corresponds to Ross’s (2006:525) reconstruction of PMP *ŋa, *na ‘ligature’. My present reconstruction is a slight refinement of that presented in Reid (1983), PMP *na ~ *a=n following a vowel, but *=a following a consonant.

2.4.1 Evidence for PMP *na~*a=n /…V__a /…C___ ‘attributive ligature’. Although Ross did not note the distributional difference between the PMP *na and *a ligatures, it is apparent that *a=n was an enclitic attaching to consonant-final forms, while *na followed vowel-final forms, and probably was reduced to *a=n in normal speech, just as other unstressed CV forms were. Many languages still maintain this distribution, while others have generalized either one or the other to all positions. Ilianen Manobo has generalized its reflex of *na (ne /na/) to all positions, as in (3a–d).

(3) ILIANEN MANOBO

a. baley ne dekela’
   house LIG big
   ‘a big house’ (lit., ‘house, a big one’)

b. pitu ne anak din
   seven LIG child his
   ‘his seven children’

c. edtika’ ne ed-iveleng
   bear LIG swallow
   ‘to bear to swallow’

d. menaney ne ed-ipanaw
   slow LIG walking
   ‘to be slow at walking’ (Shand 1964:113–14)

In the parent of the Bashiiic languages, the form that was generalized was the reflex of *=a, and this occurred in all constructions in which a ligature was used. There are no
instances of a reflex of the *na variant. \(^{18}\) In Ivatan and the other Bashiic languages, the reflex of the PMP ligature is *a. It typically functions as an enclitic to a preceding form, but has become fused with any demonstrative that follows it. Thus a sequence of N=a+ya became N=aya ‘this N’ (or reduced as N=ay ‘the N’), and N=a+uri > N=awri ‘that one’. \(^{19}\) Following forms ending in the vowel *a, the ligature may be deleted, as in (4b). In Austronesian languages, the ligature occurs to link a wide range of attributive structures,\(^{20}\) that is, structures consisting of a head and a dependent modifier, including nouns and following relative clauses, such as (4c), and verbs and complement clauses, as in (4d).

(4) **IVATAN**

a. o chito=a(ya)
   NOM.COMN   dog=PROX
   ‘this dog’

b. do kavahayan=da=wri
   LOC   [country=3PL]=DIST
   ‘in that country of theirs’

c. o nyipen=na a oyod=maliliway
   NOM.COMN   [tooth=GEN.3SG] LIG    true=LIG wide spaced
   ‘his teeth that were really widely spaced’

d. Kapaychalayilayin=da=rana a mamo.
   [trembling=3PL=already] LIG fear
   ‘They were already trembling with fear.’ \(\text{Larson 1986}\)

As I have shown in earlier works (Reid 1978:55), this fusion of a ligature to a following demonstrative is a widespread phenomenon, occurring in Formosan languages, such as Atayal in (5), and Amis in (6), in which=ay (probably also from earlier *a + ya) is a nominalizing device.

(5) **ATAYAL**

qal*an qani/qasa
village this/that
‘this/that village’ \(\text{Egerod 1978:503, 508}\)

(6) **AMIS**

a. O mitgil-ay kako.
   NS   listen-NMLZ NOM.1SG
   ‘I am the listener.’

b. O matgil-ay ako.
   NS   heard-NMLZ GEN.1SG
   ‘It is what was heard by me.’ \(\text{Fey 1986:372}\)

The same process also occurs, probably independently, in a number of Philippine subgroups such as Dupaningan Agta (a Northeast Luzon language) aye, aya, and ayo (see [7a–c]); Isinai (a Central Cordilleran language of northern Luzon) =ad ‘definite deter-
miner’ (Paz 1965); Waray (a Central Bisayan language) adi–ad ‘proximal demonstrative’, adítú–át ‘distal demonstrative’ (Wolff and Wolff 1967); Kagayanen (a Manobo language) =an ‘definite medial demonstrative’ (Pebley 1999); Blaan (a Southern Mindanao language) ani/aye/ati ‘proximal/medial/distal determiner’ (Abrams 1970:4); and so on.

(7) DUPANINGAN AGTA

a. Ma-anggad i agom=ko hidi=aye.
   ADJ-smell DEF companion=GEN.1SG PL=PROX.SPC
   ‘These companions of mine smell bad.’

b. angay-an=na=aya a talon
   going.place=GEN.3SG=MEDL.SPC LIG forest
   ‘that forested place where he is going’

c. Ni-sabit ni Manet i sulu=ayo.
   COMPL.TV-hang PERS Manet DEF light=DIST.SPC
   ‘Manet hung up that light.’  (Robinson 2008:78–79)

In many languages, the ligatures are fossilized. There are at least two conditions that lead to this. One is when head-attribute linking ceases to be a syntactic requirement. This is the case for Blaan, as for many languages to the south of the Philippines. The Blaan demonstratives with fossilized a listed above are the only forms in the language that show the ligature. The other condition that may lead to fossilization of the ligature is when the form of a ligature is replaced in one type of attributive construction but not in another. The older form may still remain as a ligature in a limited number of fused constructions, in effect distinguishing between types of head-attribute constructions that were not distinguished prior to the replacement of the ligature. Such is the case in a number of languages in which constructions in which the head noun is a counted unit (especially when that unit is the number ‘10’) form compound nouns meaning a multiple of ‘10’, with the ligature between the two numerals remaining as a frozen form, not occurring elsewhere in the language.

2.4.1.1 Evidence from multiplicative numeral compounds. Multiplicative numeral compounds provide what is probably the clearest evidence for the reconstruction of PMP *na ~ *=n following a vowel, but *=a following a consonant. In this section, I look at these forms in various subgroups within the Philippines and other languages to the south of the Philippines.

While the Bashki languages have generalized =a in numeral constructions between ‘10’ and ‘90’ (see table 2),21 Sambalic languages, such as Botolan and Tina Sambal, and also Mag-anchi Aytá, link such constructions with =a following numerals ending in a consonant (‘40’, ‘60’, and ‘90’), but show =m following numerals ending in a vowel (see table 3). It is possible that this nasal could have assimilated to the initial labial of the form for ‘10’ from an earlier *n(a) as reconstructed by Blust, but evidence from across the family supports a reconstruction with an alveolar nasal.

In some Central Cordilleran languages of northern Luzon, such as Khinina-ang Bontok, Balangao, and Kankanaey (see table 4), the so-called “multiplicative” constructions form compound nouns containing evidence of an earlier ligature with an alveolar nasal

21. Following numerals ending in a (‘1’, ‘2’, and ‘5’), the ligature is either lost or the final vowel of the numeral is lengthened. In Imorod Yami, the data that are available show the ligature occurring after the number ‘5’ as well.
occurring following numerals ending in a vowel. In these languages, no assimilation typically occurs between a nasal and a following obstruent, so that the form that occurs is \( =n \), not \( =m \). In Ifugao, although the ligature appears as \( =m \) following vowels, it is recognized as an assimilated \( =n \), as is clear from the form of the ligature before a bilabial consonant in other numeral constructions, such as Ifg dawon balahing ‘two young women’ (Newell 1993). Following numerals ending in a consonant, the expected clitic \( =a \), which still

<table>
<thead>
<tr>
<th>TABLE 2. NUMERALS ‘10’ TO ‘90’ IN BASHIIC LANGUAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMOROD YAMI (Rau 1997)</td>
</tr>
<tr>
<td>'10' páho</td>
</tr>
<tr>
<td>'20' aďâva ḏârân</td>
</tr>
<tr>
<td>'30' alo a ḏârân</td>
</tr>
<tr>
<td>'40' apat a ḏârân</td>
</tr>
<tr>
<td>'50' alima a ḏârân</td>
</tr>
<tr>
<td>'60' amâm a ḏârân</td>
</tr>
<tr>
<td>'70' apîto a ḏârân</td>
</tr>
<tr>
<td>'80' awaĥo a ḏârân</td>
</tr>
<tr>
<td>'90' asyam a ḏârân</td>
</tr>
</tbody>
</table>

* The bolded segments (including the length marker :) in this and other tables in this paper are reflexes of the PMP ligature or subsequent developments from it.

<table>
<thead>
<tr>
<th>TABLE 3. NUMERALS ‘10’ TO ‘90’ IN SAMBALIC LANGUAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>TINA SAMBAL (Goschnik 1993)</td>
</tr>
<tr>
<td>'10' ma'pô?</td>
</tr>
<tr>
<td>'20' lowâm'pôlo</td>
</tr>
<tr>
<td>'30' tolôm'pôlo</td>
</tr>
<tr>
<td>'40' a?pat a 'pôlo</td>
</tr>
<tr>
<td>'50' limâm'pôlo</td>
</tr>
<tr>
<td>'60' a?nom a 'pôlo</td>
</tr>
<tr>
<td>'70' pitôm'pôlo</td>
</tr>
<tr>
<td>'80' wâlôm'pôlo</td>
</tr>
<tr>
<td>'90' siyâm a 'pôlo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 4. NUMERALS ‘10’ TO ‘90’ IN SOME CENTRAL CORDILLERAN LANGUAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BATAD IFUGAO (Newell 1993)</td>
</tr>
<tr>
<td>'10' himpûlû</td>
</tr>
<tr>
<td>'20' duwâm'pûlû</td>
</tr>
<tr>
<td>'30' tulumpûlû</td>
</tr>
<tr>
<td>'40' nâpât</td>
</tr>
<tr>
<td>'50' nàlema</td>
</tr>
<tr>
<td>'60' nâmom</td>
</tr>
<tr>
<td>'70' napitu</td>
</tr>
<tr>
<td>'80' nàwâlu</td>
</tr>
<tr>
<td>'90' nahiyan</td>
</tr>
</tbody>
</table>

* The na- prefixed forms from ‘40’–‘90’ are unique innovations shared by some of the Ifugao languages and by Keley-i, a geographically adjacent Southern Cordilleran language (see table 6). Its etymology is unknown.
occurs in this environment in the numerals of Limos Kalinga, has generally been lost, although it is maintained in a few forms in Central Kankanaey (‘60’ and ‘90’), with typi-
cal gemination of the consonant to which it is attached (and raising of the vowel to
schwa). The form sin- and its variants that occur in the forms meaning ‘10’ across the
Central Cordilleran subgroup is an irregular development of the numeral one */n*/ plus
ligature */n, which occurs as san in Southern Cordilleran languages, such as Inibaloai
(Ruffolo 2004:49), to specify a single unit of measurement. The irregular change in vowel
quality is probably the result of a “vowel grade” analogical process that has also resulted
in the irregular change of the Proto–South-Central Cordilleran intransitive verbal prefix
*man- to min- or in- in some languages (Liao 2004:115).

In the Southern Cordilleran languages, such as Inibaloai, “the numeral expression
tedompolo tan chowa /talonpolo tan dowa/ ‘thirty two’ is made up of the number tedo
‘three’ plus the linker =n and the decimal unit polo ‘tens’ that form an indivisible unit
with a single meaning ‘thirty’” (Ruffolo 2004:49). Other Southern Cordilleran languages,
such as Karao and Kallahan (see table 5), maintain both =n (or =m) following vowels
and =a following consonants, as reconstructed for PMP.

No reflexes of PMP *na ~ *=n are found in the multiplicative numeral compounds of
Ilokano nor from the languages that constitute both major branches of the Northern Cor-
dilleran languages, Cagayan Valley and Northeast Luzon (see table 6). While Ilokano,
probably a first-order branch of the family, reflects PMP *=a following consonants (‘40’,
‘60’, and ‘90’), no ligature appears following vowels, except for ‘10’, which links the two
parts of the construction with nga. Isnag, one of the Cagayan Valley languages, appears to
have lost ligatures from all the numeral combinations, except for an alternate form for ‘10’
with nga, which appears to be a borrowing from Ilokano, the trade language of the Cagayan
Valley and surrounding areas. The other form for ‘10’ in Isnag occurs with a ma-

**TABLE 5. NUMERALS ‘10’ TO ‘90’ IN SOME SOUTHERN CORDILLERAN
LANGUAGES**

<table>
<thead>
<tr>
<th>BUGKALOT</th>
<th>KARAO</th>
<th>KELEY-I</th>
<th>KALLAHAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘10’ tampó</td>
<td>sawal</td>
<td>ham’pulu</td>
<td>hampolo</td>
</tr>
<tr>
<td>‘20’ divá=m po</td>
<td>tijª=a polo</td>
<td>dëwwm’am’pulu</td>
<td>dowampolo</td>
</tr>
<tr>
<td>‘30’ tiyô=m po</td>
<td>tidon poló</td>
<td>tellum’pulu</td>
<td>tâlpomolo</td>
</tr>
<tr>
<td>‘40’ ?apát (t)a(p) po</td>
<td>?ipat ?a poló</td>
<td>‘na?pat</td>
<td>apatapolo</td>
</tr>
<tr>
<td>‘50’ tambiañ (n)a(p) po</td>
<td>dimín ?a poló</td>
<td>ne’lima</td>
<td>limapolo</td>
</tr>
<tr>
<td>‘60’ ?anim (m)a(p) po</td>
<td>?înim ?a poló</td>
<td>‘na?imi</td>
<td>enemapolo</td>
</tr>
<tr>
<td>‘70’ pitú=m po</td>
<td>pîhon poló</td>
<td>ne’pitú</td>
<td>pitompolo</td>
</tr>
<tr>
<td>‘80’ vawú=m po</td>
<td>go’alon poló</td>
<td>ne’walu</td>
<td>walompolo</td>
</tr>
<tr>
<td>‘90’ ?isam (m)a(p) po</td>
<td>siyam ?a poló</td>
<td>‘nahyam</td>
<td>hiyampolo</td>
</tr>
</tbody>
</table>

* From *sa=m bilan’=a pu ‘one count of ten’. In other dialects of Bugkalt (also known as Ilngot), ‘5’ begins a quinary count of the last five numbers of the decade (Vanoverbergh 1937). The phonological irregularities in ‘60’ (expected *ninim) and ‘90’ (expected siam or *itam) imply that these forms have replaced the earlier quinary set.

22. In some Central Cordilleran languages of the northern Philippines, such as Bontok, Kankanaey, and Balangao, in other attributive constructions, the reflex of */=a* is generalized to follow both vowel- and consonant-final stems as */Cay* (probably */a + y(a) ‘distal demonstrative’ with an optional copy of the final consonant of the form to which it attaches as a syllable onset).
prefix, and must be the inherited form, having cognates in two of the Negrito languages, Central Cagayan Agta and Dupaningan Agta, of Northeast Luzon (table 6), as well as in the Sambalic languages (table 3) and in many languages of Taiwan (Zeitoun, Teng, and Ferrell forthcoming). In many Bisayan languages the prefix is na- (Zorc 1977:101).

It should be noted that among all these languages, it is only Ilokano (with a probable borrowing into Isnag) that has /ŋa/ as a ligature in numeral compounds and that it occurs only in the number ‘10’, not in higher numerals.

In a number of languages south of the northern Philippine area, such as Iraya of the North Mangyan group, and Tagalog, Ata Manobo, and Palawanano, each representing a different Greater Central Philippine subgroup (Blust 1991), multiplicative numeral compounds generally maintain *na ~ *=n, with na following consonants and =m following vowels (see table 7). Although Ata Manobo retains =n following vowels, some of the Bisayan languages have either =m (for example, Kuyonon sampulu? ‘10’) or =ŋ (for example, Tausug hanmpuu? ‘10’) (Zorc 1977:101).

**TABLE 6. NUMERALS ‘10’ TO ‘90’ IN ILOKANO AND SOME NORTHERN CORDILLERAN LANGUAGES**

<table>
<thead>
<tr>
<th>Ilokano</th>
<th>Isnag</th>
<th>Yogad</th>
<th>Central Cagayan Agta</th>
<th>Dupaningan Agta</th>
<th>Casiguran Dumagat Agta</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘10’ sangapúlo</td>
<td>ma’pu:lu, saŋ’a:pu:lu</td>
<td>ta:fulu’</td>
<td>mafulu</td>
<td>ma’pu:lu</td>
<td>sapulu?</td>
</tr>
<tr>
<td>‘20’ duapúlo</td>
<td>duwa’pu:lu</td>
<td>addu:fulu</td>
<td>dwa:fulu</td>
<td>du’wanpulu</td>
<td>du’wapulu?</td>
</tr>
<tr>
<td>‘30’ tallopúlo</td>
<td>tallu’pu:lu</td>
<td>tallufulu</td>
<td>tallufulu</td>
<td>tallupulu</td>
<td>ti’lu a pulu?</td>
</tr>
<tr>
<td>‘40’ uppap a púlo</td>
<td>?appap’pu:lu</td>
<td>appapatfulu</td>
<td>appapatfulu</td>
<td>appat a’ pulu</td>
<td>?ipat a pulu?</td>
</tr>
<tr>
<td>‘50’ limapúlo</td>
<td>limma’pu:lu</td>
<td>limmafulu</td>
<td>limmafulu</td>
<td>lima’ pulu</td>
<td>li’ma a pulu</td>
</tr>
<tr>
<td>‘60’ innem a púlo</td>
<td>?amnam’pu:lu</td>
<td>annamfulu</td>
<td>annamfulu</td>
<td>annam a’ pulu</td>
<td>?nim a pulu?</td>
</tr>
<tr>
<td>‘70’ pitopúlo</td>
<td>pitu’pu:lu</td>
<td>pitufulu</td>
<td>pitufulu</td>
<td>pitu a’ pulu</td>
<td>pí’u a pulu?</td>
</tr>
<tr>
<td>‘80’ wilopúlo</td>
<td>walu’pu:lu</td>
<td>walufulu</td>
<td>walufulu</td>
<td>walu a’ pulu</td>
<td>walu’u a pulu?</td>
</tr>
<tr>
<td>‘90’ siám a púlo</td>
<td>siya’m’pu:lu</td>
<td>siamfulu</td>
<td>siya’mfulu</td>
<td>s’iyam a pulu</td>
<td>s’iyam a pulu?</td>
</tr>
</tbody>
</table>

* Sources: Ilokano, Rubino (2000); Isnag, Barlaan (1993); Yogad, Reid (fieldnotes); Central Cagayan Agta, Mayfield (1997); Dupaningan Agta, Robinson (2006); Casiguran Dumagat Agta, Headland (1998).
† Yogad ta is a regular reflex of PMP (?a)’sa ‘one’.

**TABLE 7. NUMERALS ‘10’ TO ‘90’ IN SOME OTHER PHILIPPINE LANGUAGES**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>‘10’ sam’po?</td>
<td>sampú</td>
<td>sapulu?</td>
<td>sampulu?</td>
<td>sampulkul</td>
</tr>
<tr>
<td>‘20’ duwam’po</td>
<td>dalawampú</td>
<td>darum pulu?</td>
<td>duwampulu?</td>
<td>durampulkul</td>
</tr>
<tr>
<td>‘30’ tatlam’po</td>
<td>tatlampú</td>
<td>tatolun pulu</td>
<td>tatulpulu</td>
<td>tulampulkul</td>
</tr>
<tr>
<td>‘50’ limam’po?</td>
<td>limampú</td>
<td>lalimam pulu</td>
<td>anos na pulu?</td>
<td>limampulkul</td>
</tr>
<tr>
<td>‘70’ pitom’po?</td>
<td>pitumpú</td>
<td>paputun pulu</td>
<td>pitumpulu</td>
<td>pitumpulkul</td>
</tr>
<tr>
<td>‘80’ walam’po?</td>
<td>walampú</td>
<td>wawalun pulu</td>
<td>walumpulu</td>
<td>walumpulkul</td>
</tr>
<tr>
<td>‘90’ siyamma’po?</td>
<td>siyamampú</td>
<td>siasiam no pulu</td>
<td>siasiam na pulu?</td>
<td>siasiam pulkul</td>
</tr>
</tbody>
</table>

* Ata Manobo no is a regular reflex of *na in a prepenultimate syllable. The numbers from ‘20’–‘90’, although written as separate words, are compound nouns.
A reflex of *na or *=n in multiplicative compounds is also found in languages to the south of the Philippines, including Tetun (Timor) sa-n-ulû ‘10’, Ramoaaaina (an Oceanic language spoken in the Duke of York Islands, between New Britain and New Ireland) ru nôiа ‘20’, tulê nôiа ‘30’, wa explanations ‘40’, lima nôiа ‘50’, and so on. The languages of Flores have ambiguous reflexes that could have their source in either an alveolar or a velar (initial) ligature (Chan 1998–2010).

2.4.1.2 Evidence from other attributive constructions. Apart from multiplicative compounds, evidence for the form of early MP ligatures comes from frozen ligatures on demonstratives. Examples have been given above (in 2.4.1) of ligatures that have become frozen to the beginning of a demonstrative base in forms that follow a noun in Dupaningan Agta, Isinai, Blaan, Ivatan, and Iliannien Manobo. But it is a well-known feature of PMP syntax that demonstratives could occur both before and/or after a noun, linked in either situation by a ligature, and for certain functions, demonstratives could occur both before and after the lexical noun. As the demonstrative lost its contrastive force and became bleached of its deictic features, ligatures that joined a preceding demonstrative to a following noun became frozen to the end of the demonstrative, ultimately ending up as nominal specifiers with a final alveolar nasal, as nan, san, and din in the Central Cordilleran languages, while the form of the ligature in other constructions in these languages has changed (BON =α; γ; γ; γ, if γ = an, γ, and the like).

In many of the Central Philippine languages (such as MAS, SOR, GUB, JAU, and BIK), the nasal that has become fused with the specifier is also =n, and is clearly an enclitic form of na, which is the “free” (nonclitic) form of the ligature in these languages. There are some Central Philippine languages and dialects (such as TAG, SUR, KAM, and MAN) that retain the free form as na, but have an enclitic velar nasal =ŋ on their nominal specifiers. Zorc (1977:230) notes other inconsistencies, even within a single dialect, and claims that the only consistent dialects are those that have an alveolar nasal in all positions. There are none that have a velar nasal as a frozen form on nominal specifiers (Zorc’s “determiners”) and na as the free ligature (see table 8, adapted from Zorc 1977:230).

Frozen forms occur also on demonstratives that have not become specifiers. In Tagalog, for example, the “free” ligature is na, with the enclitic variant =n appearing on some of the free demonstratives, iyón ‘that (medial) one’ and iyón ‘that (distal) one’, reflecting an earlier */iýá=n N/ and */iýú=n N/, respectively. As such, they can now occur in postnominal positions: thus báhay na iyón/iýón ‘that (medial/distal) house’. In prenominal position, however, the final alveolar nasal switches to velar, reflecting an innovation

| Table 8. Distribution of -n, -ŋ, and Ø in Central Philippine Languages |
|---------------------------------|---|---|
|**Determiner final** | **Ligature** |
| MAS, SOR, GUB, JAU, BIK | -n | na |
| S-L, WAR | -n | na |
| TSG | -n | Ø |
| SUR, TAG, MAN | -ŋ | na |
| KAL | Ø | na |
| N-S | Ø | na |
in the form of the postvocalic enclitic ligature from alveolar to velar: thus *iyáng/*iyóng báhay ‘that (medial/distal) house’.23 Interestingly, Tagalog has extended the alternation to forms such as prenominal genitive pronouns that have a final alveolar nasal that was not originally a ligature, such as akin (<*?akan) ‘my’ and attin (<*?aten) ‘our (INCL)’—for example, áking/ating báhay ‘my/our (INCL) house’—and has developed a common noun nominal specifier devoid of deictic features, so that *iyóng báhay > yung báhay ‘the house’ (see Nagaya forthcoming).

2.5 FROM *ña TO *ŋa, OR VICE VERSA? Despite Blust’s claim that such a switch has “no parallels elsewhere in historical phonology,” from the evidence that has been adduced so far, reflexes of PMP *ña ~ *ŋa are far more common across the family in frozen forms, such as multiplicative compounds, demonstratives, and nominal specifiers that contain a ligature, than reflexes of Blust’s proposed PMP *ŋa ~ *=ŋ. However, no reasonable account has been provided to date to account for the alternation between the alveolar and the velar nasal that is found, not only across languages within a single subgroup, but between attributive construction types within a single language. The only explanation that has appeared for the conditions under which a PMP *ŋa could have changed into na is provided by Dyen (1970:3). He suggested that Tagalog na and Bisayan nga must be cognates, and explained the difference between them as “analogical change in Tagalog after such assimilations to preceding apicals had affected the initial of the syllabic form, as must be posited to explain the ŋ ~ n alternation in [Tagalog] datîn ‘come’, datnan ‘be reached’” (Dyen 1970:3). But this assimilation results from loss of an ultimate vowel (a reflex of PMP *a) that has become unstressed as the result of derivation with the locative suffix -an, and does not involve a ligature at all. Dyen assumed that *ŋa was the earlier form of the ligature, but did not explain why Tagalog na followed all consonant-final words, not just those that ended in an alveolar consonant, nor did he account for the scores of other Philippine languages in which similar assimilation processes take place, but in which na does not alternate with *=ŋ, but does alternate with *=a.

I find Dyen’s explanation completely unsatisfactory, and in this section, I propose to provide an explanation for the reverse. Briefly stated, it is this. In PMP, or soon thereafter, the enclitic nasal ligature *=n alternated with *=ŋ in contexts in which it immediately preceded a counter that began with a velar stop. The velar nasal subsequently (and probably relatively recently)24 extended its form by the addition of a vowel resulting in a ligature *ŋa (see 2.6). This could not have occurred in the PMP compound for ‘10’, immediately invalidating Blust’s reconstruction of PMP *sa-ŋa-puluq ‘10’, the correct reconstruction of which is probably PMP *mapuluq, given the agreement between Formosan and Philippine languages that reflect this form (see section 5, and table 11).

Dyen (1970), in discussing the evidence for a subgrouping relationship between Tagalog (and other Central Philippine languages) with Maranao, drew attention to the set of “particles” that link forms in what he referred to as “conjunctive constructions,” forms

23. Tagalog also replaces word-final glottal stop with the velar nasal ligature. This is, however, a regular phonological process, since word-final glottal stop in Tagalog is obligatorily omitted when it occurs in the middle of a phrase (Schachter and Otaes 1972:19).
24. The development of the full form /ŋa/ must have followed the breakup of Proto-Central Philippines, given the presence in a number of Central Philippine languages, such as Tagalog, of a ligature with an alveolar nasal but not with a velar nasal.
that are commonly referred to today as linkers or ligatures. He noted that in the languages
that interested him the following forms appear: Tagalog alternates na and =y; in Hiliga-
aynon and Cebuano the alternate forms are ya, =y, and ka, while in Maranao they are a
and ka. He further noted that the form ka occurs only in constructions with numerals,
both in the Bisayan languages and in Maranao, as in (8)–(10).

(8) HILIGAYNON
Nagalangōy siá sa isá ka piníli’ nga ádlaw.
was.swimming NOM.3SG LOC one LIG chosen LIG day
‘He was swimming on one particular day.’ (Wolfenden 1971:168)

(9) CEBUANO
tulu ka mansánas ‘three apples’ (Wolff 1972:409)

(10) MARANAOU
lima ka sako ‘five sacks’ (Dyen 1970:3)

The question arises as to whether such enumerative constructions (Zorc 1977:100)
with a ka ligature reflect a unique innovation in the parent of these languages and provide
evidence for a subgrouping relationship between them as suggested by Dyen, or whether
they reflect a much earlier innovation. To answer this question, it is necessary to expand
the kinds of attributive constructions that we have so far considered from the multiplicative
type with a numeral group (‘10’, ‘100’, and so on) as the counted unit, to a more general
 enumerative type.

In each of the Bashki languages (Ivatan and its closely related dialect Ibatan,
Itbayaten, and Yami), quantifier phrases typically beginning with a numeral require the
form ka between the numeral and the quantified or enumerated noun, as in (11)–(13). In
Ivatan, when the quantified noun is a time word beginning with a vowel, ka fuses with it,
as with ka+orás > kawras, ka+araw > karaw (11b–c); elsewhere, it is a proclitic or per-
haps a prefix, as claimed by Maree (2007) for Ibatan spoken on Babuyan Claro Island, in
the Batanes Islands, as in (12).25

(11) IVATAN
a. asa ka anak ‘one child’
b. asa kawras ‘one hour’
c. asa karaw ‘one day’
d. dadwa ka makasiasi ‘two poor people’
e. dadima ka bayon a paray ‘five sacks of rice’ (Larson 1986)

(12) IBATAN
a. asa kapiso ‘one peso’
b. dadwa kapisos ‘two pesos’
c. tatdo a kapisos ‘three pesos’
d. asa gasot a kapisos ‘one hundred pesos’26 (Maree 2007:92)

25. The ligature ka also occurs in some Formosan languages, such as Tanan Rukai—for example,
líma ka ʔayusu ‘five dollars’ (Li 1973:95)—and optionally in Saisiyat—for example, ʔeihaeʔ?
(ka) korkoring ‘one child’—(Elizabeth Zeitoun, pers. comm., May 19, 2010), but I have no
evidence that these are cognate with the ka ligature in Philippine languages.
(13) YAMI
   a. asa ka ciriciring da  ‘one story of theirs’
   b. papat a ka tao  ‘four people’
   c. apito a ka myanpaw ‘seven loaves’(Rau and Dong 2006:122, 130)

In each of the Bashic languages, when the numeral ends with a consonant (that is, following the numerals for ‘4’, ‘6’, and ‘9’, and also ‘100’), a ligature is required before the counter, and following the numerals for ‘3’ and ‘7’, each of which ends with a high back vowel, a ligature is sometimes required, sometimes optional. The expected form of the ligature in Bashic languages is a.

Reid (1966:98–103) lists two sets of numeral constructions for Ivatan, an analysis that now probably requires revision. According to this description, one set is headed by a numeral, all the members of which (‘1’–‘9’) are historically reduplicated by a fixed vowel reduplication *Ct—a-. The other set is headed by a numeral set, some members of which (isée ‘1’, tatdo ‘3’, ápát ‘4’, ánem ‘6’) are reduplicated forms, others (rua ‘2’, pito ‘7’, waho ‘8’, siam ‘9’) are not. The set that reduplicates all of the numerals (those reduplicated numerals listed above, plus dadwa ‘2’, papito ‘7’, wavaho ‘8’, and sasiam ‘9’) counts nouns of all types, and requires the morpheme ka immediately preceding the counted noun. The second set, by this analysis, is used without ka and interprets the counted noun as a measurement term: thus ánem lá kamay ‘six finger-widths’, but ánem lá ka kamay ‘six fingers’.27 Reviewing the data in the light of published Ivatan text materials (Larson 1986) and Maree’s grammar of Ivatan (Maree 2007), which is the result of much closer familiarity with the language than mine was,28 it seems probable that my published interpretation has the cart before the horse; that is, the constructions that require ka are counting measurement terms, while those without ka are simply enumerated. While Maree does not distinguish two basic sets of numerals, he does provide the following examples, noting that ka-prefixed nouns are interpreted as mensural terms, that is, units of measure, as in (14). Although he doesn’t provide instances of counted nouns that are not mensural terms, the phrase dadwa nwang (with no ka-) ‘two water buffalo’ appears in a text (Maree 2007:338).

(14) IBATAN
   a. asa katawaw  ‘one body deep’ (cf. tawo ‘person’)
   b. dadwa kamay29  ‘two finger-widths’ (cf. kamay ‘finger’)
   c. asa kadakalapan  ‘one palm-width’ (cf. dakolapan ‘palm of the hand’)

(Maree 2007:96)

26. The term for ‘100’ in Ivatan is clearly a borrowing of ILK gasot ‘100’. The appropriate reflex of PAN *Ratus is found in Itb yatos ‘100’.
27. Blust (1998:31–32), relying on the work of Tsuchida, Yamada, and Moriguchi (1987), claimed that in Ivatan dialects, the two sets are either free variants or nondistinctive forms generalized to serve the purpose of counting both human and nonhuman referents. However, Reid (1966) had already given an account of the distinct functions and syntactic distributions of the two sets.
28. My dissertation was based on a relatively short period of field work in 1965, with young speakers of the language from Wao, Lanao del Sur, whose parents were assisted immigrants to Mindanao some years prior to my visiting there.
29. This form is probably a reduction of kakamay, the form that occurs in the corresponding structure in Ivatan.
Other mensural terms in Ibanan include *kadal* ‘the distance of a step’ (cf. *dalawang* ‘step’), and *kanay* ‘the height of a full-grown coconut palm’ (cf. *nyoy* ‘coconut palm’). It seems likely, then, that the *ka*- morpheme occurring in numeral constructions in the Basho languages is a reflex of PMP *ka*- ‘formative for abstract nouns’ (Blust 2003:446), such as Ibanan *kanaro* ‘length’, *karakoh* ‘height’, *karahem* ‘depth’, and *karahmet* ‘weight’, with reflexes throughout the Philippines. The same prefix is also reported in Amis (Fey 1986:370).

The association of reduplicated numerals with measurement terms has, I would claim, a source in a traditional practice that could well go back to PMP. In Bontok, Kankanawe, and a number of other traditional societies in the northern Philippines that still practice animal sacrifice in traditional wedding and other ceremonies, reduplicated numerals are themselves culturally prominent measurement terms, still commonly used in the distribution of shares of sacrificial meat or other food items to people. Ruffolo (2004:119) refers to such numerals in Inibilaloi (a Southern Cordilleran language) as “distributive numerals” shown in (15). The initial phonological sequence /san/ is from *(ʔ)a* ‘1’ + *(ʔ)n* ‘ligature’, so that the compound literally means ‘one piece each’, ‘one group of two each’, and the like. Similar reduplicated numerals with distributive functions are found in many other Philippine languages, such as Bontok in (16), Balangao (Shetler 1976:116), and Cebuano in (17). In Cebuano distributive numerals, the forms were earlier reduplicated with CiV-, a reduplication that is now obscured by sound change: thus ‘2’ *(duduhá)*, ‘3’ *(tutulú)*, ‘4’ *(ʔtúpát)*, and ‘6’ *(ʔtúmút)*.

(15) INIBALOII

| sanseskey | /sansaskaj/ | ‘one each’ |
| sanschedba | /sandodwa/ | ‘two each’ |
| santetedo | /santotolo/ | ‘three each’ |
| san’a’pat | /sanʔaʔpat/ | ‘four each’ |
| sandidima | /sanilima/ | ‘five each’ |
| san’a’nem | /sanʔaʔnem/ | ‘six each’ |
| sanpipito | /sanpipito/ | ‘seven each’ |
| sanbebedo | /sanwawalo/ | ‘eight each’ |
| sansisiyam | /sansisijam/ | ‘nine each’ |
| sansesampolo | /sansasanpolo/ | ‘ten each’ | (Ruffolo 2004:118–19)

(16) KHININA-ANG BONTOK

| sinʔasʔa | ‘one piece each’ |
| sindudwa | ‘one group of two each’ |
| sintutlu | ‘one group of three each’ |
| sinʔapʔat | ‘one group of four each’ |
| sinilima | ‘one group of five each’ |
| sinʔanʔom | ‘one group of six each’ |
| sinpiptu | ‘one group of seven each’ |
| sinwawalú | ‘one group of eight each’ |
| sinisisiyám | ‘one group of nine each’ |
| sinpupíru | ‘one group of ten each’ | (Reid fieldnotes)

(17) CEBUANO

| tag-sa | ‘one each’ |
| tag-urha | ‘two each’ |
| tag-utlo | ‘three each’ |
tag-up?at ‘four each’
tag-lima ‘five each’
tag-un?om ‘six each’
tag-pito ‘seven each’
tag-walo ‘eight each’
tag-siyam ‘nine each’
tag-pulu? ‘ten each’

(Tanangkingsing 2009:53)

It should be noted that the form of the reduplicant is always C1V1-, never the fixed vowel C1a- common in Formosan languages and appearing sporadically in numeral sets in other Philippine languages, and that neither set (with or without the counter ka, or with or without reduplication) uniquely counts either human or animate nouns, an association that is found with similar reduplicated numerals in some Formosan languages.

The distribution of enumerative structures counting mensural terms with a preceding ka in Bashiic, Central Philippine, and Danao languages is good evidence that a structure of this sort must be reconstructed for PMP. The actual form of the structure now becomes relevant. To this point, based primarily on numeral compounds and other frozen forms, I have argued for a ligature occurring in PMP with the shape *na ~ *=-n/V____; *a/-C____. While the Bashiic languages clearly reflect *a, occurring not only in such frozen constructions, but also in enumerative constructions with ka-prefixed mensural terms, is there evidence that *na and/or its alternate *=-n could also occur in these constructions? Fortunately there is. In discussing the distribution of ligatures in the Bisayan languages, Zorc (1977:100) says, ‘in S[amar]-L[eye], this enumerative appears to be limited to marking nominals referring to measurements or lengths of time (e.g., glassful, pack, piece, sack, day, month, etc.) otherwise the ligature *a is used, [for example] S-L duhá ka sáko *a bugás ‘two sacks of rice’, [and] pitú *a malita ‘seven suitcases’.” But he also notes, “in Akl, Dsp, Blk, Cap, Hil (and an undetermined number of other dialects) the ligature *a is optionally used before such ka-phrases, [for example] Akl[an]on] tátlo (η – *a) ka dag?on ‘three years’” (Zorc 1977:100). This suggests, at least, that the Aklanon structure could have developed from a sequence of *=-n ka- > *=-η ka- by assimilation. This hypothesis is further supported by the Mamanwa evidence, as Miller notes: “if the word which precedes nga ka (attriubution in a number phrase) ends in a vowel, the nga of nga ka undergoes the loss of a, and ng becomes a clitic on the word which precedes it, e.g., isang ka gantang ‘one measure’” (Miller 1969:13).

But could *a have come from *η ka- with subsequent reduction of the ligature *η to **=-η? Zorc himself provides the answer to this question in his discussion of the probable source of the Banton ligature nak. He says, “historically the Banton ligature is the result of the fusion of the ligature na plus the enumerative ka, analogically used in all situations of linking or enumeration, i.e., Pre-BAN *limá na ka bátag > limá nak bátag ‘five bananas’” (Zorc 1977:293).

If assimilation of *=-n to *=-η before *ka-prefixed forms in PMP is correct, an explanation is needed for the velar nasal at the beginning of the full form *a, since assimilation could not have resulted in this change.

2.6 THE DEVELOPMENT OF *ηa. In the discussion to this point, it has been necessary to talk in some detail about two types of numeral constructions that must have
been present in PMP: one is the multiplicative construction, which in most languages today forms compound nouns (type 1 in table 9); the other is an enumerative or mensural construction, which counted terms for measurement, at least some of which must have been prefixed with *ka- (type 2 in table 9). Each of these constructions entailed a head noun (the numeral), an attribute (the enumerated morpheme), and a linking morpheme (the ligature). Each of these constructions was, moreover, an instance of a more general attributive construction having a variety of nominal heads, such as (case-marked) demonstratives and lexical nouns that were linked with their attribute by the same ligature that appeared in the numeral constructions (type 3 in table 9). The form of the ligature was either *=n ~ *na or *=a, depending on whether the final segment of the preceding noun was a vowel or a consonant.

30. The question arises as to whether PMP had a dedicated ligature for constructions headed by numerals, with another for constructions headed by other word classes. Among these constructions there are basically two forms, *a and *na, but it isn’t possible to uniquely identify either one with one construction type or the other. Some languages have lost one and generalized the other, with the form with the nasal common in numeral constructions in MP languages, but then this is also the form that occurs in general, nonnumeral constructions in many languages (such as Tagalog). The *a form is commonly frozen in nominal constructions with following demonstratives, =an, =aya, =awari, and so on, but this is the most common form in Formosan languages linking numeral constructions (according to Zeitoun, Teng, and Ferrell, forthcoming). Other ligatures do appear in nonnumeral constructions in MP languages, such as Bontok =en, linking speech verbs with direct quotations, and its Kalinga cognate =on, which functions as a general ligature, but these forms are relatively restricted in their occurrence and do not seem to be reconstructible to PMP as ligatures.

**TABLE 9. SOME PROTO–MALAYO–POLYNESIAN ATTRIBUTIVE CONSTRUCTIONS**

<table>
<thead>
<tr>
<th>Type 1. Multiplicative</th>
<th>Head</th>
<th>Ligature</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>-C</td>
<td>*=a</td>
<td>*puluq</td>
<td></td>
</tr>
<tr>
<td>Type 2. Mensural</td>
<td>-C</td>
<td>*=a</td>
<td>*ka-N</td>
</tr>
<tr>
<td>Type 3. General</td>
<td>-C</td>
<td>*=a</td>
<td>N</td>
</tr>
</tbody>
</table>

| Type 1. Multiplicative | -V   | *=n ~ *=m | *puluq |
| Type 2. Mensural       | -V   | *=n ~ *=ŋ | *ka-N  |
| Type 3. General        | -V   | *=n ~ *na | N      |

There are two possible developmental paths from this reconstructed system that can account for the presence of *ŋa as a ligature. One is by analogy. The assimilated velar nasal ligature of the mensural construction became a free form by analogy with the corresponding free form of the general construction, that is *=n ~ *=ŋ > *=n ~ *ŋa by analogy with *=n ~ *na. However, the more likely path of development is as follows. The free form *ŋa developed following reanalysis of one of the vowel-final numerals (probably *(ŋ)sa ‘1’) to which *=n had become enclitic and subsequently developed as *=ŋ, before *ka-N. This form was then treated as a consonant-final numeral that required a following *=a ligature, thus *(ŋ)sa=ŋ ka-N > *(ŋ)sau=a *ka-N > *(ŋ)sa *ŋa *ka-N. Pre-Tagalog apparently lost the postconsonantal *=a variant, replacing it with *na. The presence of a reflex of *ka as a counter in Dano and Central Philippine languages suggests that pre-Tagalog (a member of the latter subgroup) also had this form but lost it.31 The enclitic velar ligature that preceded mensural terms in these constructions was retained and generalized.
to occur postvocally before all attributive constructions. The fact that pre-Tagalog did not develop the full form *ηa, and its sporadic appearance throughout the Central Philippine languages and elsewhere alongside closely related languages that maintain the forms that are reconstructible to PMP (such as Mansaka, example [18]), strongly implies that the development of *ηa in these languages is a relatively recent development.

(18) MAMANWA

\[\text{ya=ng baray na=madyaw}\]
the=LG house LG=good

‘the good house’ (Svelmoe and Svelmoe 1974:51)

Ilokano, like other Northern and Central Luzon languages, has also lost *ka-marked mensural nouns,\(^{32}\) but such forms were probably inherited into their proto-languages, in that we find sporadic occurrences of the velar nasal associated with the numeral ‘1’, such as in Bontok and Kankanaey, that have alternate forms esa /əsə/ and esang /əsəŋ/ for ‘1’, but have no other evidence for a velar nasal ligature. Ilokano has the full form sangapulo ‘10’, with what is analyzed today as a frozen nga ligature, but this ligature doesn’t occur in any other multiplicative compound. It has, however, been generalized as a ligature before glottal stop-initial words. The nga ligature also occurs sporadically, optionally replacing the inherited a ligature in the Northern Cordilleran languages Isnag and Ibanag, for which Ilokano is a trade language. That such forms have spread from one language to another is hardly surprising. The use of mensural constructions must have been a daily occurrence in the cross-linguistic interaction brought about by the wide trade networks that linked all parts of the Philippines and beyond, resulting in mutual linguistic influence, convergent development, and borrowing of numeral constructions with their ligatures.

With a wide range of languages maintaining a reflex of *=η before *ka-marked mensural constructions, alongside languages that have retained it frozen on nominal specifiers (such as Kalamianen and Mansaka yang, TAG ang), even after having lost the conditions under which it developed, it would not be surprising if pre-Palauan also had had such a ligature. Even in Standard Malay, the nominal specifier *(y)an has been retained, although reanalyzed as a ligature between a head noun and various types of adjuncts, such as a relativizer introducing a modifying clause, as in (19a), also as a complementizer connecting a factive verb and its postverbal complement, as in (19b), each of which is a typical ligature environment in other Austronesian languages. In nineteenth-century Malay texts, and in colloquial Malay, moreover, *(y)an is retained as a nominal specifier, functioning as a topic marker, as in (19c), and to mark definiteness, especially in contrastive contexts, as in (19d, e) (Yap forthcoming; Minde 2008).

(19) MALAY

a. Buang saja bunga yang sudah layu itu.

\[\text{throw just flower LG PFV wither DEM.DIST}\]

‘Throw away just those flowers that have withered.’

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31. Jason Lobel (pers. comm. May 25, 2010) has drawn my attention to the fact that Tagalog retains the *ka- counter on at least one frozen form, as in the not uncommon numeral phrase isang katao ‘one person’.

32. Tina Sambal dar’wa ka daʔan ‘200’ (Goschnik 1993) may be a retention of a mensural construction with *ka: see section 5 and table 12.
b. Dia tahu (yang) orang ini tak boleh di-percaya-i.
   3SG know LIG person this NEG can PASS-trust-TR
   ‘S/he knows (that) this person cannot be trusted.’

c. Yang dia, sedikit pun dia tak kesah.
   TOP 3SG little.bit also 3SG NEG care
   ‘As for him, he didn’t even care the slightest bit.’

d. Yang bapa ketawa; yang ibu menangis.
   DEF father laugh DEF mother cry
   ‘The father laughed; the mother cried.’

e. Aku nak yang biru, (bukan yang) merah.
   1SG want DEF blue NEG DEF red
   ‘I want the blue one, (not the red one).’ (Yap forthcoming)

The use of ?an/’ as a ligature (alternating with /=ŋ/) is also found in Agutaynen, a Kalarianic language of northern Palawan in the Philippines, as in (20).

(20) AGUTAYNEN
   a. Yamo tang matod ang makatete-bek.
      2PL NOM true LIG pitiful
      ‘You are the truly pitiful ones.’

   b. Ang balay ang na, ister-an=no asta tanopa!
      NS house LIG PROX live.in=GEN.1SG DIST forever
      ‘This house, I will live in (it) forever!’ (Quakenbush 2005:441, 452)

3. EVIDENCE FOR LIGATURE CAPTURE. Blust’s rejection of the “morphological” solution to the Palauan initial velar nasal puzzle was based not only on his inability to conceptualize the analogical source of the velar nasal on forms such as Tagalog ang and a wide range of other nominal specifiers in western Austronesian languages, but also on his assumption that in pre-Palauan such a form would of necessity have been an indivisible morpheme that could only have been attached to vowel-initial forms in Paluan through metananalysis (à la Pätzold)—what Blust refers to in the first of his three “problems” as “analogical wrong division.” But it is highly likely that the velar nasal of pre-Palauan *a=ŋ was probably still functioning as a ligature that could attach as easily to vowel-final forms as an enclitic, that is, *…V=ŋ (as in the frozen final nasal of Paluan numerals before temporal mensural terms: e-ta=ŋ ‘one unit of time’, e-ru=ŋ ‘two units of time’, e-wa=ŋ ‘four units of time’), as it could to vowel-initial forms as a proclitic, that is, *ŋ=V…, and that no metanalysis, as such, was involved. Once *ŋ= had lost its function as a ligature, it remained frozen as the initial consonant on these forms.

Procliticization is hardly a dramatically irregular development. In Ilokano, there are two variants of the ligature, a and nga. Although usually written as free forms, they are unstressed clitics, whose occurrence is dependent not on whether the final segment of the preceding forms is a consonant or a vowel, as in Tagalog, but on the initial segment of the following form. The ligature a typically occurs as an enclitic, but usually precedes forms that are consonant-initial, while nga typically occurs as a proclitic attached to forms that are glottal stop-initial (written as vowel initial). The Tagalog nominal specifiers, such as ang, are always written as separate words, but as they do not carry stress, they typically
procliticized to the following word, with regressive nasal assimilation in some dialects to a following initial consonant, such as TAG /?am=batâ/ ‘the child’, /?am=suklây/ ‘the comb’, /?an=kalabâw/ ‘the carabao’ (Zorc 1977:230; Kroeger 1993:112; etc.).

Three other instances of nasal capture were cited to support my claim that the “mysterious” Palauan nasal did not appear out of thin air, but was probably originally a velar nasal ligature between a phrase marker, probably (y)a, and a following vowel-initial form. The first occurred in Minahasan, discussed in 3.1; the second in Proto-Oceanic, in 3.2; and the third in Subanen, in 3.3.

3.1 MINAHASAN PRENASALIZATION. Sneddon’s (1978) reconstruction of a Proto–Northeast Minahasan *N- assimilating nasal prefix as a common noun marker, preceded by either *a or *u phrase markers, was relegated by Blust to a footnote and treated as irrelevant, because Sneddon’s Proto-Minahasan wordlist gave nouns without the prefix, and there were syntactic environments, such as generic predicate nouns, in which nouns occurred without the nasal prefix. Sneddon explains, “it is probable that in PNM [Proto–North Minahasan] the prenasalized form of a word never began an utterance but that it always followed a particle” (Sneddon 1978:52). But that Proto–Northeast Minahasan *N- had its source in the final nasal of a preceding nominal specifier cannot be denied, and is clearly a case where a form that was earlier an enclitic to a preceding form has become a proclitic to a following form.

3.2 PROTO-OCEANIC PRENASALIZATION. The second instance cited was Proto-Oceanic prenasalization. The origin of prenasalization in the Minahasan languages from a ligature was cited in Reid (2000) in connection with what I claimed was one of the sources of prenasalization in Proto-Oceanic. Blust commented, “the attempt of Reid (2000) to derive sporadic prenasalization in Oceanic languages from ‘nasal capture’ is misguided, since this process affects both initial and medial consonants, and continued to operate after the breakup of Proto-Oceanic, when no known nasal element was present to condition an oral grade/nasal grade contrast” (Blust 2009b:327). It is somewhat surprising that Blust uses these arguments, in that it is commonly understood that medial prenasalized consonants in Proto-Oceanic probably had a different source from those in initial position (Ross 1988), and, secondly, that there certainly was a nasal element after the breakup of Proto-Oceanic that resulted in the development of prenasalized consonants in those forms not previously affected by it (the so-called oral grade/ nasal grade “cross-over” phenomenon). One of the surest reconstructed features of the POC noun phrase is *na ‘common noun determiner’, a form that is widely inherited in Oceanic languages and which has been claimed to be the source of some NC sequences in Oceanic languages (see Lynch 2001).33

Ross (1988:39–45) notes that one of the explanations for oral grade/nasal grade “cross-over” in Oceanic languages had its origins in pre-POC or even earlier, suggesting that there were alternating forms attributable to morphophonemic variation that were “quite possibly fossilized” by POC times. This is precisely the kind of evidence that we find in multiplica-

33. Riehl (2008:89) cites Crowley (1998) as claiming that “most of the words in Erromangan [spoken on the island of Erromango in Vanuatu], including well over half of the nouns, begin with a nasal, the result of an historic nasal article which is not synchronically divisible.”
tive compounds in some of the non-Oceanic, Central Malayo-Polynesian languages. In Uma, a Central Sulawesi language, for example, Martens (1995:540) recognizes two morphological sources for the prenasalized consonants that he claims to have developed in that language. The first, which has also been claimed as the source of some POC prenasalized consonants (for example, Dempwolff 1969:30–33; Ross 1988:41) is a verbal velar nasal, as in (21a). The other source is a morphophonemic ligature, such as between a numeral and a classifier, as in (21b).

(21) **UMA**

a. koni ‘eat’ /koni ‘to eat’

b. ro- ‘two’ /pepa? ‘be wide’ /ro?pepa? ‘two sheets of s.t.’

(Martens 1995:540)

In Wolio (a language spoken on the islands off southeast Sulawesi), another language that has a series of prenasalized obstruents (Anceaux and Grimes 1995:575), prenasalization is claimed to be predictable “in certain environments due to morphological morphophonemic processes, … for example, in compounding, when the second root begins with a voiced or voiceless stop, a homorganic nasal ligature -N- is inserted,” as in (22a,b). However, with prefixes, prenasalization is sometimes present, sometimes not, as in (22c,d). It is clear, however, that where it does occur, it also has its source in a nasal ligature.

(22) **WOLIO**

a. penami-/~kuku /penami-N-kuku/ ‘nibble’

b. ulo-ulo-/~kobulu /ulo-ulo-N-kobulu/ ‘hairy heads’

c. baa ‘head’ /sa-baa ‘one head (classifier)’

d. bara ‘west monsoon’ /sa-barə ‘one year’

(Anceaux and Grimes 1995:582)

A similar situation is described for Manggarai (a language of Flores). “Occasionally we find the insertion of a homorganic nasal ligature -N- before stops in compounds” (Verheijen and Grimes 1995:589), and the examples that are given are all numeral constructions, as in (23).

(23) **MANGGARAI**

a. ṇa-pulu ~ ṇa-mulu ‘ten’ (numeral, lit., one-ten)

b. sua-mulu ‘twenty’

c. ṇulu-/~kali ‘three times’ (Verheijen and Grimes 1995:589)

In Bina (a language in Sumbawa), a bilabial nasal before the initial consonant of *puluq ‘10’ developed as prenasalization (*sampuru ‘10’, *dua mpuru ‘20’, and so on). In Rongga (on the island of Flores), we find voicing (and prenasalization) of the initial consonant of the reflex of *puluq ‘10’, and nasal substitution of the initial velar consonant of *Ratus ‘100’ (sa bulu ‘10’; *bulu tua ‘20’, sajasu ‘100’, pasu tua ‘200’). The same developments are found in the multiplicative compounds of Anakalangu, a language

34. Riehl (2008:57) claims, however, that the Uma NC sequences are tautosyllabic clusters and not unary prenasalized stops.

If this explanation of the possible development of initial prenasalized consonants in POC is misguided, I look forward to any alternate explanation that Blust could provide to guide me.

3.3 SUBANEN (PHILIPPINES) VELAR NASAL CAPTURE. The third case I cited that I claim had its source in a nasal ligature was the pervasive initial assimilating velar consonant of nouns in Subanen languages, the most recent discussion of which is Daguman (2004), a source that Blust dismissed as adding nothing to the discussion, and that he apparently never bothered to check; among the wealth of information on the assimilating proclitic velar *G=*, that she labels ‘syntactic category marker for nominals’, there are answers to several questions raised by Blust, including an explanation of the adjectives/stative verbs that begin with a labial stop and that Blust claims “have developed a vocalic onset under still poorly understood conditions,” as with *ba articulated* > *gimbogat* ‘heavy’, *baba articulated* > *gimbaba*? ‘short’, and so on. Blust assumes that such forms developed from *ombogat* and *ombaba*, respectively. Daguman makes clear, first, that there are no vowel initial onsets in the language, with glottal stop occurring word-initially, medially (both preceding and following a medial consonant), and finally, and, second, that the forms in question are the result of metathesis of the stative prefix *mi-* (from *ma-* ) to *im-* before labial consonants, as in (24).

(24) NORTHERN SUBANEN\(^{35}\)

\[
\begin{array}{llllll}
?\text{ombogat} & \text{sa?wan} & \text{ktarabahuu} & \text{piru} & \text{?inanatu}\text{u} \\
\text{ma-bogat} & \text{sa?wan} & \text{G=ktarabahuu} & \text{?u} & \text{piru} & \text{?antus-in-}=\text{?u} \\
\end{array}
\]

\begin{tabular}{l}
ADJ-heavy & CTR & SCM=work=1SG.GEN & but & suffer-TR.PAT.R.=1SG.ERG \\
\end{tabular}

\?
\?
\?
\?
\?

\begin{tabular}{l}
because for INTR.AGR.ABIL.IRR-see money \\
\end{tabular}

‘My job was tough but I persevered in order to earn money.’ (lit., ‘My job was heavy but I suffered it in order to find money.’)"

(Daguman 2004:621)

Blust correctly noted that active verbs, such as *hiup > *iup > Sindangan *iup-in* ‘to blow’ , *leben > Sindangan *liben-in* ‘to bury’, and so on, do not carry the proclitic *G=*, but failed to notice that they do when they follow the ligature *G=* (surely ultimately from *η*) in a relative clause or complement clause. He also failed to notice that so-called “actor voice” verbs that carry a prefix that reflects PMP *maR- have as their final consonant a velar stop, Northern Subanen /moG-/ with precisely the same assimilation features as those associated with the proclitic /G=/, including the fact that the form is reflected with an assimilating velar nasal before verbs beginning with a nasal consonant (Daguman 2004:447). These facts suggest that the assimilative processes began with the verbal prefix, and spread to affect also the velar consonant that was originally part of

\(^{35}\) The second line in the Northern Subanan examples is Daguman’s representation of her morphemic analysis of the spoken text, and line 3 is her morpheme-by-morpheme translation, modified only to conform to abbreviations given in the Leipzig Glossing Rules.

\(^{36}\) Sindangan is a Central Subanan language, spoken around the Sindangan Bay area of Zamboanga Peninsula.
the phrase-marking form that Lobel has reconstructed as Proto-Subanen */əg/* /əg/ ‘non-
personal nominative case marker’ (Blust 2009b:326), which Blust (and Lobel) assume
is the source of the proclitic.37 But it was not only nouns that follow the “nominative
case marker” to which the final consonant of the marker that preceded them became
proclitic; the genitive/ergative (na from */na) and oblique (se from */sa) markers also
donated their final velar consonant, as can be seen in (25). A proclitic /G=/ also follows
the common noun plural marker that must ultimately have its source in PGCPH */maŋa,
and, in addition, /G=/ appears as a ligature, with or without a preceding na, as in (26).

(25) NORTHERN SUBANEN
Binəŋaʔ na gqataw su gwayan ditu sə kpantaran.
bəŋaʔ-in- na G=?ataw su G=wayan ditu sə G=panataran
split-TR.PAT.R- ERG SCM=man ABS SCM=banana there OBL SCM=river.bank
‘The man split the bamboo along the riverbank.’ (Daguman 2004:108)

(26) NORTHERN SUBANEN
su ŋna ŋmakitut (na) gbətaʔ name
su= G=na= G=mak-itut (na=) G=gbətaʔ nami
ABS= SCM=PL= SCM=ADJ.PL-small LIG=SCM= thing GEN.1PL.EXCL
‘our portable [lit., small] belongings’ (Daguman 2004:108)

I claim that the Subanen proclitic /G=/ reflects an earlier velar nasal, but Blust sug-
gests that “the claim that contemporary Subanen languages reflect an earlier grammatical
marker that ended with a velar nasal is not supported by the evidence” (Blust 2009b:326).
The evidence, although not transparent in the Subanen languages, is obvious when one
compar es comparable forms in other GCPH languages, to which Blust (1991) claims the
Subanen (labeled there as “Subanun”) languages belong. Whether or not the final conso-
nant was a velar stop in Proto-Subanen, as Blust, citing Lobel’s still to be published work,
claims, is irrelevant, since it is clear that each of the markers in related languages that have
retained a final consonant show either an alveolar or a velar nasal. This paper has already
discussed in considerable detail the development of the velar nasal ligature that linked
nominal specifiers with their following nominal heads. Such markers include Hiligaynon
sang ‘oblique’ (Wolfenden 1971:64); Masbateño an ‘nominative’ and san ‘genitive’
(Wolfenden 2001:21); and Mansaka yang ‘topic (nominative)’, nang ‘relative (genitive)’,
and sang ‘directional (locative)’ common noun markers (Svelmoe and Svelmoe
1974:45, 47). There is no comparative evidence for a set of noun phrase markers that end
in a velar stop. The only comparable form is Cebuano (Sinugbahanon) ʔug ‘indefinite
genitive’ (Zorc 1977:82, 85) that Zorc claims is an innovation restricted to the Cebuano
subgroup. Zorc also cites Cebuano ʔag ‘definite nominative’; however, other descrip-
tions of Cebuano (for example, Bell 1976:51 and Tanangkingsing 2009) give only ang
with the same function, suggesting that the denasalization process that has brought about
ʔag in Cebuano has also affected ang in some dialects, and the geographic distance from
the Subanen languages makes it extremely unlikely that there is any connection at all
between the Cebuano forms that end in -g and those found in the Subanen languages.
Elsewhere in the Philippines, the only case markers that end with a velar stop are found in
Central Cagayan Agta (Mayfield 1987:116). But these are personal plural forms, ig/nig/

teg ‘nominative/genitive/oblique’, where the source of the final consonant is a plural formative that also appears in Ilokano demonstratives, such as daytoy/dagitoy ‘this/these (PROX)’, dayta/dagita ‘that/those (MEDL)’, daydiay/dagidiay ‘that/those (DIST)’, and are clearly unrelated to the Subanen forms.

While we still do not fully understand the factors that stimulated the denasalization of the ligature that must have been enclitic to nominal specifiers in Pre-Subanen (and which linked nouns and attributive constructions), as they surely were in the parent language of many of the subgroups of PMP found in the Philippines, this process is the only reasonable explanation for the occurrence of proclitic /G=/ in Subanen, given the absence of any other possible source for it, and given the extensive evidence from other languages of a nasal in these positions.

4. EXPLAINING THE PALAUAN CASE. In listing his objections to the morphological solution to the Palauan initial velar nasal, Blust states: “The morphological solution may be a priori plausible for nouns, but it is problematic for verbs, and especially for pronouns . . . . To account for the shape of Palauan pronouns in etymologies such as *aku > 怏’1SG emphatic’ or *ia > 伲’3SG emphatic’ through the presence of a pre-Palauan grammatical marker *an, then, fails to accord with structural properties shared by virtually all Philippine-type languages” (Blust 2009b:325, 328).

The implicit claim that Palauan is a Philippine-type language is both unnecessary and incorrect, even though Subanen, which is clearly one, attaches proclitic G= not only to lexical nouns, but also to free absolutive as well as oblique pronouns (Daguman 2004:75). Malay, which is just as clearly not a “Philippine-type” language, uses the sequence yang + Pronoun in topicalized constructions that are possible equivalents of those labeled in Palauan as “emphatic,” as in (27a,b), and in (19c), repeated here as (27c). And until a more satisfactory explanation of the etymology of Malay engkau ‘you SG’ is proposed, the possibility that it is a fossilized sequence of a contrastive topic specifier *?an+*kaw ‘2SG’ should be considered.

(27) MALAY
a. Yang aku, kahwin tak kahwin aku tak kesah.
   TOP 1SG marry NEG marry 1SG NEG care
   ‘As for me, I don’t care whether or not I marry.’

b. Yang engkau, siapa suruh engkau pergi?
   TOP 2SG who tell.to.do 2SG go
   ‘As for you, who told you to go?’

c. Yang dia, sedikit pun dia tak kesah.
   TOP 3SG little.bit also 3SG NEG care
   ‘As for him, he didn’t even care the slightest bit.’
   (Yap pers.comm., forthcoming)

The presence of the velar nasal on some three verbs that Blust assumes were earlier vowel-initial in Palauan is also considered to be problematic for the morphological solution:

Finally, although it is true that the noun/verb distinction is difficult to draw in many AN languages, nominalized structures with an + verb are almost certainly of lower
frequency than constructions that contain *aŋ + underived noun. Even if a NCM *aŋ could plausibly be posited for pre-Palauan, then, it is highly unlikely that Palauan verbs such as ŋadər, ŋar, or ŋikəd could have acquired their initial consonants from it, since this would imply that nominalized verbal constructions served as a model for the generalized forms of verbs (Blust 2009b:328).

This is not necessarily true. The velar nasal ligature that originally was enclitic to nominal specifiers (TAG ang, Malay yang, and so on) also developed in many languages as a ligature that linked a head noun with a following relative clause, or that linked a verb to a following complement clause. In both situations, at least according to most syntactic analyses, the heads of both constructions were verbs and, just as in Subanen, pre-Palauan (vowel-initial) verbs could have had the ligature procliticized to them, without serving as a “nominalized verbal model for the generalized forms of verbs.” Velar nasals attaching to verbs could also have had their source in a reflex of PMP *maŋ-, as was apparently the case with some prenasalized initial verbal consonants in pre- and Proto-Oceanic. There are too few data, however, to verify whether this may have been the source for any of the Palauan verbs with an initial velar nasal consonant.

Blust also had a problem determining whether the final velar nasal that occurs on three Palauan numerals was a matter of phonology or morphology:

A non-etymological velar nasal appears after a final vowel in the reflexes of three numerals, *esa > e-laŋ ‘one (unit of time)’, *dua > *dua > e-ruŋ ‘two (units of time)’, and *epat > *pat > e-waŋ ‘four (units of time)’. This nasal is not present in constructions such as e-ru el sils ‘two days’, or e-wa el buŋ‘four months’, but it is unclear whether this is a matter of phonology or morphology (Blust 2009b:331).

It was noted above in section 3 that it is highly likely that the velar nasal of pre-Palauan *aŋ was probably still functioning as a ligature that could attach as easily to vowel-final forms as an enclitic, that is, *…V=ŋ, as it could to vowel-initial forms as a proclitic, that is, *ŋ=V…. This claim seems to be borne out when considering the Palauan numerals with a final nasal that occur when counting temporal mensural terms, but not elsewhere. This is precisely the environment that required, at least in the Bashi language, a ka-prefix that resulted in an assimilated velar nasal ligature. It is clear that the velar nasal was still functioning in pre-Palauan to mark temporal mensural terms following the loss of final consonants; otherwise it would not appear on e-waŋ ~ e-wa ‘4’ that earlier was not a vowel-final numeral (PMP *?oŋ ‘4’). In Palauan, the appearance of the final nasal on numerals is sporadic, as it is in a few Philippine languages that retain it on the numeral meaning ‘1’, in alternation with a form without the nasal. The evidence seems fairly uncontroversial: the appearance of the velar nasal on Palauan numerals is a matter of morphology, and not of phonology.

5. RECONSTRUCTION OF PMP NUMERALS. In PMP, numerals probably had several different forms, one that was used in serial counting, and others that occurred as the heads of various attributable constructions. Serial counting forms were probably disyllabic forms, carrying stress on the final syllable, as in table 10. General
numeral constructions, that is those that counted numbers of objects, such as *ʔasu ‘dog’, probably elided the first unstressed syllables of numbers ‘1’, ‘4’, and ‘6’. As noted by Blust (1998), some Philippine languages have numerals that appear to have inherited C1a-, a fixed vowel reduplication that in a number of Formosan languages marks a numeral that counts a human noun. There is no evidence in MP languages, except perhaps for Yami (see Rau and Dong 2006:130–31) and Itbayaten (see Yamada 2002), that these reduplicated numerals had such a function; however, it is possible that the function was extended, or replaced in PMP by one that counted mensural terms, such as *q<al-jaw ‘sun, day’,38 as appears to have been the case in Proto-Bashiic.

Other languages have coopted these reduplicated forms for serial counting, reducing them by the loss of the medial, unstressed, vowel (for example, TAG *talo ‘3’, Tina Sambal *ʔipat ‘4’), or fusing them in numbers to produce long vowels that are now interpreted as stressed open penultimate syllables (for example, TAG *ʔipat ‘4’, *ʔanim ‘6’). Distributive terms, as discussed above, were probably commonly used, at least in ceremonial contexts. They were reduplicated by C1V1-. Multiplicative numerals were a type of mensural construction, in which the counted unit was not only *puluq ‘10’, but also *Ra'tus ‘100’, and possibly *ribu ‘1000’. Each of these numerals appears prefixed with a reflex of *ma- in various languages throughout the Philippines (as well as in a wide range of Formosan languages), giving evidence for their status as PMP multiplicative numerals (see table 11). While there is no evidence for ‘10’ being treated as a *ka-prefixed mensural term, there is evidence that the terms for ‘100’ and ‘1000’ were prefixed with *ka-, possibly originally in multiples higher than ‘1’ (as in Tina Sambal and Central Tagbanwa), but subsequently extending to replace *ma- (table 12). The Mamanwa and Tagakaulo forms are of special interest, because they maintain a reflex of the enclitic *=ŋ before ka, clearly marking the forms as reflexes of the PMP mensural construction.

The forms of the PMP numerals used in serial counting in table 10 are relatively uncontroversial (apart from the initial glottal stops), and are discussed fairly extensively in Dahl (1981).39 There is clear evidence that, at least in PMP, if not earlier, contrastive lexical stress occurred, and Zorc (1977:72, 96) has suggested that counting intonation resulted in numer-

<table>
<thead>
<tr>
<th>Serial</th>
<th>General</th>
<th>Mensural</th>
<th>Distributive</th>
<th>Multiplicative</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘1’</td>
<td>*ʔsa,</td>
<td>*(ʔ)sa=ŋ</td>
<td>*(ʔ)san *(ʔ)sa=ŋ</td>
<td>*ma-puluq</td>
</tr>
<tr>
<td>‘2’</td>
<td>*ʔdu'ha</td>
<td>*(ʔ)du'ha=ŋ</td>
<td>*(ʔ)san *(ʔ)du'ha=ŋ</td>
<td>*du'ha-puluq</td>
</tr>
<tr>
<td>‘3’</td>
<td>*ʔte'lu</td>
<td>*(ʔ)te'lu=ŋ</td>
<td>*(ʔ)san *(ʔ)te'lu=ŋ</td>
<td>*te'lu-puluq</td>
</tr>
<tr>
<td>‘4’</td>
<td>*(ʔ)ʔapat</td>
<td>*(ʔ)ʔapat=ŋ</td>
<td>*(ʔ)san *(ʔ)ʔapat=ŋ</td>
<td>*(ʔ)ʔapat-puluq</td>
</tr>
<tr>
<td>‘5’</td>
<td>*li'ma</td>
<td>*(ʔ)li'ma=ŋ</td>
<td>*(ʔ)san *(ʔ)li'ma=ŋ</td>
<td>*li'ma-puluq</td>
</tr>
<tr>
<td>‘6’</td>
<td>*(ʔ)ʔanam</td>
<td>*(ʔ)ʔanam=ŋ</td>
<td>*(ʔ)san *(ʔ)ʔanam=ŋ</td>
<td>*(ʔ)ʔanam-puluq</td>
</tr>
<tr>
<td>‘7’</td>
<td>*pi'tu</td>
<td>*(ʔ)pi'tu=ŋ</td>
<td>*(ʔ)san *(ʔ)pi'tu=ŋ</td>
<td>*pi'tu-puluq</td>
</tr>
<tr>
<td>‘8’</td>
<td>*wai'lu</td>
<td>*(ʔ)wai'lu=ŋ</td>
<td>*(ʔ)san *(ʔ)wai'lu=ŋ</td>
<td>*wai'lu-puluq</td>
</tr>
<tr>
<td>‘9’</td>
<td>*s'wa</td>
<td>*(ʔ)s'wa=ŋ</td>
<td>*(ʔ)san *(ʔ)s'wa=ŋ</td>
<td>*s'wa-puluq</td>
</tr>
</tbody>
</table>

39. See also Blust 1998 and Zeitoun, Teng, and Ferrell forthcoming for discussion of PAN numerals.
als that were used in serial counting being stressed on the ultimate syllable, although many languages reflect the number ‘10’ with penultimate stress.\textsuperscript{40} The number ‘9’ deserves some discussion. The first issue has to do with the initial consonant. Dahl (1981:51) notes that Formosan languages generally reflect *Siwa ‘9’, while MP languages reflect *siwa,\textsuperscript{41} suggesting that this indicates a borrowing relationship, since *S is not reflected in PMP as *s, but as *h. Dahl suggests that the form was borrowed into Formosan languages from the Philippines. I find the opposite direction of borrowing more persuasive, in that s is the reflex of *S in all of the East Formosan languages with which early Philippine traders dealt.\textsuperscript{42}

### Table 11. PMP Terms for ‘10’, ‘100’, and ‘1000’ Prefixed with *ma-, and Their Reflexes

<table>
<thead>
<tr>
<th>PMP</th>
<th>‘10’</th>
<th>‘100’</th>
<th>‘1000’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pamplona Atta</td>
<td>*ma'puulu</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Abenlen Ayta</td>
<td>mapo?</td>
<td>(maqatoh)</td>
<td>—</td>
</tr>
<tr>
<td>Aborlan Sambal</td>
<td>ma'po?</td>
<td>magato</td>
<td>—</td>
</tr>
<tr>
<td>Central Cagayan Agta</td>
<td>mafulu</td>
<td>magatut</td>
<td>maribu</td>
</tr>
<tr>
<td>Isnag</td>
<td>ma'pu:lu</td>
<td>ma'gatu</td>
<td>ma'ri:bu</td>
</tr>
<tr>
<td>Dupaningan Agta</td>
<td>ma'pulu</td>
<td>magatus</td>
<td>—</td>
</tr>
<tr>
<td>Maguindanao</td>
<td>—</td>
<td>magatu</td>
<td>—</td>
</tr>
<tr>
<td>Iranun (Sabah)</td>
<td>—</td>
<td>magatu</td>
<td>—</td>
</tr>
<tr>
<td>Masbatencyo</td>
<td>mapulo</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Romblomanon</td>
<td>(na'puyo?)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bagobo</td>
<td>—</td>
<td>mlatus</td>
<td>—</td>
</tr>
<tr>
<td>Tiraray</td>
<td>—</td>
<td>maratuah</td>
<td>—</td>
</tr>
<tr>
<td>Sarangani Bilaan</td>
<td>—</td>
<td>mlulu</td>
<td>mlibu</td>
</tr>
<tr>
<td>Belait (Brunei)</td>
<td>—</td>
<td>marato</td>
<td>maribau</td>
</tr>
</tbody>
</table>

### Table 12. MP Multiplicative Numerals with *ka-

<table>
<thead>
<tr>
<th>Tina Sambal</th>
<th>da'ruw ka da'ra'an</th>
<th>—</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iraya</td>
<td>'sai ka da'ra'an</td>
<td>'sai ka 'ribu</td>
</tr>
<tr>
<td>Masbatencyo</td>
<td>isa ka gatos</td>
<td>—</td>
</tr>
<tr>
<td>Romblomanon</td>
<td>?isa ka a'tus</td>
<td>?isa ka 'libu</td>
</tr>
<tr>
<td>Central Tagbanwa</td>
<td>duwa ka gatos</td>
<td>duwa ka libo</td>
</tr>
<tr>
<td>Higaonon</td>
<td>—</td>
<td>'naŋka li:bu</td>
</tr>
<tr>
<td>Western Bukidnon</td>
<td>—</td>
<td>naŋkali:bu</td>
</tr>
<tr>
<td>Manobo</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mandaya</td>
<td>?isa ka ga'tos</td>
<td>?isa ka 'libo</td>
</tr>
<tr>
<td>Mamanwa</td>
<td>isaŋ ka gatos</td>
<td>isaŋ ka 'libo</td>
</tr>
<tr>
<td>Tagakaulo</td>
<td>—</td>
<td>du'anja 'libo</td>
</tr>
</tbody>
</table>

\textsuperscript{40} Stress is reconstructed for PMP lexical items (and marked by a straight apostrophe before the stressed syllable), based on agreement between languages in different MP subgroups located in the geographical Philippines that still maintain contrastive stress, for example, between Tagalog, Cebuano and other Central Philippine languages, and Ilokano, a Northern Lucon language, along with various Central and Southern Cordilleran languages of Northern Luzon, such as Inibalo, Bontok, Kankanayen, and Ifugao, and Bashiic languages, such as Ivatan.\textsuperscript{41} Dahl writes the forms *Siua and *tiua, respectively.\textsuperscript{42} East Taiwan was the source of the jade excavated from the jade workshop at Anaro, Itbayat, that was involved in the manufacturing of lingling-o (ear rings) around 2,000–1,500 years ago (Peter Bellwood, pers. comm.).
The second issue has to do with the medial (and final) consonant. While most MP languages (including Chamorro, probably a first order branch of the family) reflect *s'iwa, many Philippine languages show s'i'yam ‘9’, a form that is found throughout the northern Philippines and the Visayan region as far south as some of the Sama-Bajaw languages (probably the result of borrowings from a southern Philippine language), as well as in Sabah (Murut siam, Tebilung sijam). The other form commonly found in the south of the Philippines (the Danao languages, many of the Manobo languages, Tiruray, the Sangiric languages, and various languages of the Celebes, including Tondano, Padoe, Mori Bawah, and Moronene) is a reflex of *si'yaw or *si'yaw. Dahl, in discussing the reflexes of *si'yam, suggests that “while no explanation of the final nasal is found, it is more prudent to consider the word as a Philippine creation” (Dahl 1981:52). The evidence that has been presented above for the form of multiplicative compounds would suggest that reflexes of *si'yam probably have their source in an early *si'ya with subsequent cliticization of the ligature *-n and assimilation to *-m before *pułuq. It is possible, but probably unlikely, that *si'ya is an irregular development of *si'wa. What I find more likely, and somewhat intriguing, is the possibility of it being a later borrowing into the northern Philippines from a Formosan language, such as one of the Tsouic group, in which the reflex of *w is zero, and the regular reflex of *Siwa is sia or siya ‘9’ (Li 1972:324–35). The lexically specific change from *si'yam (or *si'ya) to *si'yaw is a problem that still needs an explanation.

6. CONCLUSION. This paper has taken considerable space justifying the historical development of the ligature in Malayo-Polynesian languages, and related issues, such as the types of numeral constructions that must have been present in their immediate parent language. Although the discussion has taken place within a response to Blust’s claim that the Palauan initial velar nasal on otherwise vowel-initial words is a phonological process, and not a morphological one, the issue that is of primary importance here is not the actual shape of the ligature, whether it was PMP *na,*ŋa, or some other form; the key issue is the methodology that must be used when attempting to reconstruct the morphosyntactic features of protolanguages.

The comparative method has a long history of success in establishing genetic relationships between languages and the subgroups that they form part of, but this success has been founded on the presence in genetically related languages of sets of regular correspondences between the sounds of lexical items, especially those from open classes such as nouns and verbs. However, when one considers the paradigmatically related morphemes appearing in closed classes, such as numerals, pronouns, and the like, the possibility of irregular phonological development is always present, because of the mutual affect that such forms typically have on one another, often referred to as analogical change brought about by frequency of occurrence and other factors. These irregular factors are exacerbated when the closed class consists of forms that are unstressed, monomorphemic, single syllables consisting only of a consonant and a vowel, especially in languages with a restricted set of consonants and vowels to begin with. Such forms typically occur as clitics, attaching phonologically to either the lexical item that follows them, or the one that precedes them, and not uncommonly developing “dual
citizenship” (Klavans 1985), belonging syntactically with one phrase, but phonologically with another. It is only when one recognizes—and takes seriously—the implications of these facts for phonological and morphosyntactic change that it is possible to distinguish between direct inheritance and parallel independent innovation resulting in convergent development, rather than considering them “dramatically irregular developments that strain all credibility.”

REFERENCES


—. 2009. On the development of the nominal phrase marking system in Ilongot. Paper presented to the Conference on Southeast Asian Languages, Institut National des Langues et Civilisations (INALCO), and Université Paris Diderot.


