

WHERE, O WHERE, HAVE THE LARYNGEALS GONE?
AUSTRONESIAN LARYNGEALS RE-EXAMINED

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This paper represents a progress report on a monograph (to appear in *Pacific Linguistics*). It is written in the spirit of an Aklanon phrase (mamu:gun kīta 'let's go gleaning in the fields'). I have gleaned from the works of several scholars, and offer here a positive (not negative) criticism of their methodology or approach. From the outset, I must underscore my indebtedness to all of them, particularly at TICAL or in personal correspondence.

1. A BRIEF LOOK IN THE KITCHEN¹

Dyen's now classic monograph (1953) was written in the atmosphere of the discovery of Proto-Indo-European laryngeals. The reconciliation of Dempwolff's somewhat chaotic correspondence sets into PMP *q, *h, and *∅ appeared to justify the title "laryngeals", although it was selected lightly as an explanation of the phenomena observed. In fact, Dyen observed "that either one or both of these proto-phonemes [*q, *h] was phonetically not of a type to which the term 'laryngeals' would normally be applied" (1953:1). Based on currently available reflexes in major Austronesian subgroups, I have suggested — equally lightly — that a title "Some Proto-Austronesian voiceless fricatives" would now be more appropriate, i.e. PMP *q < PAN *[x], PMP *h < PAN *[š]. Conant (1915:11) had already unified the correspondence of Palau x, Malay h, and Philippine ʔ, but this was either unknown to or ignored by Dempwolff, although cited by Dyen (1953:fn.2). Furthermore, Costenoble (c.1942) foreshadowed Dyen's assignment of Dempwolff's *-h- and *-h as *ʔ, and Dempwolff's *-h- and *-ʔ- as *h; unfortunately this study was only published in 1979 (owing to the efforts and translation of the late Dr Cecilio Lopez).

Although Dyen (1953:1,43,50) did leave considerable latitude for the phonetic interpretation of his *q and *h, it is quite clear that q represents a glottal stop in the citation of data, and that the temporal and geographical separation of Tongan and Tagalog led him to assume this phonetic character for the PMP phoneme. Although Tag and To [ʔ] correspond with Malay [h] < PMP *q, Dyen noted, but left unexplained, the correspondence Tagalic [ʔ], Ml/In [ʔ], and Tongan [∅] (1953:28) which could have led to the reconstruction of PMP *ʔ: *būkaʔ [P136] 'open', *Da:tuʔ [P137] 'chief, ruler', *kakaʔ [P138] 'elder sibling'. [Numbers in brackets refer to data sets in this present study.] Later studies by Dyen

Amran Halim, Lois Carrington and S.A. Wurm, eds *Papers from the Third International Conference on Austronesian Linguistics*, vol.2: *Tracking the travellers*, 111-144. *Pacific Linguistics*, C-75, 1982.

(1965a:302f; 1971:36-44) introduced the reconstruction of PAN *ʔ on the basis of a comparison of Philippine and Formosan evidence, but the Ml/In evidence was never re-investigated.

Neither *q nor *S were laryngeals (Dahl 1976:35), but do have laryngeal reflexes in many AN languages. The evidence presented thus far for PAN *ʔ has not been convincing (Dahl 1976:37). While data leading to the reconstruction of PAN *H has been limited (1976:130), "it is prudent at our present state of knowledge not to identify all [final *h's] with PAN *S, but as long as correspondences are not found in Formosa, to leave open the question whether they represent *S, some *h, or Ø". (1976:39)

Dyen and McFarland (1970) indicated *ʔ on a large number of PAN reconstructions, particularly in initial and final position (where no other consonant was attested), e.g. *ʔakúʔ 'I', *ʔarúhuʔ *Casuarina*, *ʔas;{Lə 'salt', *bába[ʔh] 'to bring along', etc. Nothofer followed a similar procedure in the reconstruction of Proto-Malayo-Javanic. Since the reconstruction of PAN *ʔ is at issue here, one must be wary of a large number of AN languages that have a phonotactic rule that inserts [ʔ] word or phrase finally (sometimes initially as well), e.g. Sundanese, Kuyonon, Kalamian, Casiguran Dumagat, Itbayaten, Keley-i' Kallahan, Bunun, Pazeh, Puyuma, Saisiyat, Sediq, Thao, and Atayal.² In this study, considerable weight is attached to the phonemic or the morphophonemic (as opposed to the phonetic or phonotactic) occurrences of laryngeals in various AN languages.³ The importance of morphophonemics cannot be underestimated since inflected forms often preserve phonemes (irregularly) lost in bases. Thus Tsg duwa 'two' (*h > Ø) but ka/whaʔ/an 'twenty' (*h preserved), Aty payat 'four' (*S > Ø) but spat 'eight' (*S preserved), Pai alu 'eight' (*w > Ø) but ka/valu/an 'eighth month, August' (*w preserved).

The choice of 'q' as a symbol for the glottal stop (as opposed to ʔ, ʔ, ʔ) has had unfortunate and confusing consequences for laymen, lexicographers, and linguists, such as the citation of Formosan glottal with ʔ, but Philippine glottal and Malay -k with q within the same article (Dyen 1971:passim).

The confusion of orthographic vs phonemic systems has also led to misinterpretations. Ibans have adopted the Malay orthography even though it does not provide a phonemic fit — it ignores a phonemic final glottal stop and introduces an unnecessary 'o'. A careful and sensitive lexicographer such as Scott (1956) is then forced to give a 'systematic spelling' (i.e. phonemic interpretation) after the traditional spelling. Blust (1970 and articles since) has not cited this final glottal stop, which has herein proven crucial to the reconstruction of PHN and PAN *-ʔ and *-h:

The unexpected appearance of a final glottal stop in some Iban words presents special difficulty... Where such a glottal stop is found it is assumed to be of secondary origin, though conditions for its appearance cannot be stated at present. Most of the Philippine languages used extensively in the present comparison also show a final glottal stop in some forms corresponding to a final vowel in Malay, Iban or Javanese. The reconstruction of the 'laryngeals' (*q, *S and *Ø) in all positions is based on a generalization of the criteria presented in Dyen (1953). (1970:110f)

The following sets of data show contrast among four 'laryngeals' in Iban: -Ø (final vowel), -ʔ (final glottal stop), -k (final postvelar unreleased stop), and -h (final voiceless vowel).

mata \emptyset	'eye'	tua \emptyset	'we-2-inclusive'
mata?	'unripe'	tua?	'guardian-spirit'
matak	'pulling' [< batak]	tuak	'palm toddy'
matah	'sloping (land)'	tuah	'lucky'

An extremely large number of minimal pairs appear in Scott, recently corroborated by my work with an Iban informant.⁴ Many of the forms with phonemic glottal stop in final position correspond to cognates among Philippine languages:

Ib aku, Akl ? \check{a} ku 'I' > PHN * \check{a} ku \emptyset [P200]

Ib aku?, Akl ?a:ku? 'admit, confess' > PHN *a:ku? [P129]

Iban is therefore a criterion language⁵ for the establishment of PHN/PAN *-?.

Nevertheless, following Dyen's conventions for reconstructing *q and dismissing Scott's notation of Iban -q, Blust has ignored this Iban evidence. Although Scott (1956:15) lists Iban badi (badiq) 'a dagger', Blust reconstructs:

76. *badiq 'dagger'. Ceb bariq 'k.o. sickle', Mar badiq 'bolo, machete, knife', Ib badi (*q > \emptyset unexplained) 'dagger', Ngadha badi 'dagger, sword'. (1973:39 - emphasis mine, see P132)

The plethora of laryngeal correspondences (*S₁, *S₂, *S₃, *x, *X, etc.), certainly never seriously proposed by Dyen as PAN phonemes, has fallen under criticism by several scholars, notably Blust (1978:469f), who raises the point, why has this not been done for PAN *l (with at least three reflexes in Tagalog) or for the PAN vowels (allophony of [i]:[e], [u]:[o] has led to phonemic contrasts among several AN languages)? Apparently Dyen's reluctance to characterise the phonetic nature of proto-phonemes or to reduce the inventory to that of a 'real language' is based on the lack of information about subgrouping (e.g. 1953: 50 and 1971:passim). However, it seems that Dyen himself made an appropriate working hypothesis in 1956 - although addressing a different, but related, problem:

The essential point in problems of this type is the basic vocabulary. The correspondence system of a language must be that which applies to its basic vocabulary, taken as a whole; the contrary proposition cannot be tolerated in a genetic comparative treatment. (1956:87)

Granting that many of the most irregular correspondences appear in items meaning 'fire, dog, child, thou, four, tree/wood', it would appear that sorting out these problems would be with recourse to the standard reflexes within each given language's (other) basic vocabulary, rather than with recourse to that language's genetic relationships to other AN languages - except where such information could lead to the identification of loanwords and the direction of borrowing.

2. PURPOSE AND PLAN

In this study, the reconstruction of the PAN laryngeals is based on a systematic progression from two lower-order proto-languages: Proto-Philippine and Proto-Hesperonesian. The comparison of several genetically-remote Ph languages necessitates the reconstruction of four 'laryngeals': PPH *h, *q, *?, and * \emptyset . These can be aligned with Proto-Indonesian (or Nothofer's PMJ): *h, *?, and * \emptyset . PHN *h appears to have been lost early in the history of Indonesian languages, and only sporadic evidence can be found in word initial and final position, so that PMJ *h is a reflex systematically, if not exclusively, of PHN

*q. Finally, PAN *q, *S, *Ø, *ʔ, and *H can be reconstructed — although only the latter two can be considered to have been laryngeal articulations.

In this shortened draft, each phoneme will be dealt with independently, and reconstructions will be labelled according to the time-depth warranted by the currently available evidence. In the absence of *definitive* subgrouping criteria to date, reconstructions are here assigned to putative proto-languages based on the geographical distribution of the witnesses. Hence, only if cognates are found widely distributed in Formosan (North AN), Oceanic (East AN), and Hesperonesian (West AN) are they assigned to PAN. If they are found only in East and West AN, they are assigned to Proto-Malayo-Polynesian (PMP). And, if they are found only in West and North AN, they are assigned to Proto Hesperonesian-Formosan (PHF).⁶ No claim is made that this latter parent language was a reality, as it is possibly equivalent to PAN (based on current subgrouping hypotheses of several scholars).⁷ Rather, this principle is adhered to because certain proto-phonemes are necessitated by Formosan evidence *alone* (*S, *H, amongst others), and in the absence of such evidence no justification can be made, for example, in rewriting PHN or PMP *h as either *S or *H, because the languages used in reconstructing PMP yield a laryngeal inventory identical to that established for PHN (*q, *h, *ʔ, and *Ø).

It must be kept in mind that a reconstruction is founded upon three different kinds of witnesses: *test language* (Pai c < *C, s < *S), *criterion language* (Akl ʔ < *q or *ʔ, Ib -ʔ < *-ʔ or *-h, therefore Akl, Ib ʔ < *ʔ), and *witness language* (helpful in determining the antiquity rather than the phonemic shape of a reconstruction).⁵

3. PROTO-AUSTRONESIAN *q

The reconstruction of PAN *q is straightforward, having been put forward by Dyen (1953) and defended by Dyen (1965, 1971) and Dahl (1976), among others. Healey (1959) has shown that both Kalamian and Tboli (= Tagabili) establish PPH *q in all positions. Historically speaking, the Kalamian dialects⁸ (Karamianenen, Tagbanwa, and Agutaynen) serve as a test language for PPH *q in that [k] is the reflex in all positions, and PPH/PAN *k went to Kl [Ø], although numerous loans from other languages now obscure this phenomenon.⁹ Initially and finally the Tbl reflex is [k], but intervocalically [-h-]. Most other Ph languages reflect *q with [ʔ], although members of the Cordilleran group have final -Ø, and Itb has Ø except in clusters. Nothofer (1975) has shown that PMJ/PIN *h reflects PAN *q, and is established by OJv, Sd, and Ml [h] in all positions; to this may be added the evidence of Ib [h] in final position. At the PMP and PAN level the test languages and respective reflexes are: early Palau data and Bunun (Isbukun dialect) [x], recent Palau data, Tonga, Paze, and Kanakanabu [ʔ], Paiwan, Takituduh Bunun, Ami, Thao, Sediq, and Atayal [q], and Puyuma [h]. Any witnesses with irregular reflexes, due to inflection, innovation, or borrowing, are put into parentheses, but no attempt is made here to subclassify the reconstructed phonemes on this basis.

Table 1: Standard reflexes of some PAN phonemes involving laryngeals								
PAN	*q	*ʔ	*H	*S	*s	*∅	*w	*y
Akl	ʔ	ʔ	h	h	s	- ^w y-∅	w	y
Ceb	ʔ	ʔ	h	h	s	- ^w y-∅	w	y
Bik	ʔ	ʔ	h	h	s	- ^w y-h-	w	y
Tag	ʔ	ʔ	h	h	s	-ʔ-h-	w	y
Itb	∅ ʔC	∅ ʔC	h	h	s	∅	w	y
Kal	k	∅	∅	∅	s t	∅	w	y
Tbl	k-h-k	ʔ	ʔ-ʔ-h	ʔ-ʔ-h	s-h-h	-h-	w	y
WBM	ʔ	ʔ	h	h	s	- ^w y-ʔ-	w	y
PPH	*q	*ʔ	*h	*h	*s	*∅	*w	*y
Ib	∅-∅-h	∅-:-ʔ	∅-:-ʔ	∅-:-ʔ	s	∅	∅-w-w	-y-
OJv	h	∅-:-ʔ†	(h)∅-∅	(h)∅-∅	s	∅	w	y-y-
Md	∅	-ʔ-ʔ†	∅	∅	s	∅-h	b-b-	ʃ-ʃ-
ML	h	-∅-ʔ†	(h)∅-∅	(h)∅-∅	s	∅	∅-w-w	-y-
PIN	*h	(*ʔ)	*(h)∅(h)	*(h)∅(h)	*s	*∅	*w	*y
Pl	x	∅	∅	∅	t	∅	∅-u-∅	-r-
To	ʔ	∅	∅	∅	h	∅	v	∅
PMP	*q	*ʔ	*h	*h	*s	*∅	*w	*y
Aty	q	∅	h†	s	h-h-x	∅-ʔ	w	y
Ami	q	ʔ	h	s	c	∅	w	y
Bun	x	∅	∅	s	s	∅-ʔ	v	ɛ
Tkd	q	ʔ	h	s	s	∅-ʔ	v	ɛ
Kan	ʔ	∅	∅	s	∅	∅	∅	-l-
Pai	q	∅	∅	s	t	∅	v	y
Paz	ʔ	∅	h†	s	z	∅-ʔ	∅	y
Puy	h	∅	∅	∅	s	∅-ʔ	w	y
Sai	ʔ	∅	h†	ʃ	h	∅-ʔ	∅	y
Tha	q	∅	∅	ʃ	t	∅-ʔ	∅	y
Sed	q	∅	x h	s	x	∅-ʔ		y
	[x]	[ʔ]	[h]	[ʃ]	[s]	[∅]	[w]	[y]

† Only in certain environments or on some lexical items.

Where test evidence is not available, criterion languages can assist in establishing certain reconstructions, such as:

- (P01) PHN *qǎbuk¹⁰ 'dust' > Tg ʔǎbok, Ml (h)abok. (NYZ)¹¹
 (P02) PHN *qu:taŋ 'debt' > Akl, Ifg, Ilk, Isg, Sbl, Tag ʔu:taŋ, (Tbl ʔutoŋ, Kal utaŋ), Abr, WBM ʔutaŋ, Sd, OJv hutaŋ, Ml (h)utaŋ. (DNYZ)
 (P03) PHN *tǎqən 'trap, restrain' > Akl, Ceb tǎʔun, WBM, Moŋ taʔan, Ifg tǎʔon, Sd taħən 'trap, snare', OJv taħən 'resist, restrain', Ml taħan 'restrain, set snares; endure, resist', Ib ta:n 'hard-wearing, able to bear, keep, detain'. (BNZ) (See section 6 and note 26.)
 (P04) PHN *tǔquR 'dry' > (Tag tǔyoʔ <), Kpm tǔyuʔ, Abr tuʔug, Sml tohoʔ, Ib tu:r, Ml tohor, Sd tuhur. (CNZ)
 (P05) PHN *lintaq 'leech' > Akl lintaʔ, Btk, Mar lintaʔ, (Kal linta, WBM lintak), Ib, Ml lintah. (ADNSYZ)
 (P06) PHN *lǔdaq 'spit(tle)' > Tag lǔraʔ, Tbl dulak (M), Ib, Ml ludah. (ABDYZ)
 (P07) PNH *pǎRaŋ 'wring out' > Tag pǎgaʔ, Ceb pǎgaʔ, Ib, Ml pǎrah. (DNY)
 (P08) PMP *Rapuŋ 'rot(ten), brittle' > Ceb gapuʔ, Ml rapoh, Sd rapuh; Fj ravu 'smash up', Ib rapuh 'pile, heap', WBM gapuʔ 'dead wood'. (BNYZ)

In some instances new evidence corrects previous reconstructions:

- (P09) PMP *qaDəp 'front' > Tsg ʔalup/an, Ml (h)adap, Bj ma/hadap, Sd harəp, To ʔao 'front', OJv harəp 'what is placed in front', haDəp 'prevented', To ʔalo 'belly'. (BCNYZ) (Tag hǎrap 'front', Itb harap/ən 'to face', Tsg harap 'foreground', Akl harǎp/un 'near-sighted' < Ml/In.)
 (P10) PMP *qalima:ŋu [crab] > Kal kalimaŋu, Akl ʔalima:ŋu, Pl xemaŋ, Sm alimaŋo, Penchal kimmŋ. (BYZ)
 (P11) PAN *qalsəm 'sour' > Kal kakləm (A/t→k), Akl ʔáslum (M), Itg ʔalsəm, Ib, (Ml asam), Sd, OJv hasəm, Sm m/asa, Puy ǎrsəm. (DNTYZ)
 (P12) PMP *qa:lun 'wave' > Kal lakun (M), Bik, Ceb ʔa:lun, Ml (h)alon, Ib, NJv, Tb alun, To, Sm ŋ/alu. (BDYZ)
 (P13) PAN *qañud 'flow, drift' > Akl, Ilk ʔa:nud, Kpm ʔanyud, Bj, NgD hañut, Ml (h)añot, (Md añoʔ),¹² To ma/ʔanu, Tkđ maŋ/qanuʔ, Ami ma/qalul 'flow, float', Pai qałud 'lose'. (ADFTYZ)¹³
 (P14) PMP *qaŋət 'warm' > Ml (h)añat, OJv haŋət, Sd hanət (A/ŋ→t 'warm', To ʔaŋo/aŋo 'dried-out'. (DNYZ) (Tsg haŋət 'uneasiness due to heat'.)
 (P15) PHF *qapejuŋ 'gall' > WBM ʔepəzu,¹⁴ Png ʔapɡú, (Kal apdu, Tbl hədu/n), Ml (h)ampədu, (h)əmpədu, Jv ampəru, Pai qapədu, Pl xoas. (ADFSTYZ)
 (P16) PAN *qa:puR 'lime' > Akl ʔa:pug, Ifg ʔa:pul, (Kal apug, Tbl lohoʔ (M), Ml kapor), Pl xaus, Ami qapul 'lime', To n/avu 'put lime'. (BCDSTYZ)
 (P17) PAN *qásiN 'salt(y)' > Kal kasin, Tbl kahiʔ, Akl, Bon, Isg, Tag ʔásin, (Ml, OJv asin), Ib m/asin, Kan ma/ʔáini 'salt', Puy ǎsil 'salty', To m/ahi 'sour, astringent'. (ADNSTYZ)
 (P18) PHN *qǎlət 'interval' > Tbl kǎlət 'in succession', Akl ʔǎtut 'gap', WBM ʔələt 'object between two objects', OJv a/hələt 'with an interval of', Sd hələt 'interval', Ml (hə)lat 'alternate'. (BDNSZ)
 (P19) PMP *qi:lau 'light; reflect' > Kal kilaw 'intense brightness', Tag ʔi:lau 'light', Ml (h)ilaw 'glimmer', Fj ilo/ilo 'anything that reflects: water, glass, mirror'. (BDNYZ)
 (P20) PHN *qipil Intsia [tree] > Kal kipil, Akl, Ilk, Tag ʔi:pil, Bik, Ceb, Han ʔǎpil, (Ml ipil). (DYZ)
 (P21) PHN *qi(m)pit 'press/squeeze-together' > Kal kipit, Ceb, Ilk, Tag ʔi:pit, Ml (h)impit = (h)əmpit. (BZY) (Note: Akl ʔi<g>pit)
 (P22) PHN *qiriS 'cut/slice-up' > WBM ʔigis 'threaten to stab or spear', Jv ires, Ml (h)iris 'slit, slice, rip open'. (DLZ) (Tag hílis < Ml)

- (P23) PHN *qu:buj 'edible pith' > Kal kuBud, Akl ?u:bud 'palm heart', Ilk ?u:bug 'unspread leaf', (Ml umbut 'palm cabbage'). (BCSYZ)
- (P24) PHF *pāq̄iC 'bitter' > Kal pakit, (Tbl he?et), Akl, Bon, Ilk pa?it, Bj, OJv, Sd pahit, Ml pa(h)et, Ib pait, Pl mex/waxed 'bitter', Sai pa?is 'spicy', Kan pa?itsi 'sour' (DNSTYZ)
- (P25) PAN *da:Raḡ 'blood' > Sbl da:ya?, Ilk da:ra, Ifg da:la, Sml laha?, Ib, Ml darah, OJv rāh, Md Dara, Kan cará?ə, Puy darah 'blood', Pai ḡaq, Ami lalaḡ 'menstrual flow', Pl rasax, Fj ndrā. (ADFNSYZ)
- (P26) PHN *lu:tuḡ 'cook, prepare (food)' > Kal lutuk, Tag lu:to?, Ilk lu:tu, WBM lutu?, NgD luntoh 'cook', Akl ʔu:tu? 'ripe'. (DSZ)

Numerous examples show Ml/In [h] from PAN *q to have been well retained. Although lost in every other position, it is retained word finally in Iban. Furthermore, although Dyen's original hypothesis regarding PMP *q came under some attack on the basis of his sources, the historicity of Ml orthographic and dialectal [h] is established by substantial external evidence and is a tribute to Dyen's original insights and to Wilkinson's lexicographic method.

There are comparatively few instances of disagreement. Ml fails to reflect [h] in Pl6, 17, 20, 23, kəntut < *qə(n)tut 'flatulence', ubi 'yam' < *qu:bi(h) (but note Ml humbi), and pusu 'abdomen' < *pu:suḡ 'heart'. In these few instances the external evidence is weighed more heavily than the lack of an (exact) cognate with [h] in Ml. Conversely, evidence from Ml or other In languages is considered definitive on reconstructions where there are no Kal or Tbl cognates (e.g. P01, P03, P04, P07, P08, P09, P13), or where Kal or Tbl evidence contraindicates the reconstruction of PHN *q (e.g. (P02, P05, P15)). The shift of PAN/PHN *q to PIN/PMJ *h is therefore well substantiated. However, the relationship of PIN/PMJ *h to PHN/PMP *h (and PAN *S or *H) is an entirely different case (see section 6).

4. PROTO-AUSTRONESIAN *S

The reconstruction of PAN (or PHF) *S is only justified by various sibilant reflexes among Formosan languages. The most reliable test languages are Paiwan and Amis with [s]. Saisiyat and Thao, with [ʃ] < *S, also reflect [ʃ] < *C (but under conditions of assimilation rather than of merger with *C).¹⁵ Criterion languages include Bunun, Takituduh, Kanakanabu, Pazeh, Atayal, and Sediq, all with [s]. These correspondences are related to [h] reflexes in Bisayan (Akl, Ceb, Oḡ, Kin, Hil, S-L),¹⁶ Itbayaten,¹⁷ Western Bukidnon Manobo,¹⁸ Bikol (Naga dialect), Hanunoo,¹⁹ Tausuḡ,²⁰ or Tagalog.²¹ Irregular correspondences are put into parentheses and will be discussed at the end of this section; no attempt is made to subclassify the reconstructed phoneme. The following are uncontested reconstructions (i.e. in conformity with the reflexes listed in Table 1):

PAN *Sājək 'kiss' (BCTZ) ²²	PAN *SāpaR 'lay mats' (T)
PHF *Sap(V)Sap 'grope' (TZ)	PHF *Səḡaw 'wash up' (CTZ)
PHF *Sə(m)pi 'dream' (ADFSYZ) ²²	PHF *Sə(n)Zam 'borrow' (ATZ)
PHF *Sīḡaw 'wash up' (ATYZ)	PAN *Su(w)ab 'yawn' (BCZ)
PAN *i:Səḡ 'urine' (AFTYZ)	PHF *qami:San 'N wind' (CTZ) ²²
PAN *būSək 'hair' (AFTYZ)	PAN *CāSiḡ 'sew' (AFTYZ) ²²
PHF *ku:Sa(?) 'go (for)' (TZ)	PHF *lu:Səḡ 'tear' (TZ)
PHF *ma-buSuk 'drunk' (BZ)	PHF *tāSəp 'winnow' (ABTZ)
PHF *taSaN(an) 'dwell' (T)	PHF *tu:Sud 'knee(l)' (TZ)
PHF *CiḡaS 'food particles caught between teeth' (TZ)	PHF *RaḡuS 'scoop out' (T)
PAN *təbuS 'sugarcane' (ABTZ) ²²	PAN *tuqaS 'old (of people)' (ATYZ)

The following reconstructions are either problematic or recently modified:

- (P27) PHF *Sauni 'a while' > Ifg ?awni 'later', Pai nu/sawni 'in a while', ka/sawni, Aty saoni 'a while ago', Ami anu/sauni 'after, later', Tso osni 'right away', Kan saúni 'today', (Paz ?uhuni? 'now'). (TZ)
- (P28) PAN *-Saji(?)²³ 'younger sibling' > Odg ha:li, WBM hazi, (Han ?a:ri?), Md ali?, Ib, Ml adi?, To t/ehi/na, Aty ssue?, Paz sua:zi?, Kuv sua:ni?, Sed suái, Tha ša/šuwá:di?, Ruk ?agí?, Puy wæi?. (ABZ)
- (P29) PHF *SamúCi *Solanum nigrum* > Itb humti, WBM muti, Bon ?amti, Isg ?amsi, Pai saməci, RukMg amicu, RukTn amici. (T *-amici; Z)
- (P30) PHF *Saŋut 'smell, sniff' > Bik həŋut, Itb haŋut, Ilk ?a:ŋut 'smell', Pai saŋuŋ 'kiss', (Aty pən/haŋuc 'suck in'). (Z)
- (P31) PAN *Səpuy 'fire' > Itb, WBM hapuy, Ib, Ml api, To afi (see Table 2 for Formosan data). (ADFNSTYZ)
- (P32) PHF *Sarum 'aroma, smell' > Ml, NgD harum, Pai salum. (A)
- (P33) PHF *Sa(n)təD₂ 'deliver, escort' > Akl hətəd, Tag hətid, WBM hatəd, Itb i/hatid (A), Ml (h)antar, Jv atər (Id), Pai saŋəz 'send'. (ADSZ)
- (P34) PHF *Səmay '(cooked) rice' > Akl hūmay, Tsg humay, Ibg, Isg ?əmmáy, Ml imay, Paz sumay, (Ami həmay, Kuv ?əməy). (BCZ)
- (P35) PAN *Səpat 'four' > Tig həp?at, WBM hə?əpat, (Akl ?ap?at, Ceb ?ūpat, Tag ?a:pat, Itb ?a?pat), Ml əmpat, Tso səptə, RukBd səpátə, Sed səpat, (Sir hpat; for other Formosan data see Table 2), To fa. (ADFNSTYZ)
- (P36) PAN *SəRəC 'tight(en)' > Akl hūgut, Han hu:gut, WBM həgət, Png ?ələt 'tight', Tag hīgīt 'pull taut', Itb mə/hyət 'strong', Arosi ro, Tso sərcə 'hug tightly' (note doublet *qəRəC) (BTZ)
- (P37) PHF *Səyup 'blow' > Akl hūyup, Kal əyəp, Tbl m/əyuf, Bon ?əyup, Tag hi:p/an, Tb iup, NgD tar/iup, (see Table 2). (ADYZ)
- (P38) PHF *Sīkam 'mat' > Kam hīkam, Dbw hikam, (WBM ?ikam), Ilk ?ikəm/ən, Tbl ?igam, Kan sikámə, Sar sikamə. (TZ)
- (P39) PAN *Si:paR 'other side; sister-in-law' > Tb ipar, Kan mua/sipáre, Sar i/sipare 'other side', Akl, Tag, Bik hi:pag, (WBM ?i:pag), Ilk ?i:pag, Ib, Ml ipar, Sa ihe, Fj ra/iva 'sister-in-law'. (ADSYZ)
- (P40) PAN *Si:Rup 'sip, slurp' > Akl hi:gup, WBM higup, Itb h<um>yup, Ml (h)irop, Pai s<əm>iup, (Ami herop); Ulawa iluh/i 'to sup', Nggela ilu 'drink cabbage soup'. (ABDFNYZ) (note doublet *siRəp > Puy sirəp, Ami mi/cirəp).
- (P41) PAN *Su 'thou, thy' > (Tag ?i:yo, Han ka:/wu), Tso na/su, Sed ni/su?, (see Table 2), Kin -u. (ABTYZ)
- (P42) PHF *Su:lij 'sleep with' > Akl, Mas hu:lid, WBM, Tsg hulid, Abr ?ulid, Pai sulid. (Z)
- (P43) PHF *Su:ni [sound of birds] > Akl, Ceb, Tag hu:ni 'chirp', Itb h<um>uni 'to crow', Jv uni, Ami suni 'sound', (Paz huni?) 'chirp'. (TZ) (see Table 2)
- (P44) PAN Su:Nus 'pull out' > Akl hu:nus 'pull out', Tag hūnos 'moult, peel', Ml (h)unus 'draw off, unsheath', Jv unus 'draw out', Ami sułuc, To unuh/i 'pull out'. (ABNYZ)
- (P45) PAN *Sa+ba:Rat 'monsoon' > Akl, Ceb, Tag haba:gat, Itb havayat, (WBM ?əvagat, Han ?aba:gat), Ilk ?aba:gat, Tkđ mi/balat, Bun kalim/ba/balat, Sar baratə, Ml, Sđ barat 'west', OJv, NJv barat 'west monsoon'. Note: Ami savalat 'E wind' (T). (ADNSYZ)
- (P46) PAN *quSaNap 'scale (of fish)' > Tsg hu?nap, WBM hun?ap, Sai ?öšalap, Pl xoło, To ?uno 'scale', Fu unaf/i 'to scale'. (Z)
- (P47) PHF *qu:Saw 'thirst(y)' > Akl, Ceb, Tag ?u:haw, Kal kuaw, Itb mə/hwaw; Ilk mə/wáw, Pai mə/qusaw, Puy hə/haw. (Z)

- (P48) PAN *Cu:SuR 'pierce' > Akl, Bik, Ceb, Han tu:hug, Itb tuhuy/ən 'to thread needle, skewer, string (beads)', To tu/i 'thread needle', Pai c<m>usu 'to string beads', Bun tusul/un, (Kan c<um>a/cuúru, Aty t<əm>oho, Sai sōhö/ön 'to thread needle'. (TZ)
- (P49) PAN *D₁ŮSa 'two' > Ceb, Hil duha, Ođg ruha, Itb duha, (Tsg, WBM duwa), Ib, Ml dua, OJv rwa, To ua, (see Table 2). (ABCDNSTYZ)
- (P50) PAN *kaSuy 'tree; wood' > Akl, Bik, Ceb ka:huy, Itb kayuh, Ilk ka:yu, WBM kayuh-, Pl gar, To ?a/kau, Fj ka(θ)u, Puy kawí?, (see Table 2), Ib kayu?. (ABCFNSTYZ), with metathesis, especially yielding PMP *ka:yuh.
- (P51) PAN *LisəSəq 'nit' > WBM lisəha?, Itb lisaha, Kal likəs (M), Tbl kəliah, Ib linsa?, To liha, Fu, Sm lia, Pai †isəqəs, Bun ?ísxus, Tkd ?icqós, Sai i?šiš, RukBd a/lisəəsə. (BCDSTZ)
- (P52) PAN *(Ra)Sina:wa¹³ 'breath(e)' > Akl ginha:wa, WBM gəhinawa, Itb hinawa, Kpm ?ina:wa, To mā/nava, Kan m/uru/ŋisáa (M) 'to breathe', Ib, Ml ñawa 'soul', Tag ginha:wa, Ilk gin?a:wa 'relief, relaxation'. (TZ)
- (P53) PHF *ba:NaS 'man; husband' > Ceb, Hil ba:nah-, Kapuas, Siang bana 'husband', Sai balaš, Paz bałas, Pai vałas 'male (animal)'. (BZ)
- (P54) PHF *ba:ŋaS [tree] > Akl ba:ŋah, Han ba:ŋa *Orania* sp; Kan vaŋásə, Sar vaŋəə, Pai, Ami vaŋas, Sai baŋaš *Melia azedarach*. (TZ)
- (P55) PHF *baRiØuS 'storm-wind' > Akl, Ceb bágyuh-, Jv, Ml bayu, Kl bariw, SaiT baŷoš (see Table 2). (BZ)
- (P56) PAN ČaliS 'line, string' > Bon, Ilk, Isg tāli, WBM tali, (Tag ta:li? 'tie, rope', Ceb ta:li? 'to tie', Bik ta:li? 'to thread', Ib), Lm, Ml tali, Pai calis, Paz saris, Sai š<in>ä?iš, Puy Tali?, Kan talísi 'rope, cord', Fj tali/a 'to plait' (ABFTYZ)
- (P57) PAN *daqis 'forehead' > Akl dāhi? (M), Ml dahi, Bj dahi?, Ib dai (poetic), (OJv rahi, NJv Dai, To la?e), Pai đaqis, Bun daxis, Tha sá:qis, Aty rqias. (AFYZ)
- (P58) PAN *ku(S)kuS 'fingernail' > Akl kŭkuh, Ceb kŭkuh-, kŭkh-, Itb kukuh, Ml, (Ib kuku), Fj kuku, (Sed kukkux; see Table 2). (ADFYZ)
- (P59) PAN *pa:qaS 'thigh' > Akl pa:ʔah, Kal paka, Tbl hahah, (Itb paa), Pl wax, Bun p<in>asax (M), Puy paŋa 'thigh', To paʔa/paʔa 'stalk, stem'. (DSYZ)
- (P60) PHF *piRaS 'roe' > Itb piiyah, Bik piġa, Pai bias (with unexplained b, although PAN *b > Pai v). (TZ)
- (P61) PHF *bənSiq 'rice-seed' > Akl, Ceb bínhi?, Bik banhí?, Tag, Han binhí?, Kal binik, Tbl benek, Ilk bin?í, Ib bənih, Ml bəneh, OJv winih, Sai binši?, Bun binsax (M). (DNSZ; T-Fm *binSəq).

With the exception of Puyuma, some Rukai dialects, and Saaroa (*S > Ø) or Siraya (*S > h), the Formosan languages cited here reflect PAN *S reasonably faithfully with a sibilant. Table 2 illustrates the regular reflexes of *S amongst none of these languages. All of the irregularities noted have been put in and are underscored, although only a few of the many non-problematic sets are included. Note that Paiwan alone is without exception; the other languages show an irregular development from *S > h (and some thence to Ø or ?). Since these irregularities are in the basic vocabulary, they have caused considerable concern for some time now (Dyen 1965, 1971, and Tsuchida 1976), and have led to the sub-classification of the reconstruction of *S into as many as nine correspondence sets, some of which have only one member each.

Confronted with this problem, Dahl notes:

In S.At(ayal) s occasionally alternates with h. If the phonemic limit between s and h is vacillating in more languages, the difference is not so great as it seems. (1976:33)

Table 2: Regular and problematic *S cognates amongst Formosan languages; evidence for *S > *H shift

	PAIWAN	BUNUN (Tkd)	AMIS	RUKAI (dl)	KANAKANABU	PAZEH	SALSIYAT	THAO	ATAYAL
*qamis	qamis	qamisan	kaqamis	-	?amisane	?amisan	?amišan	-	qmisan
*CaSiq	cmaqis	mataqáis	mitaqis	cáisi	tumata?ísi	musa?is	šá?iš	šáqiš	smaqis
*Sepi	misepi	-	-	sipi	-	pisipi?	?išpi?	-	spi?
*Šájək	-	sá:k	misanək	-	-	musazək	sazəkən	šmá:əik	smok
*tebuš	tevus	ci?bus	tevuc	cubúse	tevése	tubus	katbuš	tufu:iš	-
P35	sepəṭ	sasaspát	sepəṭ	spəṭə	usúpatə	sepəṭ	šepəṭ	špa:t	payat '4' spat '8'
P49	Dusa	dadusa?	tusa	Dusa	cuúsa	dusa?	ruša?	tú:ša?	rusa?
P57	daqis	daqáis	-	-	-	dá:is	rá?iš	šá:qiš	rqias
P27	nusawni	-	anusauni	-	saúni	?uhuni?	-	-	saoni
P41	tisun	?asúh	kisu	kóso	fikasu	?isu?	šú?u	?f:hu?	isu?
P43	-	-	suní	-	umáuni	muhuni?	-	-	-
P34	-	-	hemay	-	-	sumay	-	-	(mami?)
P48	cmusu	matusul	-	-	cumacuúru	-	söhöön	-	Imoho
P152	seti	-	heci?	Sed hi'i Sed xeyi?	?aisi	-	-	-	hi?
P31	sapuy	sapue	-	apúy	apúlu	hapuy	hapuy	?á:puy	hpunig hapuy 'cook'
P58	katuskusan	kuskus	(kinu?əs)	kalukua?	(anuka)	kalikun	kakluköh	kú:ku?	karuh
P50	kasiw	-kavi?	kasuy	kawa?	kaálu	kahuy	kähöy	ká:wí?	khunig
P37	-	ma?iup	mi?iyup	Kuv semíup	-	-	hömiup	myú:p	yemup
P30	saṇuṭ	-	-	-	-	-	-	-	penhaṇuc
P40	semíup	-	herop	-	-	-	-	-	-
P55	-	ballivus	ballíws	-	-	-	ba:yuš	-	bihuj

Although this explanation may be adequate for the [h] reflexes in Aty, it is possible to put forward a general historical explanation. It is clear that by PMP times the sibilant reflexes of *S were completely lost outside of Formosa.²⁴ The sound had shifted to PMP *h, and was subsequently lost in Oceanic, and was on the way to being lost amongst ML/In languages (see 6). It is here proposed that PAN *S was beginning to shift from a sibilant to a laryngeal early in PAN history, and this shift is preserved in certain basic vocabulary amongst northern and central Formosan languages. This shift was arrested in most Formosan languages, but was complete in the ancestor of all PMP languages and at least Siraya of Formosa. (Puyuma, Saaroa, and Rukai may have been similarly affected if the development was *S > *h > *Ø.) It would be more appropriate to set up doublets rather than new proto-phonemes, although one member must be post-PAN but pre-PMP, e.g. PAN *Sǎpuy > post-PAN *Hǎpuy 'fire'.

5. PROTO-AUSTRONESIAN *H

Whereas a partial dialect merger of PAN *S and *H has been proposed, yielding four post-PAN doublets, *Hǎpuy (P31), *Hǎyup (P37), *ka:Huy (P50), and *kúkuH (P58), it must be stressed that this is not the origin of PAN *H. This phoneme is reconstructed where certain Formosan languages (Tkd, in particular as a test language, or Sai, Ami, Paz, Aty – in descending order of reliability) have an [h] corresponding to [h] among various Ph languages, final [-ʔ] or, less commonly, [-y] in Iban, and (sporadically) initial [h-] in ML, OJv, or Sd. The presence of cognate forms with [Ø] reflexes in Paiwan (which faithfully shows PAN *S > [s]) makes Pai a special criterion language in the reconstruction of *H (note that Pai [Ø] < *R, *H, *ʔ, *Ø). In the absence of such Pai cognates, similar witnesses are sought among other Formosan languages which would disallow the reconstruction of PAN *S. This phoneme is best attested in final position; forms that generally meet these requirements of Ib, Ph and Fm languages include:

- (P62) PAN *qǔmaH 'farm(land)' > Akl, Ceb ʔǔmah-, ʔǔmh/an, Kal kuma, Ilk ʔǔma, Ib umay, Ml (h)uma, Ami, Tkd qumah, Sai ʔǔm/ǔmäh, Paz ʔuma/mah, Aty qmayah, Pai quma 'field', Fu uma/ŋa 'dry taro-field', Aty qumah 'to work a field'. (ADSTYZ)
- (P63) PHF *ba:RaH 'live coals' > Itb vayah 'red-hot', Akl, Ceb ba:gah-, Kal bala, Tbl balah, Ib baraʔ, OJv wā, Ami valah, Paz bahah, Aty bagah, Sai bāäh, SaiT baLäh, Sed bawah, Sar varaʔa, Kan bara (Tkd, Pai NC). (ADNSTYZ)
- (P64a) PAN *qa+li:maH 'hand' > Akl, Ceb ʔali:mah-, Kal kalima, (Itb lima), Ib limaʔ, Pl xiim, RukMg aríma, Tkd ʔimáh, Pai lima 'hand', Tkd tal/ʔimáh 'to wash hands', Fu, Sm lima 'hand'. (CZ)
- (P64b) PAN *lǐmaH 'five' > Akl lǐmah, (Itb lim, lima), Ib limaʔ, Tkd himáʔ (M), Pai lima, (Ami lima), Fu, Sm lima, Pl w/im. (ADSTYZ)
- (P65) PAN *qani:ŋuH, PMP *qani:nuh 'shadow' > Akl ʔani:nuh, Kal kaninu, Tb halinu, Bima ninu, Tkd qaniŋúh, Bun xaniŋuʔ, (Sai ʔaliŋuʔ). (BCDZ)
- (P66) PHF *qan̄suH 'stench' > Akl ʔánsuh (of urine), Tkd qancúh (of rotten tubers), Bun ma/xánsuʔ 'stinking'. (Z)
- (P67) PAN *qi:SuH 'shark' > Odg ʔe:hoh, Agy kiu, Ib iuʔ, Ml (h)iyu, Fj ŋg/io, Pai qisu, (Ami ʔiso). (ACNYZ)
- (P68) PAN *qu:luH 'head' > Akl ʔu:tuH, Kal kulu, Tbl kuluh, To, Fu ʔulu, (Sai taʔölöh), Pai qulu 'head', Ib uluʔ 'meaning' (Tkd NC; Itb uxu). (ADNSYZ) [Sai l < *l is inexplicable (T).]
- (P69) PAN *baq(ə)RuH¹⁴ 'new' > Akl, Ceb báqʔuh-, Kal baklu, WBM bəgu, (Itb vaʔyu, Ib baru), Ml ba(h)ru, Jv wahu, To foʔou, Tkd baqluh, Ami baqluh/ay, Pai vauq/an, Tha faq+uʔ, (?Sed buurah). (ADTYZ)

- (P70) PAN *ba:RuH 'hibiscus' > Akl ba:guh, (Itb vau), Ib baru?, Ml baru, Fj vau, To, Fu fau; Pai vau *Macaranga tanarius* (T). (ADYZ)
- (P71) PHF *băyuh 'to pound (rice)' > Akl, Ceb, Hil băyuh-, Tkd bađuh, Bun báđu?. (Z)
- (P72) PHF *buŋuH 'head' > (Tag būŋo? 'skull'), Tkd buŋuh, Ami vuŋuh, Kan na/vuŋu, Sar vuŋu?u 'head'. (T)
- (P73) PHF *qasiRaH 'salt' > Chamorro asiga, Pai qatia, Ami cilah, Tkd qacilah, Bun xasila?. (AZ)
- (P74) PHF *Ca:qiH 'faeces' > Akl, Ceb ta:ʔih-, Kal taki, Tbl ke?, Ib tai?, To taʔe, Pl dax, Pai caqi, Ami taiq (M), (Sai säʔi?). (ADNSTYZ)
- (P75) PAN *CăquH 'know (how)' > Akl tăʔuh 'don't know', Kal taku, Ml ta(h)u 'know', Ib tau?, Pai caqu 'able', (Itb mananawu 'study, learn'), Tbl hêm/tahuh 'believe', Tkd taquh 'teach', To ma/taʔu 'right hand'. (ADSYZ)
- (P76) PAN *Cali:ŋaH 'ear' > Ceb taliŋh/ug 'listen to', (Itb taliña 'earlobe'), To teliŋa, Tkd taiŋah, Pai caliŋa, (Paz saŋira?, Ami taŋila (M)), teliŋa. (ADSTYZ)
- (P77) PAN *CapaH 'smoke (foods)' > Akl, Ceb ta:pah 'jerk', tăpah 'smoke', Rov tava, Tkd ma/tapha? (M), Pai capa 'smoke', Tso c<m>apo, Kan c<um>a/capa 'to roast over a slow fire'. (ABDTZ)
- (P78) PAN *Cu:maH 'body louse' > Ceb tu:mah-, Itb tumah, Han, Ilk tu:ma, Ib tuma?, To, Sm, Ml tuma, Sai sumäh, (Aty sum/yeq, Sed sum/i?). (ADFNSTYZ) [Paz ʔumah, but ʔ < *C is inexplicable (T).]
- (P79) PAN *CuNuH 'roast on fire' > Jv, Ml, (Ib), To tunu, Ami mu/tuʔuh, Tkd ma/tunuh, Sai sulöh/ön, Pai c<m>uʔu, Kan c<um>a/cunu.
- (P80) PHF *dăkiH 'body dirt' > Akl dăkih, Ib daki?, Ml daki, PMN daki 'id.', (Paz tu/daki? 'dirty', Itb raci? 'rust'). (STZ)
- (P81) PHF *dăpaH 'sole (foot)' > Akl dăpa/dăpah, Ceb lăpa/lăpah-, Kal dapa/rapa, Soc po/lapa, Ib tapa? (A/t→p), Tkd ʔ<al>apáh, Bun d<al>ápa?. (Z)
- (P82) PAN *kítaH 'we (incl)' > Akl, Ceb kítah-, Ib kitay, Ml, To, Fu kita, NJV kitò, Tkd ʔa/táh, (Ami kíta?, Paz, Sai ʔita?, Aty ita?). (ADNSYZ)
- (P83) PHF *nunuH 'breast' > Mlg nunu, (Sbl nu:nu?), Tso nunʔu, Sar nuunuʔ/a, Paz nunuh, Sed nunuh 'breast', Paz mu/nunuh 'suck milk'. (ATZ)
- (P84) PAN *pījaH 'how many?' > Akl, Ceb pīlah-, Itb pīrah, Tkd pīah, Pai pīda, To fiha, (Ami pīna, Sai pīza?). (ADFSTYZ)
- (P85) PAN *si:kuH 'elbow' > Akl, Ceb si:kuh, Itb sicuh, (Ib), Ml siku, Tkd cīkuh, (Sai hiku?) 'elbow', To hiku, Fu siku 'end, corner'. (DSZ)
- (P86) PAN *tu:baH [plant: fish-poison] > Akl, Ceb tu:bah-, Ib tubay, NgD tuwe, Fj tuva = nduva, (Sai ta/tuba? (n), t<um>uba? (v) 'id.', Itb tuva/tuva 'drug'). (DNSYZ)
- (P87) PHF *ZaRa:mīH 'rice-stalk, straw' > Akl, Ceb daga:mīh-, Ilk gara:mi (M), Ib jərami?, Ml jərami, Jv dami, Pai qamia (M). (ADFSZ)
- (P88) PHF *za:waH 'millet' > Akl da:wah, Ib jawa?, NgD jawe, Puy əawa? 'millet', Itb um/rawah '(of grain) to appear out of the ears when nearly ripe'. (ABDZ); Gonda (1973:322) suggests Skt yava- 'barley'.

Tsuchida (1976:132-8) sets down two correspondence sets (*H₁ and *H₂) which agree only in having Akl, Tkd -h. It would appear that Ami, Paz, Sai, and Aty have lost this sound on a number of words, and do not reflect a difference in proto-phonemes (pharyngeal stop and fricative, as Tsuchida suggests). I accept his *īnaH 'mother' and *āmaH 'father' (but the *-H here is a vocative ending; *-ʔ, *-y, and *-ŋ also occur in this function, see Blust 1979 and Zorc (1978:94). I have reservations about *qăbu(H) 'ashes', *qaSəlu(H) 'pestle', *bătu(H) 'stone', *ka:li(H) 'dig', and *ku:Cu(H) 'louse' (while Akl and Tkd both reflect *-H, both Itb and Ib reflect *-Ø). I would also require better evidence for his *īni(H) 'this', *Libu(H) 'pen', *taRa(H) 'wait', *zaNi(H)

'near', *təlu(H) 'three', *tutu(H) 'pound' (contrast *tuqtuq), *waRi(H) 'sun, day', *wiRi(H) 'left(side)', and my *-aH 'direct passive imperative', *qaba:Ra(H) 'shoulder', *Ca:wa(H) 'laugh', *Du:Ri(H) 'thorn'.

In intervocalic position the following etyma may be reconstructed:

- (P89) PAN *qaluHi:pan 'centipede' > Tag ?alupi:han (M), Ib (l)lipan, Pl xiul, Ml halipan, Sa eluhe, SaiT ?aLuŋähipan, Sai ?awŋähipan. (Z)
- (P90) PHF *qu:Huŋ [mushroom] > Akl, Ceb ?u:huŋ, Tbl ko?oŋ, guwòŋ, (WBM ?u?uŋ), Ilk ?u?uŋ, Bun xuuŋ, Sar u?uŋa, RukMn ?uŋu, Aty qeihoŋ. (Z) (T-*q₄uS₂uŋ)
- (P91) PAN *baHiØ 'woman, female' > WBM bahi, behi?an, Akl ba:yih-, Tbl bo?ih, beh, Ami va/vahiy/an, (Itb ma/v<in>ayi), Pai va/vai/an, Puy va/vay/an 'woman', To fe/huhu 'mother (= 'woman of milk'), fe/f<in>e 'woman'. (ABDTYZ)
- (P92) PAN *bu:Hat 'make, work' > Akl, Ceb bu:hat, Kal buat, Ilk bu:?at 'make', Fj vuat/a, Fu, Sm fuat/a 'harvest', (Tha mu/bú:hat 'work') Ib, Ml buat 'load'. (DNZ) [Tha b < *b and h < *H (or *S) is inexplicable (T).]
- (P93) PHF *buHut 'squirrel' > (Tag bu:?ot, bú?ut 'rabbit', Bik bú?ut 'mountain rat'), Ami vuhut, Tkd puhut, Paz buhut, Aty bhut, Sai ka/bhöt, Kan vuútu 'squirrel'. (T)

The cognation of Kan su/kúam/a 'sickness', ma/su/kuámə 'painful' with Tag gũham [skin disease], Ml guam 'thrush (skin disease)', Kal kuam, Tbl kə/kam Aphten tropica is doubtful, and ambiguously *gu[SH]am (Tsuchida 1976:227 *guS₂am). I accept Tsuchida's (1976:136,181):

- (P94) PAN *lǎHud 'sea' > Paz rahut 'west' (= 'seaward'), SaiT Lähör, Sai ähör 'downhill', hau/ähör 'downstream', Kal laud, Ml laot, (Akl tǎwud) 'sea', Fj lau 'Windward Islands', (WBM lawəd 'in midst of', Pai lauD = lauz 'seaward, downhill') as provisional, but exceptionally problematic.

The following may be reconstructed in initial position (see P168 also):

- (P95) PHF *Ha:paw 'to top (off)' > Akl ha:paw 'fill to brim', Tag ha:paw 'scum or excess on top', Tkd tun/hapav 'to swim', ma/tiŋ/hapav 'to float up', ?i/hapav 'outside; shallow'. (Z)
- (P96) PHF *HiRaw 'opening, clearing' > WBM higaw/an 'clear-land/trail', Tkd hiláv, Bun ?i?av 'door(way)'. (Z)
- (P97) PHF *Ha:saq 'whet' > Tag ha:sa?, Kal asak, (Han ?a:sa?), Ilk ?a:sa, Mo ?ata?, Ib ansah, Ml asah, OJv a /asah, Tkd ma/hacaq, (Bun ma/sasaq (A/h → s, cf: Bun ?asaz/un), Pai tataq (A/h → t). (ABCDNSYZ)
- (P98) PAN *Ha:liq 'go; move' > Tag hali:- 'come on', Bik ha:li? 'origin; to leave', Ib alih 'turn over', Ml aleh 'move, change (direction)', Kan taku/aí?i 'change direction'. (DNTYZ)
- (P99) PAN *ma/Hataq 'raw, unripe' > Itb ma/hata, Tbl m/atak, Ib m/ata? (M), Ml m/atah, To mata, Kan matá?ə, Pai ma?aq, Sai mantä?, Ilk ?a:ta. (ADNTYZ)

In some cases, evidence is not clear if the reconstruction should be with *S or *H (as in P92):

- (P100) PHF *[SH]u:Ras 'wash' > Akl, Ceb, Tag hu:gas, (Han ?u:gas, Itb uyas/an) 'to wash', Ml (h)uras 'besprinkle', uras 'wet ground', (Sar tara/a/urase 'rinse off'). (DTZ)

Tsuchida (1976:137) reconstructs *H₁ulə[sə] 'garment' on the basis of Tkd huluc, Ami hələt 'garment', Sa ulo 'wrap up', while I find evidence for PMP *qúləs 'woven-garment/blanket' > Kal kukl/un, Ilk ?úləs, Kpm ?úlas, Tig ?uləs/en 'blanket', Ml (h)ulas 'wrapper'. The Formosan forms may be contaminations or

loans of Fm *kuləs/*lukəs (Aty lukus, Tha hú:luθ, Kuv koləs), and should not be directly connected with the Sa form. On the basis of Paz huhas 'vein', Tsuchida reconstructs PAN *H₂uRaC (despite Tkd ?ulat, Sai ka/was, Ami ulat, Akl ?úgat); on the basis of Sai hipih 'cockroach' one might similarly posit PHF *[H]ipes (despite Tag ?i:pis, WBM ?ipəs); however, it is prudent to leave the initial consonant undecided for the present. Alongside Akl hŷyap, Ifg ?ŷyap, Ceb ?ŷhap 'to count', there is Sar <um>a/iapə, but this must be ambiguously *[HS]əyap 'count'.

While some of these reconstructions are subject to review and alternative interpretations, the majority of them validate the reconstruction of a PAN (or PHF) *H different from *S, particularly, but not exclusively, in final position. Apart from Formosan evidence, PMP *h must be reconstructed.

6. A NOTE ON THE LOSS OF PMJ/PIN *h

Nothofer maintains: "Dyen's initial *h₁ through *h₄, *q₁ and *q₂, and *S₄ merge in any case in PMJ *h." (1975:167). So many instances of the loss of PHN *h are to be noted that one must posit a chronology of sound shifts: (1) PHN *h was in the process of being lost (i.e. PHN *h > PIN, PMJ *Ø) when (2) the shift of PHN *q > PIN, PMJ *h preserved the phonetic character of *[h] on forms that had not yet undergone #1. Furthermore, certain positions appear to have been more 'fragile' than others, so that PIN, PMJ *h (< *h) was lost intervocally and in clusters (I have found no solid evidence for its retention among In/ML languages in these positions), retained sporadically in initial position (witnessed variously by OJv, Bj/ML, or Sd), but rather well retained in final position (at least in Iban, where it is reflected as -ʔ; it otherwise appears to have been lost in this position in all other In/ML languages). The position taken here differs substantially from that of Nothofer,²⁵ and partially from that of Dyen (1953).²⁶

I do not know of any evidence that shows the retention of *h among ML/In languages in cognates of the following:

PAN *Saba:Rat 'monsoon' [P45] ²⁷	PMP *haDi:ri 'pillar' (DSWZ)
PHN *haRəZan 'ladder' (CDH)	PHN *qana:haw <i>Livistona</i> (DYZ) ²⁷
PAN *qaluHi:pan 'centipede' [P89]	PAN *Sa:ji? 'Y-sibling' [28]
PHN *ha:(ŋ)kup 'take with hands' (DZ)	PHF *Sa:(ŋ)kuC 'transport' (BTZ)
PHN *hālas [tree]; 'forest' (DZ)	PAN *Ha:liq 'go, move' [P98]
PHN *hālin 'transfer' (CZ)	PHN *ha:muk 'attack, rage' (DY)
PHN *ha:ŋus 'breathe hard' (DYZ)	PHN *ha:(m)pin 'pad' (Z)
PAN *Sāpuy 'fire' [P31]	PMP *ha:(ŋ)saŋ 'gills' (ADSYZ)
PHN *ha:wak 'waist, body' (ADNSYZ)	PHN *ha:wid 'hold, keep' (Z)
PHF *Səmay '(cooked) rice' [P34]	PHN *hŷkət 'tie up' (DSZ)
PHN *hiluØ 'poison(ous)'	PAN *Si:paR 'other side; sister-in-law' [P39]
PHN *hi:(m)pun 'fry, small fish' (BZ)	PHN *humbak 'wave' (DYZ)
PHN *hu:baq 'change' (DNZ)	PHN *hu:tək 'brain' (DNYZ)
PHF *Su:ni [sound of birds] [P43]	PHN *ba:hu(?) 'smell' (ADHSYZ)
PHN *bāhal 'ferment(ed)' (Z)	PHN *bu:haŋ 'throw/pour out' (DY)
PHN *bāhur 'mix up, mingle' (BNSZ)	PAN *buSək 'hair' (ABTYZ)
PAN *bu:Hat 'make, work' [P92]	PMP *bāhaq 'flood' (BDYZ)
PMP *Da:hun 'leaf' (DNY)	PHN *guham 'thrush' (DT)
PAN *DūSa 'two' [P49]	PMP *lāhuk 'mix, blend (food)' (DY)
PHN *ku:hit 'tap; extract' (B)	

PHF *lu:Səq 'tear' (CNTYZ)	PHN *lühəd 'kneel' (YZ)
PHF *ma-buSuk 'drunk' (BCDZ)	PHN *nahik 'go up' (DY)
PHN *ta/həyup 'blow (tube)' (BY)	PHN *timpuhəq 'squat' (BDY)
PHF *tu:Sud 'knee' (DTYZ)	PMP *wa:hiR 'water' (ABCDNYZ)
PMP *qaRu:hu? <i>Casuarina</i> [P130]	PAN *i:Səq 'urine' (AFTYZ)
PMP *pa:huq <i>Mangifera</i> (DNYZ)	PHF *qaS(ə)lu 'pestle' (ACFNTYZ) ¹⁴
PHF *qaŋSit 'stink' (BCTZ)	PMP *bakhaw <i>Rhizophora</i> (DNYZ)
PMP *buRhu? 'jealous' (BDYZ)	PHF *bənSiq 'rice-seed' [P61]
PHN *DahDah 'chest' (DNZ)	PMP *uDəhi 'late, behind' (BCDYZ)

I know of no convincing cognates between Ph and Ml/In languages reflecting [-h-] in both groups. Ceb, Tag *tāhan*, Bik *ta:han* 'to bear, endure' have the secondary meaning of Ml *tahan* < PHN *tāqən [P03] and are loans rather than cognates (Dyen 1953:12 *tahan). Similarly, Tag *da:hak*, Ilk *da:ʔak* 'to spit' are loans from Ml *dahak*, which is from PMJ *Dəhak (Nothofer 1975:72), cf. OJv *rəhak*, Ib *da:k*; compare Dyen (1953:12) *[dD]ahak. Under this hypothesis, Tag *būhoŋ* 'deceitful, cunning' must be discarded as a loan from Ml *bohōŋ* 'lying, untruthful' (Blust 1970:#72). There are a large number of loans among Ph languages from Ml (or other In speech varieties), e.g. at P02, P09, P14, P22, P56. (See also note 26.)

Conversely, I have found only the following examples of the retention of initial *h-:

- (P101) PMP *ha:ŋin 'wind' > OJv (h)əŋin, Ml əŋen, Akl ha:ŋin 'wind', To əŋi 'blow', Itb hañin 'storm'. (BCDNYZ)
- (P102) PHN *ha:wən 'open space' > OJv hawan 'road, way', Ml awan 'cloud', Akl, Tag ha:wən 'open', Tsg hawan 'to clear', Itb pi/hawan 'interval'. (BDZ)
- (P103) PHN *hi:ləm 'secret, hidden' > Ceb hi:lum, Tag li:him (M); Ml (h)ilam, ilam-2 'dimly visible'. (Z)
- (P104) PHN *hāsək 'cram in; dibble' > Ml (h)asak 'stuff', Ceb hasuk, WBM hasək 'press down (on)', Tag hāsik, Tbl ʔəhək, Ds ŋ/asok 'to dibble'. (BZ)
- (P105) PHN *hu:luR 'fall; drop' > OJv hulur/ulur 'may the fringes be of', Ml (h)ulor 'to pay out (rope), let go', Akl hu:tuŋ 'fall'. (DNYZ)
- (P106) PHN *huyun 'shake, sway' > Ml (h)uyon 'rock, sway', ter/huyun-2 'stagger', Akl hu:yun, WBM huyun 'shake, rattle'. (B)
- (P107) PMP *ha(m)buR 'spread-out/wide' > Ml (h)abur 'to lavish', Ml (h)ambur 'to scatter, litter', Ib abur 'widely known', Tsg hambug 'stout, blooming', ma/habug 'broad (of cloth)', POC *apu 'sprinkle'. (BZ)
- (P108) PHN *halintaŋ 'crosspiece' > Ml (h)alintaŋ 'crosswise', Akl halíntaŋ, Han halíntaŋ 'step, rung in ladder'. (Z)
- (P109) PMP *hampir 'near(by)' > Ml (h)amper 'near', Ib ampir 'encroach', Tag hampíl 'peak (of heat or coolness)', Ceb hámpil 'pile, to attach', To ofi 'near, close'. (Kuy ampir 'near') (DY)
- (P110) PHN *hantəp 'dense, deep' > Ml (h)antap 'heavy, dense', Akl hántup 'deep within (oneself)'. (Z)
- (P111) PHN *haiq [interjection] > Ml hai 'oh (astonishment or vocative)', Ib aih [interjection: annoyance or incitement], Akl hay? 'well?'. (Z)

Note also PHF *Sa(n)təD₂ (P33), PAN *Si:Rup (P40), PAN *Su:Nus (P44), and PHF *Su:Ras/*Hu:Ras (P100).

There are a number of instances where a final glottal stop (or -y) in Ib reflects PHN *-h (< PAN *-S or *-H), see P50 (M), P51 (M), P62, P63, P64, P66, P67, P70, P73, P74, P75, P78, P80, P81, P82, P86, P87, P88, and:

- (P112) PHN *ǎnuh 'what(ever)?' > Ib anu?, OJv, NJv, Ml anu 'so-and-so, such-and such', Akl ʔǎnuh, Hil ʔǎnuh-, ʔanh-, Itb -aṅuh, akuh (with k for ŋ), Agta ʔənu 'what?', Itb di/nuh 'where?', Itb si/nuh 'who?'. (ADNSYZ)
- (P113) PHF *CīṅaS 'food particles caught between teeth' > Ib tiṅa?, Akl, Ceb tīṅah-, Itb tiñah, Tbl tiṅu?, Pai, Bun ciṅas, Sai šīṅaš. (BCSTZ)
- (P114) PMP *bu:ṅah 'flower; fruit' > Akl, Ceb bu:ṅah-, Tbl buṅuh 'fruit', Ib buṅay, Tb, Ml buṅa, Sm fuṅa 'flower'. (BDSYZ)
- (P115) PMP *būkuh 'joint, node' > Ib buku?, Akl, Ceb būkuh- 'id.', Ml buku 'knot, knuckle', Fj mbuku 'corner, edge'. (DNSYZ)
- (P116) PMP *Dəpah 'fathom' > Ib dəpa?, OJv Dəpa, Md Dəppa(h), Akl, Ceb dūpah-, (Itb maha/dpa), Fu lofa, To ofa. (BDNSYZ)
- (P117) PHN *kənuh [quote particle] > Ib kənu?, Akl, Ceb kūnuh-, (Itb kunu), Ilk kənu. (BZ)
- (P118) PHN *ləṅah *Sesamum indicum* > Ib ləṅa?, Ml ləṅa, Tb loṅa, Akl tṅah, Ceb lūṅah-, WBM ləṅa, Tag līṅa. (DZ)
- (P119) PHF *ṅīluH 'set teeth on edge' > Ib ṅīlu?, Ml ṅīlu, ṅīlu, nilu, Akl, Ceb, Hil ṅīluh-, WBM ṅi/ṅīlu, Pai ṅīlu. (DNSZ)¹³
- (P120) PHF *pəkuH [fern: *Athyrium esculentum*] > Ib paku?, Ml paku, Akl, Ceb pəkuh-, (Tag pəko?), Tbl hoku?, Ami pahko? (M). (DSTZ)
- (P121) PHN *pəñuh [turtle] > Soc ponu, K-C pənu, Tbl hənuh, Ib pəñu?, Ml pəñu, Sml pəno. (DZ)
- (P122) PMP *pa:Rih 'rayfish' > Ib pari?, NJv pé, Ml pari, Akl pa:gih, Ceb, Han, Tag pa:gi, Fj vai, To, Sm fai. (DNSYZ)
- (P123) PMP *saguh [root-crop] sago > Ib sagu? 'balls of cooked sago', Akl saguh, Tag sago, NJv, Ml sagu 'sago, pith', Fj sako/sako 'pudding'. (DNZ)
- (P124) PHN *səwəh [snake] python > Ib sawa?, Akl səwəh, Tag səwa. (DSY)
- (P125) PHN *sīDah 'they' > Ib sida?, Ceb sīlah-, S-L sīrah-, (Itb sira), NJv sirò. (DNSYZ) (Note Ami caṅra?, Akl sándah (T) < PHF *saṅDah.)
- (P126) PMP *tūlih 'earwax' > Ib tuli? 'having a suppurating ear', Akl tūlih, Ceb ʔa/tulih-, Tag tu/tuli, Fj tule=ndule 'earwax'. (DZ)
- (P127) PHN *zəzah 'to carry (goods)' > Ib bə/jaja?, Ml jaja, NJv jòjò 'to peddle, carry merchandise', Akl dətah, Ceb, Tag dəlah-, dalh- 'carry, bring', Itb rarəh 'load'. (Z)

There are instances where Ib appears to have lost final -ʔ < *-h (P69, P79, P85, P58), but the number and nature of the agreements indicate that Iban is a criterion language for this reconstruction; borrowing, analogy, or independent innovation would not offer a reasonable counter-hypothesis, particularly in the light of the contrast with final -∅ < *-∅ (see section 8).

7. PROTO-AUSTRONESIAN *ʔ

PAN *ʔ is reconstructed on the basis of criterion languages (see Table 1) such as Akl, Ceb, WMB, Tbl, Ib, Md, Jv, or Ml, where it has merged with other phonemes. Formosan languages (with the possible exception of Tkd and Ami) serve only as witness languages because [ʔ] appears to be a phonetic or phonotactic feature of word closure or onset, and has generally merged with PAN *∅. Evidence for PAN *ʔ is clearest and most abundant in final position.

- (P128) PAN *-ǎma? 'father' > Tbl ma?, Moṅ, Abr, Msk, Tsg ʔama?, Sml ʔəmma?, Md əmma?, Ami w/ǎma?, Pai k/ama, t/ama, To t/ama?/i, Sm t/amā. (ABCDYZ)

- (P129) PHN *a:ku? 'admit, acknowledge' > Akl, Bik, Han ?a:ku? 'accept responsibility', Ib aku? 'admit, confess; treat as', Lm aku? 'take', Ml aku/an 'acknowledgement'. (CNZ)
- (P130) PMP *qaRu:hu? *Casuarina* > Akl, Ceb ?agu:hu?, Ilk ?agu:?u, ?arũ?u, Ib ru?, Ml (h)aru, øru, Tb oru, Fj z/au, Sa s/elu. (BCDYZ)
- (P131) PHF *qila? 'like, note' > Akl ?i:la? 'like, want', Ib ila? 'keep eye on', Sai mya/?ila? 'like, love'. (Z)
- (P132) PHN *badi? [knife] > Ceb bāri?, Mar, Ib badi?, Ngadha badi. (BZ)
- (P133) PHF *b<al>aŋa? [earthenware vessel] > Tag bālāŋa?, Tb balaŋa, Ml bəlaŋa, Ib bəlaŋa? [earthenware vessel], Pai valaŋa, Sir vaŋara (M) 'mortar'. (DYZ)
- (P134) PHN *bapa? 'father' > Lm, NJv, Ml, Sd bapa?, Md əppa? 'father', Ib bapa? 'father-in-law', Han ba:pa? 'uncle', Ilk ba:pa 'parent or parent's siblings', Sbl ba:pa? 'father'. (DZ; A rejects as nursery word)
- (P135) PMP *bi:Ra? 'discharge; semen' > Ceb bi:ga?, Akl biga:?'un, Tsg biga? 'sexual lust', Mar biga? 'semen', Ib bira? 'evacuate, discharge', Sm pia 'smegma'. (BZ)
- (P136) PMP *būka? 'open' > Akl, Hil, Sbl būka?, Tsg buka? 'open', Mar boka? 'untie', Ib, Lm, NJv, Ml, Sd buka?, Md bukka? 'open', Sa hu?e, To, Fu fuke, Sm fu?e 'to uncover'. (DNSYZ)
- (P137) PMP *Da:tu? 'chief' Akl, Hil da:tu?, WBM, Mar, Tir, Tbl datu? 'chief, leader', Ceb da:tu? 'rich; chief', Ib datu? 'nobleman, chief', Ml dato? 'head of family', OJv ratu 'prince', NJv Datu? 'prince, master', Fj ratu 'honorific title (of chiefs)', Sm latu 'captain'. (BDNYZ)
- (P138) PAN *kaka? 'elder sibling' > Tag, Sbl kākā?, Ilk ka:ka, Han ka:ka?, Ib aka?, RukMg kaka, Ami kaka?, Kuv haha 'elder sibling', Lm, Ml kaka? 'elder sister', Md kaka?, Fj tua/ka 'older brother', Pai kaka 'sibling'. (ABDSYZ)
- (P139) PHF *kəD₁i? 'small (amount)' > Akl saŋ/kĩri?, Pai kəDi. (Z)
- (P140) PAN *ki:Ta? 'see' > Akl, Ceb ki:ta?, Tag ki:ta 'see', pa/kita:?'an 'let see', Kpm ?a:kit (M?), Kal ita, Ilk ki:ta; NJv was/kiTò 'clear insight', foresight', To kite 'to appear', Fu fe/kite 'see one another again', Aty m/ita?, Sed k<m>íta?, Sar k<um>a/kita, Paz mu/kitá?, Sai kita?. (ACDNTYZ)
- (P141) PHF *mama? [male kin: MB] > Tag ma:ma? 'MB; sir', Hil ma:ma? 'old man', Ml mama? 'MB', Jv mama? 'father', Lm mama? 'uncle, parent's younger brother', Aty mama? 'uncle'. (BDTYZ)
- (P142) PMP *muda? 'young, unripe' > Tag mu:ra?, Ib muda? 'unripe', Ml muda 'young', To mula 'young (of vegetables)'. (YZ)
- (P143) PHN *naŋka? *Artocarpus* sp. > Bik, Tag naŋká?, Ceb, Tsg nánka?, Isg, Ilk nánka, Itb naŋka, Ib, Sd naŋka?, OJv, Ml naŋka. (DNYZ)
- (P144) PHF *Nasi? '(cooked) rice' > Md nasi?, Ib asi?, Ml nasi? '(cooked) rice', Paz mu/łasi? 'paddy plant'. (Z)
- (P145) PHN *ni:ni? [female kin: address] > Tag ne:ne?, Akl, Ceb ni:ni? (term of address to girls), Ib ini? 'grandmother; (term of address for old women)', NJv nini 'grandmother'. (DZ)
- (P146) PAN *ŋusu? 'mouth' > Bik ŋu:su?, Sar ŋusuu 'mouth', Tag ŋu:so?, Sa ŋudru 'upper lip', Odg ŋu:su? 'jaw'. (DTZ) [Tsuchida 1976:130 *ŋuθuq]
- (P147) PMP *pa:ku? 'nail' > Bik pa:ku?, Tag pa:ko?, Ib paku?, Jv, Ml paku, Fj i/vako. (BDYZ)
- (P148) PMP *pa:lu? 'strike, hit' > Tag pa:lo? 'strike with hand or stick', Ceb pālu? 'hit or strike in punishment', Ib palu? 'hit, beat (with stick, etc.)', Ml palu 'hit hard with a rigid weapon', Tb, Jv palu 'strike', Fj valu, Sa i/pelu 'fight, make war (on)'. (BDNYZ)

- (P149) PAN *puki? 'vulva' > Ceb pu:ki?, Odg, Rom puki?, Tbl ki?, Sml puke?, Ib puki?, NJv, Ml puki 'vulva', Fj mata/vuki 'ulcer on the sole of the foot' = ('eye of the vagina'), Ami (dialect) puki? 'vulva'. (DNTYZ)
- (P150) PHF *sa:ra? 'filter; sift(er)' > Akl sa:ta?, Tag sa:la?, Bik, S-L sa:ra?, Ibg ta:ra, Pai sara. (Z) [For Pai s < *s, see siva 'g' < *siwaØ]
- (P151) PAN *səD₂u? 'hiccup' > Tbl s<ən>du?, Tir sədə? (A), Ib sədu?, Pai təzu, Fj ma/dedru 'hiccup', Ml sədu 'short broken respiration (of sob or hiccup)'. (BNSZ)
- (P152) PHF *Səsi? 'meat, content(s)' > Kal isi, (Itb a?si), Pai səti, (Ami həci?), Puy isi?, Aty hi?, Sed xəyi?, hi'i 'meat, flesh', Ib isi?, Ml, Jv isi 'contents', Kan ?a/isi 'exist'. (TZ)
- (P153) PMP *ta:bi? [greeting] > Akl, Ceb, Bik ta:bi? (polite particle) 'excuse me, please', Ib tabi?, Ml tabek (greeting), Tag ba:ti? (M) 'to greet', Fj tavi 'salute in welcome, give hospitality to'. (BZ)
- (P154) PHN *ta:ma? 'hit the mark' > Akl, Bik, Ceb, Han, Tag ta:ma?, Kal tama 'correct; hit the mark', Sbl ta:ma? 'correct', Ilk ta:ma 'suitable, timely', Ib tama? 'enter', NJv tòmò 'strike, reach mark'. (DYZ)
- (P155) PHF *təD₂a? 'leftover (food)' > Bik tăda?, Oas təra?, Gubat tŭda?, Pai təza, (Tag tŭra). (Z)
- (P156) PHN *təku? 'bend' > Mar təkò?, Ib təkù?. (BZ)
- (P157) PHN *tŭku? 'bend' > Akl, Hil tŭku?, Mar tiko?, Ib tiku?. (BZ)
- (P158) PMP *wăDa? [existential] > Kin, S-L wăra?, Tag wăla?, WBM waza?, Tbl la?, Ib n/aday, NJv óra 'none, there is not', Ilk ?addá, wăda, Ilt wada, OJv wwara, Ml ada, Md báDá(h) 'there is', Itb wara/wara 'belongings', Fj wara/i 'not be'. (ADNYZ)
- (P159) PHN *zəra? 'warned by experience' > Akl má/dla?, Hil dú/dla?, Kpm, Tag dăla?, Ilk d<ig>rá, Tbl mə/dəla?, hə/dəla?, Ib jəra?, Ml jəra 'warned by experience', Han da:la? 'fear', WMB dəla(?) - 'frighten away'. (BZ)

Intervocalic *-?- is reconstructed between unlike vowels in contrast with *-q- and *-Ø- on the basis of Ph, Ami, and Tkd evidence; hiatus or reduction appear in all other witnesses. Between like vowels the development of a glottal stop is natural and spontaneous (Dahl 1976:37), and hence may have been a phonetic rather than phonemic feature of the proto-language.

- (P160) PPH *ba?ug 'rotten (eggs); sterile' > Han ba:ug, Agy buug 'rotten', Tag bǎog, Han bǎug 'sterile', Bon ba:ug 'never married', Ilk ba:ug 'ruined (seeds)', Akl ba:ug (v), bǎug (adj) 'rot (of eggs)'. (Z)
- (P161) PHN *bə(n)ti?is 'calf (leg)' > Kal bisit (M), Tbl tih (aphesis), Msk bitis, Akl bati:is, Ceb bitis, Tsg bi?tis, PMN *beti?is, Ib, Ml bətis, OJv wətis, Md bəttès, NJv wəntés. (CDNSYZ)
- (P162) PPH *bija:u 'winnowing basket' > Akl bila:u, Tag bila:u, Ilk biga:u, Png bigǎu, (Itb bilaw), Kal biraw. (Z)
- (P163) PHF *Ca?as 'high/long' > Akl ta:as, Ceb, Tag tǎas, Tbl taha? (M) 'long, tall'; Ml, Ib atas 'over, above', Md attas 'above, on top', NJv atas 'clearly visible' (M); Puy ?a/Taš 'high, tall', ?i/Taš 'above', Kan ma/cáasə 'long'. (CNZ)
- (P164) PHF *da:an 'old (thing)' > Akl, Han, Il, Png, Sbl da:an, Mar, WBM, Kly da'an, Atta da:n, Isg da/da:n, Itb may/a'dan, Agy daan, Kl da/dan 'old (thing)', PMN *da'an 'old (rice)', Aty ra/ral, Kualan za:n 'old (not new)'. (BSTZ)
- (P165) PHN *Da:in 'to jerk (meat/fish)' > Tag da:in 'jerked fish', Kal daiŋ 'dried meat/fish', Ilk da'in 'salted fish dried in sun', Sd de?eŋ 'raw meat cut into slices, spiced, and then dried in the sun', OJv Deŋ,

- NJv DènDèn, DènDèn 'dried meat', Ml daen, (dahiŋ - with secondary h, counter to Sd, OJv, and Kal evidence) 'slicing into strips and drying in the sun'. (BNZ)
- (P166) PPH *ha:ʔun 'remove from fire' > Akl, Ceb ha:ʔun, Tag ʔa:hon (M), WBM haʔun, Ilk ʔa:ʔun, Kal aun. (Z)
- (P167) PHN *harŭʔan [mudfish] > Akl haʔŭʔan, (Ceb hálwan), Bik harŭʔan, Tbl ʔaluʔ, WBM ʔaruʔan, Ml (h)aruan. (Z)
- (P168) PHF *Həʔə 'yes' > Akl hu:ʔu, Kin hə:ʔə/d, Bik ʔu:hu (M), Han huʔ, Msk ʔəʔə, Tsg huʔu/n, NJv həʔə, hə/m 'yes', Pai ʔəʔə 'no' (sem. reversal). (Z)
- (P169) PAN *ka:ʔən 'eat' > Akl, Ceb, Han ka:ʔun, Tag ka:ʔin, Tbl kən, Abr, Btk kaʔən, WBM kaʔan (A), Bik kaʔon, Kal pa/ŋan, Itb k<um>an, Isg ka:n, Ilk ʔag/kǎʔan, mǎ/ŋan, Tkd m/aʔun, Ami k<əm>aʔən, PMN *kan, *ka:n, Ml ma/kan, Sd ha/kan, Ib ma/kay, Fj kan/a, kan/i, To, Fu ka/i. (ABDNSTYZ)
- (P170) PHN *kŭʔul [snail] > Akl kŭʔuʔ, Hil kuʔul, Ceb ku:ʔul, Sd kuʔul, Md kŏʔòl, OJv kŭl, NJv kól, (Tag kŭhol).²¹ (DNZ)
- (P171) PHN *laʔin 'other, different' > Akl ʔǎʔin, Ata, Iln, Mam laʔin, Kal lain, Bik, Ceb la:ʔin, Ib, Sd lain, Ml laen, NJv lèn, Md laèn. (DNZ)
- (P172) PHN *laʔun 'long; slow' > Akl ʔǎʔun, Tag ʔǎʔon, Kal luun 'old', Han la:ʔun 'big', Ib laun 'late', Sd laun, OJv a/lon, NJv a/lòn, Ml laon, Md laòn 'slow'. (DNYZ)
- (P173) PHN *lu:ʔək 'bay' > Ceb, Han lu:ʔuk, Ilk lŭʔək, lu:ʔuk (A), Moŋ luʔok, Kal lək, Ml tə/luk. (CZ)
- (P174) PHF *paʔən 'bait' > Akl, Ceb pǎʔun, Han pa:ʔun, Tag pa:ʔin, Kal paən, Itb aʔpan, Mar paʔan (A), Bon pa:pan, PMN *paʔan, Ib, Ml um/pan, Tb oppan, Tso to/pan/a, Kan paənə, RukMn pənə, Pai pan. (DSTYZ)
- (P175) PHN *paʔis 'roast in leaves' > Tag pa:ʔis, Mar, WBM paʔis, Ib pais 'roast in leaves', Ml pais 'spiced fish cooked in a banana leaf', Sd pais 'what has been roasted in hot ashes', NJv pès 'roasted'. (BNZ)
- (P176) PHN *piʔət 'narrow; crowded' > Akl, Bik pi:ʔut, Tag piʔit, Ceb, S-L piʔut, Ceb pi<g>ʔut, Kal piət 'narrow, crowded', Ml mə/miat (< piat) 'to nip and twist (as one tweaks a boy's ear)'. (BZ)
- (P177) PAN *Rabi:ʔih 'night, evening' > Akl gabi:ʔih, Ceb gabʔih-, gabhiʔ-, Tag gab(?)i, Ilk rabiʔi, Ami laviʔi, Aty gbi/an, Sed biy/an, Kal laBii 'night, evening', To efi/afi 'afternoon or early evening'. (DYTZ)
- (P178) PHF *Riʔək 'thresh' > Akl, Ceb, Han gi:ʔuk, Ceb giʔuk, Tag giʔik, Bik g<ŷn>ik, Tsg giʔik (A), WBM giʔək, Mar gik, (Ml (h)irek), Tir ʔerek, Ilk ʔŷrik, Png ʔŷlik, Kan, Sar <um>a/iriki, Tso m/irʔi, Ami mi/ʔrik, RukMg u/iki. (T-*iRik; Z) (metathesis to *ʔiRək is widespread)
- (P179) PPH *ta:ʔəb 'high tide' > Akl, Ceb, Han ta:ʔub, Tag ta:ʔeb, Btk taʔəb, Moŋ taʔab, Kpm, Ilk ʔǎtab (M), Png ʔǎtab 'high tide', Kal təəb 'sea'. (CZ)
- (P180) PSP *tŷʔəl > Ceb, Hil, S-L, Iri tŷʔil 'foot', Tbl tiʔol 'bone'. (CZ)
- (P181) PHF *tinəʔun 'weave' > Ami mi/tinuʔun, Tkd tinʔun, Aty, Sed t<əm>inun, Sar t<um>a/tinəənə, RudBd ua/tfnunu, Itb tinun/ən, Gad ma/sinun, Tb tonun, Ib, Ml tənun, Mlg ténuna. (NTY)

At least one form appears to have a cluster with *ʔ (i.e. no test or criterion language gives evidence for *q):

- (P182) PMP *bərʔat 'heavy' > Kal ləbat (M), Tbl bəlat, Akl, Ceb búgʔat, Tag bígat, bigʔát, Btk bəʔgat, WBM bəgat, Moŋ bogat, Kpm ba:yat, Sbl bíyat, Ibl bəlʔat, Png bəlat, Ib, Ml, Sd bərat, Tb borat, NgD behat, Md bərraʔ 'heavy', OJv mə/wwat 'become heavy', bwat 'very; weight', Lm biaʔ 'difficult; heavy', Pl xo/bräod, To, Fu, Sm ma/ma/fa 'heavy'. (CDNSYZ)

Tentatively *ʔ clusters may also be reconstructed on the following:

- (P183) PMP *buʔni 'ringworm (herpes)' > Akl, Ceb bunʔi, Han búnʔi, Bik buʔní, Itb vuʔni, Tag bu:ni, Isg bŭni, Ulawa, Motu huni. (BCDYZ)
- (P184) PMP *kaʔwit 'hook' > Big, Tag, Ilk ka:wit, Akl, Ceb káwʔit (M), Bj, Ib, Ml kait, Ml kaet, Ilk k<all>a:wit, Tb hait, NgD kawit, To kave. (DYZ)
- (P185) PHF *siʔbu 'urine' > Abr, Btk siʔbu, Pal si:bu, Kyp hiʔbu, Bon, Ilk ʔisbú (M), Gad ʔiʔbu, Ifg ʔihbú (M), Sai kã/hbuʔ, Tso sifu, Kan íivu. (TZ)
- (P186) PHF *tiʔNaw 'clear (water)' > Akl, Ceb tinʔaw (M), Tag ti:naw, Tha ma/tilaw 'clear (water)', Itb ma/tnaw 'clean'. (TZ)
- (P187) PHN *haʔnəy 'weave, set up warp' > Ceb hanʔay, Han hanʔay, Sd pi/haneʔ, NJv p/ani, Ml məŋ/ani 'to arrange the warp threads on a loom'; Tag ha:nay 'row, line', WBM hanʔəy 'to wind a rope or string in a figure eight around two posts'. (NZ)
- (P188) PHN *sabʔa [plantain] > Kal saBa, Akl, Ceb sáʔa, Bik saʔba (M), Tag, Ilk sába, Sbl ha:ʔa, Han sabʔá, Bj, NJv piŋ/saba. (CZ)
- (P189) PHN *buʔyʊŋ 'pot-bellied' > Tag bu:yon, Akl búyʔun (A/ŋ → y), Ilk buyʔuŋ, Ml buyuŋ. (BZ)
- (P190) PHN *tuʔmid 'heel' > Tondano, Matanai tuʔmir, Tonsea, Tombulu tuʔmid, Kl tumid, Uma Juman tumir, Ml, NgD tumit, Hv tumutra, (Ib tumbit). (BSZ)

There appear to be only three possibilities leading to the reconstruction of an initial *ʔ-. The first is evidence for the metathesis of an original intervocalic glottal to initial position (e.g. *ʔiRək (P178) or *ʔaCas (P163)). The second is evidence from bound forms with frozen prefixes, where the resulting intervocalic reflexes substantiate an initial glottal after the morpheme boundary (e.g. *si+ʔānuh (P112)):

- (P191) PHF *ʔamin '(use) all' > Akl, Kla, Ilk ʔa:min, Bon, Ifg ʔāmin, Bon ʔamʔin (Mʔ), Isg ʔammín, ma:min, Tkd muʔamín, Ami maʔmin. (Z)
- (P192) PAN *ʔənəm 'six' > Akl ʔa/nʔum, Tag ʔa:/nim, Itb a/ʔnəm, WBM hə/ʔənəm, Tkd ʔaʔa/ʔnum, Ami ʔənəm, Fj, To, Fu ono. (ACDNSTYZ)

The third possibility is the evidence of doubled monosyllables which cannot otherwise be established as having begun with *q-, e.g.

- (P193) PHN *[ʔ]ag[ʔ]ag 'sift; sieve' > Tag ʔagʔág = ʔágag 'sift(ed)', Ceb ʔ<a>agʔag 'to sift', Kl agag 'sieve (for rice)'. (BZ)

Reluctance to reconstruct this phoneme in initial position is based on the unavailability of morphophonemic evidence for its occurrence outside of the Philippines, note, for example, Sd ʔinum :: ŋ/inum 'drink'.

8. PROTO-AUSTRONESIAN *∅

PAN *∅ is reconstructed in final position on the basis of test languages such as Akl, Ceb, and Ib, and in intervocalic position on the basis of criterion languages. Bs dialects have a morphophonemic final -∅ which is realised in two ways before suffixes: (1) in some dialects (Akl, Hil, Odg) a final high vowel changes to the homorganic semivowel -w- or -y-, while the low vowel is lost and a glottal stop is inserted; (2) in other dialects (Ceb, S-L) a glottal stop is inserted with sporadic instances of final vowel loss. (Zorc 1977:206ff)

- (P194) PAN *qasa:wa \emptyset 'spouse' > Akl, Ceb ?asa:wa 'spouse', paŋ/asáw $\text{?}/un$ 'to marry', Kal katawa, Bik, Bon, Han, Ilk ?asa:wa , Fu ava/ a, Ami ?acawa? . (ACDTYZ)
- (P195) PAN *măCa \emptyset 'eye' > Akl, Bik, Ceb, Han, Ilk, Isg, Sbl măta, Pai maca, Puy maTa ? , Ami mata, Tkd mata ? , To, Ib mata 'eye', Akl, Ceb mat ? - 'wake (x) up', Tag (dial) mata: $\text{?}/an$ 'look around for'. (ADNYZ)
- (P196) PAN *su:su \emptyset 'breast' > Akl, Bon, Ceb, Han, Ilk su:su, To huhu, Pai tutu, Puy susu ? , Ami cucu, Bun susu ? , Sai hōhō ? 'breast', Akl pa/susw-, Ceb pa/sus ? - 'breast-feed (x)'. (ADSTYZ)
- (P197) PHN *Zu:Ru \emptyset 'corner, angle' Akl du:gu 'meet at right angles', ka/rúgw/an, Itb a/ruyw/an, Sbl du:yu, Mar rugu, OJv pa/dū, NJv pa/dō/n, Ml pən/juru, Sd juru ? 'corner, angle'. (DNSZ)
- (P198) PAN *bātu \emptyset 'stone' > Akl, Ceb bātu, Ib batu, Paz batu ? , Itb vatu, Fj vatu 'stone', Akl ka/ba/batw/an 'rocky area', Ceb bat ? / $\text{?}/un$ 'full of rocks'. (ADNSTYZ) [however, compare Tkd batuh, Akl, Ceb bātuh- 'to stone']
- (P199) PAN *ku:Cu \emptyset 'louse' > Ceb ku:tu, Itb, Lm, Ib, Ml, Ami, To kutu, Tha kú:θu ? , Paz, Sai kusu ? 'louse', Akl hi/ŋutw/i 'delouse'. (ADNSTYZ) [however, compare Tkd kutuh, Akl ku:tuh, kutu:h/un 'full of lice']

Where such morphophonemic evidence is not available, PAN *- \emptyset may be reconstructed where languages offer evidence for no other phoneme (e.g. P15):

- (P200) PAN *ăku \emptyset 'I' > Akl, Bik, Ceb, Han ?ăku , Bj, Ib, Jv, Ml aku, Ami k/aku, Bun đ/aku? , Aty s/ako, Sm a $\text{?}u$. (ABDSTYZ)
- (P201) PAN *bəli \emptyset 'buy' > Tag bīlih, bilh-, Tbl b<əm>lih, Tsg bi:h (all with regular intrusive -h- < * \emptyset), Sml bēli, Ib, Lm, Ml bēli, Sd bēli ? , Sa holi, Fj voli/a, Pai v<n>əli. (DNYZ)
- (P202) PAN *(k)āmi \emptyset > Akl, Ceb, Han kāmi, Bj, Ib, Ml kami, Tb hami, Ulawa ami, Ami k/ami, Bun đ/ami? , Aty s/ami. (ABDSYZ)

PAN *- \emptyset - is reconstructed where most AN languages reflect hiatus (with a possible non-phonemic off glide in some languages); although some Ph languages appear to give evidence of *-w- or *-y-, no such evidence is available from any other language group.

- (P203) PAN *i \emptyset a \emptyset 'he/she' > Ceb, Bik, Tag s/īya, Itb s/iya, Odg s/īda, Mam ?iza , Ib, Ml, Tb ia, Ml d/ia, Pl ŋ/i, Jv -e, Fj, To, Fu, Sm ia, Aty h/ia ? , Sai s/ia. (ABDYZ)
- (P204) PMP *nī \emptyset uR 'coconut' > Akl, Bik, Han, Ifg, Itg nīyug, Ilk, Png nyug, Bon ?inyúg (M), Itb niyuy, Ogd nīdug, Pl lius, Ib, Ml ñiur,¹³ OJv nyū, Ml nior, Md ñèyòr, ñèyòŋ, Tb niur, NgD ə/ñoh, Fj, Sa, To, Fj niu.
- (P205) PAN *lū \emptyset aq 'expel from mouth' > Tag, Bik luwa ? , Kal ulak (M), Ml luah 'expel from mouth', Ib kə/luah 'put out', To lua 'vomit', Pai pa/De/luag 'make sound of vomiting'. (ABSYZ)
- (P206) PAN *bu \emptyset aq 'fruit' > Ilk bwa, Blw, Isg būwa 'areca nut', Akl, Ceb bu:wa ? 'spongy growth inside coconut', Jv woh, Bj, Ib, Ml buah, To fua, Puy vuah 'fruit', Kan vuá $\text{?}ə$ 'orange', Pai vuaq [tuber]: (ADNSTY)

The reconstruction of PAN * \emptyset in intervocalic and final position needs no defence, and had indeed been assumed on forms that here have been reconstructed with * ? , *H, or (in a few instances) *S. In the absence of solid morphophonemic evidence for other phonemes (* ? - in particular), it is most prudent at our present state of knowledge to posit it initially as well, and this is done by stating etyma with initial vowels (e.g. P200, P203). Although it is proposed that * ? contrasted with * \emptyset (and *H and *q) in intervocalic and final position, it is possible that it did not occur in initial position or that it did, but

evidence for this may be forever lost to us. Such a contrast would be difficult to distinguish, and therefore I see no advantage in making an assumption that it was clearly *ʔáku over *∅áku, or in marking such ambiguity as *[∅ʔ]áku.

9. A NOTE ON THE PAN SEMICONSONANTS *w AND *y

Dyen (1953:9) recognised the fact that although he treated PMP *w and *y as consonants, "these may turn out to be simply non-syllabic *i and *u", but he generally left the question open, although "*y and *w are not reconstructed next to *i and *u respectively. To do this would indicate a prejudice for the distinctive nature of the semivowels for otherwise a writing such as *lawun would imply two occurrences of the phoneme *u." (1953:9) Dahl maintained: "In PAN there was no phonemic difference between *u and *w nor between *i and *y. They were in complementary distribution, *u and *i at syllable summits (syllabics), and *w and *y at syllable limits (non-syllabics)." (1976:17) The result yields a large number of (potential) trisyllabics, even though the majority of AN evidence indicates disyllabics. Often his reliance is on an inaccurate orthography rather than on a careful phonemic representation of data (e.g. Ibg "ualu" = [wǎlú] 'eight', Bagobo "uaig" = [wǎʔig], Tir "uajeg" = [wáyeg] 'water', Ilk "uaig" = [wá:ʔig] 'marsh', Kpm "uanan" = [wá:nan], Ibg "jiuanan" = [ziwǎnǎn] 'right(side)'). (Dahl 1976)

In his review of Dahl, Blust (1976b:223) offers some cogent arguments for the preservation of the character of PAN *w and *y as consonants, e.g. loss of final consonants in Amblau (*w and *y included) and the reduction of antepenultimate vowels to [ə] among Bornean languages. Li (1974) has also demonstrated that the reflexes for *y and *w are different from those of *i and *u, strikingly so in some languages.

- (P207) PAN *qa:yam 'domestic animal' > Md ajám 'chicken', Pl xaram 'animal', Bun xadam 'bird', Kan ʔalámə 'meat', Akl ʔa:yam 'dog'. (ACDNTYZ)
- (P208) PAN *ka:yuH 'tree, wood' > Md kaju(h), Fj ka(θ)u, Kan kaálu, Itb kayuh; Pl gar 'fire; wood'. [See P50; (ACDFNTYZ)]
- (P209) PMP *la:yaR 'sail' > Pl yars, Fj laθa, Odg ya:dag, Sur la:jag, Ml layar.
- (P210) PAN *wǎlu∅ 'eight' > Md bállu(h), Tkd vauʔ, Pai -Valu-, Ami, To valu.
- (P211) PHF *ka-wǎnaN 'right(hand)' > Pai kanavaʔ (M), Sai kaʔnal, Paz ʔanan, Ml kanan, Ho havanana, Kan anǎnə. (ADTY)
- (P212) PAN *ka-wiri 'left(hand)' > Pai kaviri, Sai kayiʔ, Paz ʔixiʔ, Tkd tana/vilih, Ml kiri, Fj ma/wī. (ADTY)

However, this does not preclude that the origin of some (irregular) w-reflexes is from *u. Reid (1979:18) has suggested an *[ʔ]u topic marker (Ami, Sed, Itb, Ivt ʔu). It is possible that such a marker has become frozen on certain lexical forms, producing otherwise irregular reflexes of *u-Saji(?) 'younger sibling', *u-a:su 'dog', *u-ǎNak 'child'; note that the Paz reflex of *w is ∅ (P211-212), yet it has wazuʔ 'dog', sua:ziʔ 'YS'; Tkd v < *w, yet ʔacuʔ 'dog'; Pai v < *w, yet aʔak 'child' (but vatu 'dog'); RukBd v < *w, yet agi 'YS'; Tha ∅ < *w, yet šašuwa:diʔ 'YS'. The role of grammar and morphophonemics in reconstructing PAN is not to be underestimated.²⁸

10. POSTSCRIPT

Part of the attraction of Dyen's monograph (1953:49) was the elimination of several of Dempwolff's doublets. Nevertheless, many doublets must be reconstructed which cannot be resolved. For example, there is evidence for both *SəRəC (P36) and *qəRəC (Ml hərat, Tbl kəlot, Kan ʔəracə), *hu:tək 'brain' (Bik hu:tuk, Itb hutək) and *qu:tək (To ʔuto), *lawaq 'spider' (Kal lawak, Puy warək) and *lawəʔ (Ib əmpəlawəʔ), *būkaʔ (P136) and *būkah (Ceb būkah-, bukh-, Hil būkah-).

Some of these may be resolved on the basis of grammatical derivations. Note, for example, Ib dua 'two', bə/duaʔ 'divide', sə/duay 'you-two'. It would appear attractive to adopt a hypothesis that *bātuØ (P198) was a noun stem, while *bātuH was a verb stem, since -h- appears as a morphophoneme in a number of genetically diverse SPh languages (Tag, Ceb, WBM, Tsg, Tbl); but this analysis fails on *ku:CuØ vs *ku:CuH (P199), where the exact opposite situation obtains in at least Akl. Blust (1970, 1979) and Zorc (1978:94) have each shown that phenomena such as accent shift and/or *-ʔ, *-H, *-ŋ, *-y served to mark vocatives, which accounts for discrepancies in the final consonants of many kin terms (e.g. *āmaH, *āmaʔ, *āmay, *āmaŋ, *a:maØ 'father'). Accent shift is also noted in commands (Zorc 1978:73) and, parallel to the grammar of vocatives, this may account for the presence of [-h] in the direct passive command form (Akl, Tkd -ah < PHF *-aH).

A greater understanding of the grammar of AN languages is needed in order to determine the role of grammar in sound changes. For example, I have noted that contentives that are otherwise vowel final in Kuyonon and Kalamian end in [-ʔ], but functors (pronouns, demonstratives, numerals, etc.) do not. In S-L and Tsg some functors have undergone the change *s > h, but no similar change is found on a single lexical item. Functors (and this would include kin terms used vocatively) appear to be subject to separate rules, perhaps due to their extremely high frequency, and thus it is not surprising to find *ʔ retained on kin terms in Ml or Jv (lost on other lexemes), or the retention of both *h and *ʔ in Jv həʔə 'yes' (P168).

The reconstruction of two laryngeals (PAN *ʔ and *H) is ineluctable, although much more information is needed on the phonemic and morphophonemic status of [ʔ] and [h] in various AN languages, particularly those of Formosa. I encourage and elicit the assistance and assessments of fellow Austronesianists in determining the nature and provenance of laryngeals in PAN.

Shortly after this paper was presented in Bali, Dahl's excellent study (1981) appeared. The reader will note that each of us has addressed certain similar problems (such as the unification of various *q's into one *q, the reconciliation of *S and *H, and the chronology of the shift of *S and *q > [h] in Malayo-Javanic). After several personal communications, Dahl and I have agreed to disagree on the following: one *S (Zorc) versus *S₁ and *S₂ (Dahl), one *H (Zorc) versus *H₁ and *H₂ (Dahl and Tsuchida), and the phonemic status of PAN *ʔ, *w, *y (Dahl is open to discussion, but not yet convinced). I shall address these problems further in my forthcoming monograph.

11. ABBREVIATIONS

A	Assimilation	Kyp	Kayapa Kallahan
Abr	Aborlan Tagbanwa	Lm	Lampung (Way Lima)
Agy	Agutaynen (Kal)	M	Metathesis
Akl	Aklanon (Bs)	Mam	Mamanwa
Ami	Amis	Mar	Maranao
AN	Austronesian	Mas	Masbateño
Ata	Ata Manobo	Md	Madurese
Aty	Atayal (Squiliq)	ML	Malay(sian)
Bik	Bikol (Naga)	Mlg	Malagasy
Bj	Bandjarese (Ml)	Moŋ	Mongondow
Bkd	Binukid Manobo	Mr	Murik
Blw	Balangaw	Msk	Mansaka
Bon	Bontok	NC	not cognate
Bs	Bisayan	NgD	Ngadju Dayak
Btk	Palawan Batak	NJv	New Javanese
Bun	Bunun (Isbukun)	Ntg	Northern Tagbanwa (Kal)
But	Butuanon (Bs)	Odg	Odionganon (Bs)
Cas	Casiguran Dumagat	OJv	Old Javanese; Kawi
Ceb	Cebuano (Bs)	Pai	Paiwan
Dbw	Dibabawon Manobo	Pal	Palawan
Fj	Fijian	PAN	Proto-Austronesian
Fm	Formosan	Paz	Pazeh
Fu	Futuna	PFM	Proto-Formosan
Gad	Gaddang	Ph	Philippine
Han	Hanunoo	PHF	Proto-Hesperonesian-Formosan
Hil	Hiligaynon (Bs)	PHN	Proto-Hesperonesian (West AN)
Ho	Hova = Malagasy	PIN	Proto-Indonesian
Ib	Iban = Sea Dayak	Pl	Palau
Ibg	Ibanag	PMJ	Proto-Malayo-Javanic
Ibl	Inibaloi	PMN	Proto-Minahasan
Ifg	Ifugao (Batad)	PMP	Proto-Malayo-Polynesian
Ilk	Ilokano	Png	Pangasinan
Iln	Ilianen Manobo	POC	Proto-Oceanic
Ilt	Ilongot (Kakiduge:n)	PPH	Proto-Philippine
In	Indonesian	PPN	Proto-Polynesian
Isg	Isneg	PSF	Proto-South Formosan
Itb	Itbayaten	PSP	Proto-Southern Philippine
Itg	Itneg (Binongan)	Puy	Puyuma
Ivt	Ivatan	Ruk	Rukai
Jv	Javanese	RukBd	Rukai (Budai dialect)
Kal	Kalamian	RukMg	Rukai (Maga dialect)
Kan	Kanakanabu	RukMn	Rukai (Mantauran dialect)
K-C	Kalamansig Manobo	RukTo	Rukai (Tona dialect)
Kin	Kinaray-a (Bs)	RukTn	Rukai (Tanan dialect)
Kl	Bario Kelabit	Sa	Sa'a
Kla	Kalinga	Sai	Saisiyat (Tungho dialect)
Klg	Kalagan	SaiT	Saisiyat (Taai dialect)
Kly	Keley'i' Kallahan	San	Sangir(ese)
Knk	Kankanay	Sar	Saaroa
Kor	Koronadal Bilaan	Sbl	Sambal (Botolan dialect)
Kpm	Kapampangan	Sd	Sundanese
Kuv	Kuvalan	Sed	Sediq
Kuy	Kuyonon	Sin	Sindangan Subanon

Sir	Siraya	Tbl	Tboli, Tagabili
Sk	Sanskrit	Tha	Thao
S-L	Samar-Leyte, Waray (Bs)	Tig	Tigwa Manobo
Sm	Samoan	Tir	Tiruray
Sml	Samal, Sinama	Tkd	Takituduh Bunun
Snl	Sangil	To	Tongan
Soc	Siocon Subanon	Tsg	Tausug
SPh	Southern Philippines	Tso	Tsou
Sur	Surigaonon (Bs)	UAN }	Ur-Austronesian
Tag	Tagalog	Ur }	[Ur=Ger. "Proto"]
Tb	Toba Batak	UJ	Uma Juman
		WBM	Western Bukidnon Manobo

NOTES

1. In 1971 while preparing the "Proto-Philippine finder list" for fieldwork, I accepted many instances of final Ph [-?] as loans or irregularities, but in the interest of being systematic, I marked reconstructions with an underlined zero (0). As my research was in progress, I noted an ever growing corpus of data that agreed in showing a final glottal stop. In 1976 while going through Scott's Iban dictionary, I found a number of agreements with Philippine languages. However, I felt that since Blust had been to Borneo and knew the languages well, his rejection of Scott's phonemics was well founded. By 1978, after continued research into Iban, I felt the agreements amongst Philippine -? and Bisayan -h :: Iban -? were too many and too convincing to be dismissed, especially since Ib and Bs appeared to reflect *-Ø faithfully as -Ø. I revamped all of my data, eliminating the symbol 'q' (except where it genuinely represented a post-velar stop in data or was warranted in reconstructions), re-writing the glottal stop as '?'; I then began to see the necessity for reconstructing *? as opposed to *q, and began drafting a monograph on AN laryngeals in September 1978. I wish to thank Blust, Dyen, Nothofer, Sneddon, Harvey, Tchekhoff, Li, Ferrell, and Wolff for their many helpful and positive comments at TICAL, and Charles, Dahl, and Tsuchida for their correspondence concerning this paper.

2. Murik (Blust 1974a) and Uma Juman (Blust 1977c) appear to have gone through a stage where all final *-Ø > -? (sometimes with -n doublets), but synchronically this is no longer the case, so there are vowel-final stems either from *-q or from monophthongalisation:

Mr, UJ alu? 'pestle' < PHN *qahluØ
 Mr awa?, awan 'spouse' < PAN *qasa:waØ
 Mr, UJ batu? 'stone' < PAN *bātu[ØH]
 Mr, UJ baya? 'crocodile' < PMP *buqa:yaØ
 Mr buṅa?, (UJ buṅa) 'flower' < PMP *bu:ṅah
 (Mr baa), UJ ara? 'ember' < PHF *ba:RaH
 Mr buku? < PHN *būkuh 'joint'

Mr baha, UJ basa 'wet' < PMP *bǎsəq
 Mr, UJ ue 'rattan' < PAN *qũøəy
 Mr, UJ laki? 'male' < PMP *la:kiø
 Mr, UJ asa 'whet' < PHF *Ha:saq
 Mr n/uta, UJ uta 'vomit' < PAN *u:taq

A similar phenomenon is observed for Bario Kelabit (Blust 1974d) which shows -h on all forms that came to end in earlier -ø:

Kl təb^huh 'sugarcane' < PAN *təbuS
 Kl mud^hih 'behind' < PMP *uDəhiø
 Kl pəd^huh 'gall' < PHF *qa(m)pəjuø
 Kl barəh 'ember' < PAN *ba:RaH
 Kl matəh 'eye' < PAN *məCaø
 Kl əb^ha? 'water' < PMP *bǎhaq 'flood'
 Kl bada? 'inform' < PHF *bajaq 'know'
 Kl əd^ho 'day' < PAN *qaljaw

3. This is so because one often hears a glottal stop in list intonation which disappears in inflection, e.g.

Kuy dugú? 'blood' :: d<in>uguán 'blood-pudding'
 Kal ?álaŋ 'buy' :: pa/alaŋ/ən 'make (someone) buy'
 Kal kasáwa? 'spouse' :: kasawá/na 'his wife'
 Itb pasu? 'roast' :: pasu/ən 'roast (it)!'
 Sd ?inum 'drink' :: ŋ/inum 'to drink'

A satisfactory analysis of such phenomena would yield a morphophoneme /ø/ which has a realisation of [ʔ] in specific environments. The glottal stop is not given on data cited from Philippine languages which exhibit this.

4. Challengga Anak Manjan (now Mrs Holt Thompson) from Rumah Tabor, Sungai Sera', Bintulu, Fourth Division, Sarawak. Iban is a fascinating language for the historical linguist in the following areas:

- (1) many instances of semantic reversal (see Blust 1980a),
- (2) -y < *-ŋ, *-n, *-h, *-ʔ, as in datay < *dätəŋ 'arrive', makay 'eat' < *ma/ka:ʔən, bukay 'other' < *bukən, panjay 'long' < *panjaŋ, jalay 'road' < *Za:lan, naday 'don't have' < *waDaʔ, umay 'farm' < *qũmaH, etc.
- (3) loss of *C- in functors (including words used vocatively), e.g. udah < *sudah 'already', agi? 'still' < *lagiʔ, ari 'from' < *dari, ukay 'none' < *bukən, apay 'father' < *bapaʔ, etc.
- (4) vowel length as the result of loss of laryngeals, e.g. ba:h 'flood' < *bǎhaq, ba:l 'fermented' < *bǎhal, bu:k 'hair' < *bũSək, da:n 'branch' < *daŋan, sa:n 'carry on shoulder' < *saŋan, ma:r 'expensive' < *məhal, etc.
- (5) final *-R > Ib -ʔ on a few items of basic vocabulary, e.g. iku? 'tail' < *i:kuR, ili? 'downstream' < *qi:liR, kapu? 'lime' < *k+apuR, ai? 'water' < *wa:hiR, təlu? 'egg' < *qi+təluR.
- (6) the retention of *q > h, *ʔ, *H, *S > ʔ in final position only, as taken up in this study.

5. An illustration of criterion, test, and witness language evidence is in order. PAN *Cəbuŋ 'spring (of water)' is reconstructed from Akl tubúr/an, Kal tu/tubd/an, Buhi tubúr/an, Ivt a/tbur/an, Paz subud, Pai si/cəvud, Sai ka/sbəz, Fj tuvu, To tufu 'spring', Ilk ag/tűbbóg 'to discharge (water)'. Pai is a test language for *C, *ə, *u, *j in that there is a one-to-one correspondence from each Pai phoneme to a PAN phoneme; Pai is a criterion

language for *b because Pai v < *b or *w. Akl and Ilk serve as test languages for the short penult vowel (with gemination being the manifestation in Ilk, even though *ə has assimilated to the following *u). Paz serves as a criterion language for *C (Paz s < *C, *S) along with Kal, Akl, Buhi, Ivt, Ilk (t < *t, *C, *T); while Sai is a test language for *C (s < *C; *S only if there is a *C in the same form). Fj and To here serve as witness languages and attest to the antiquity of the form, the *ə has assimilated to the following *u. Ilk is also a criterion language for *j (g < *g, *R, *j). Hence, each language contributes something to the reconstruction, and, further, *each phoneme of each language has a different status*. If we did not have the Pai cognate, PAN *Cǔbuj could have been reconstructed (although the addition of Mota tov would have salvaged the *ə), or an ambiguity would have to be indicated, as a PAN *C[ǔǎ]buj (syncope in Ivt and Sai is generally but not always due to the loss of *ə). If we did not have the Oceanic evidence, the reconstruction should be labelled PHF.

6. Tsuchida (1976) was more conservative and labelled such reconstructions as PHN. Dahl (1976) used similar labels, but more to indicate the author of a reconstruction rather than its time depth (UAN = Dempwolff, PMP = Dyen, PAN = Dahl).
7. Dahl (1976:124ff) and Blust (1977b; 1980b) each posit Fm as the highest order AN subgroup from which PMP split. Dyen (1965b:56) did not rule out the possibility of a Formosan homeland. PHN is clearly one subgroup under PMP, but it is not clear whether there are two further offshoots (Central and Eastern) or only one. Tsuchida does not take a firm stand (note 6) because Fm languages generally share a large inventory of forms with Western languages (many of which may be innovations), and only a very small number with Oceanic.
8. I owe a special vote of thanks to Ed Ruch (SIL, Philippines) for sending me all Ntg (Kal) lexical entries he had gathered to date with a [k]. Data on Kal (proper) and Agy were gathered by myself in the field in 1971-72.
9. Note Kal atəl < *kətəl 'itch', ilala < *kila:laØ 'know (person)', ulit < *ku:liC 'skin', ian < *Si+ka:ʔən 'fish', bitua < *biCu:ka 'intestines', siit < *săkit 'sick; pain(ful)', manu < *mănuk 'chicken', bua < búSək 'hair'. However, it appears that Kal retains *k between like vowels and in double monosyllables: Kal takaw < *ta:kaw 'steal', taka < PSP *tăkaØ 'fed up with', kaliŋkiŋ < *k<al>iŋkiŋ 'little finger', kamkam < *kamkam 'get hold of', kəmkəm < *kəmkəm 'hold in fist', kiskis < *kiskis 'scrape off', kuskus < *kuskus 'scrub'. Clearly identifiable loans include: Kal kural 'fence' < Sp corral, tambək 'fat' < Bs tambək, kada 'each' < Sp cada, kalag < CPh kălag 'soul, spirit', kanugun 'too bad' < Bs kanu:gun, etc.
10. Oceanic evidence appears to reflect a doublet (*Răbuk) rather than refute the reconstruction of *qăbuk.
11. Abbreviations refer to the work of the following authors: Z = Zorc

A = Dahl	D = Dempwolff	S = Sneddon
B = Blust	F = Ferrell	T = Tsuchida
C = Charles	N = Nothofer	Y = Dyen

Although such credits are given to the research and data of these authors, I must assume full responsibility for their present shape and meaning. In many instances I have modified the reconstruction of an author quite drastically in the light of evidence for laryngeals, accent (see Zorc 1978), or other phonemes. Numbers preceded by a P- refer to data sets in this paper.

12. Nothofer reconstructs PMJ *qañu| (i.e. *ʔañuj) based on Md añoʔ (1975:103) and dismisses OJv h<in>añut 'was let afloat', NJv añot, NgD hañut 'float' as loans from Ml (1975:217, fn.82). Tsuchida reconstructs *q₂añu[zZ] (1976:167, 200, fn.109), producing the first instance of a final *-Z. The evidence for *qañuj would be based on Md alone, since NPH languages (which normally reflect *j > g) have d (Bon ʔa:nud, Cas ʔanod, Png ʔånur), and together with Pai qaʔuʔ point to PAN *qa:ñud. It is probable that Md añoʔ is an early loan with the regular development of -t > -ʔ. (Although possibly a typographical error, Nothofer ignores initial Ml (h) and reconstructs *ʔ-.)
13. I do not generally reconstruct *ñ next to *i unless there is strong evidence for doing so. Forms affected include: *niʔa instead of *ña, *qa:niC (not *qa:ñiC), *(Ra)Sina:waʔ (not *ñawa nor *ñiSa:waʔ), *nʔuR (not *ñiʔuR), *ŋʔluh (not *ñʔluh).
14. WBM does not normally reflect syncope (WBM gəhinawa < *(Ra)Sina:waʔ 'breathe', lisəhaʔ < *lisəSəq 'nit', həgəzan < *haRəZan 'staircase', ʔəpəzu < *qa(m)pəjuʔ 'gall, bile', pəmənahik < *panahik 'go up') so that some forms are either irregular (perhaps because they involve laryngeals) or reflect genuine consonant clusters in PPH (if not in PHN and PAN: PAN *bāR(ə)qəŋ 'molar' > WBM baqəŋ, PAN *Cuq(ə)laN 'condylar bone' (B) > WBM tulan, etc.
15. Li (1978:141) made this observation for Sai; the only case observed for Thao is šáqiš 'sew' < *CaSiq, but observe also the assimilation in Thao *šá:qiš 'face' < *daqis (Ferrell 1976).
16. For the reconstruction of PBS see Zorc 1977. For purposes of this comparison, all evidence from Bs is taken as a single witness following a similar procedure adopted by Dyen (1953:6f) where he took all Tagalic evidence as one witness. However, Bs evidence is clear and more cogent than Tag.
17. Itbayaten reflects both *S and *H quite faithfully in initial, intervocalic, cluster, and final position, although several instances of h-loss have occurred. This is attributed to influence from Ivt (or other surrounding) h-losing dialects, where Bs, Ib, and Tkd reflect *H or *S (e.g. P69) the reconstruction is considered substantially weak, which is why I am hesitant to accept Tsuchida's *bātuH or *ku:CuH.
18. Western Bukidnon Manobo is generally an excellent witness, except in antepenultimate syllables (ʔəvəgat < *Haba:Rat) or in clusters (ʔandu < *qaS(ə)lu(H)). Data so far assembled appear to indicate a contrast, at least after final a, between *-ʔ (with intrusive -ʔ-) and *-h:

ʔuma 'arrive' :: nə/ʔumah/an 'was met'
 bava 'carry' :: bəvah/a 'carry (it)!'
 dəpa 'fathom' :: dəpah/an 'fathom (it)!'
 duma 'accompany' :: dumah/a 'go with (him)!'
 ʔəsawa 'spouse' :: ʔəsəwaʔ/an 'marry'
 duwa 'two' :: nə/zuwaʔ/an 'two days ago'
 kilala 'know' :: kilələʔ/a 'recognised'
 kuwa 'get' :: kuwaʔ/a 'get (it)!'
 ʔupiya 'good' :: ʔupiyaʔ/an 'find (it) good'
 huna 'precede' :: hunaʔ/an 'go ahead of'
 pəmula 'plant' :: pəmulaʔ/an 'planted (in)'

The data are from Elkins (personal communication, 7 May 1980) and are unfortunately not indicated in his dictionary or grammatical sketches.

19. Blust (1974c:138; 154, fn.31) maintained that Han lost *h between unlike vowels, but retained it between like vowels. Rather, Han shows sporadic loss of PPH *h in virtually every environment, and rather fits the theory of lexical diffusion. The 'motivation' for this loss is the surrounding *h-losing languages (Semirara, Kuyonon, Datagnon, and Buid). Note: Han bāha? 'flood', but bā?ag 'loincloth', bāhug 'mix with' but da:wun 'leaf', būhuk 'hair' but ?agu:?u Casuarina, ?u:hay 'rice panicle' but dūwa 'two' or ?ūwaw 'thirst', ?aba:gat 'SW monsoon', ?ami:han 'NE wind', ?i:hi? 'urine', ?i:hu 'shark', etc. Thus, the presence of [h] in Han serves as evidence for either *S or *H, but the absence of [h] does not serve as counter-evidence. Note Han binhí? 'seed', bakhaw [tree], ginha:wa?.
20. Tausug generally reflects PAN *S and *H faithfully except in final position where *-Ø, *-H, and *-S merge in Tsg -h. Tsg is one of the few non-Fm languages that reflects *Si- 'instrumental passive' as hi- (rather than ?i-), and although *S is lost in Tsg duwa 'two', it is retained in ka/wha?/an 'twenty' (with regular loss of *D).
21. Tag is perhaps the poorest witness for PPH *h and PAN *S, *H because of numerous secondary developments and loans. Like Tsg, Tag has merged *-Ø, *-H, and *-S, so that all but a handful of vowel-final forms are inflected with -h- before suffixes. Further, PAN *l has shifted to Tag [h] on some forms, e.g. ba:hay < *bālay 'house', sa:hiŋ 'resin' < *sa:ləŋ, sāhig 'floor' < *saləR, sa:hod 'catch drippings' < *sa:lud, bu:ho? [thin bamboo] < *bu:lug, bi:his 'change' < *bēləs, si:haŋ 'chin' < *sələŋ, ?u:hod 'worm' < *qu:ləj, etc. It is posited that this development was through a shift *l > Ø, with -h- insertion on analogy with morphophonemic final -h (Dyen 1973). A similar development is posited for Tag kūhol 'snail' < *kū?ul 'snail' < (P170).
22. See Table 2 for Formosan data leading to this reconstruction.
23. A PAN *u topic marker is posited as frozen on this and other forms with otherwise irregular evidence for *w (see end of section 9). Blust (1979:233) reconstructs *Sua(n)ji and Dahl (1976:80) *[qu]a(ŋ)ji. Whereas Formosan languages appear to have metathesised *S to final position on some forms (*būSək > Fm *bukəS 'hair', *CāSiq > Fm *Caqis 'sew', *tāSəp > Fm *tapəS 'winnow', *lisəSəq > Fm *lisəqəS 'nit'), they possibly metathesised an original *u+Saji? 'outwards' into initial position, yielding Fm *Suaji. This hypothesis accounts for the subsequent appearance of forms like PHN *hāji? (from the proposed *Saji(?)) and PHN *waji? (from *u+Saji(?) with *S loss).
24. Charles (1974:490ff) and Dahl (1976:125, 130) have each noted difficulties with Blust's vowel deletion hypothesis whereby a proposed PAN *S came to stand in a cluster with some consonant, yielding reflexes such as implosive stops (Bintulu), aspirated voiced stops (Kelabit), or s (Kiput). Dahl shows that only *buSək and *təbuS (but not *təbuSu) conform with Formosan evidence, but eight reconstructions (*qa(m)pəjuØ, *bəjbəj, *dəkək, *lūdaq, *ba:baw, *buRuk, *qa(l)jaw, *D₂əmD₂əm) "are without traces of PAN *S". Three forms can only be justified with *h (not *S) on available evidence: PMP *bāhaq 'flood', PMP ūDəhiØ 'late, behind', and PHN *bāhaR 'loincloth'; one must be reconstructed with *q (PHN *dəqən 'press' > Tag dī?in, S-L, Bik dū?un, Tbl dəkən, Kl də/dhən); and one should probably be reconstructed with *q (PHN *Dəqak 'spit' > PMJ *Dəhak, see section 6 herein). Most cases of these strengthened grade reflexes occur after *ə, and all occur after a historically reconstructable short penult vowel (*qijun, *bīlaq, *lūdaq). Such

short vowels led to *sporadic* gemination in Madurese (Zorc 1978:97f), and probably to such disparate reflexes in the North-Sarawak languages. Although considerable support for the hypothesis was gained by apparent *S loss in *five forms* [**buSuk* (which is from **bũSək* with assimilation of *ə → *u), **bǎhaq* (no justification for *S), **dahək* (which may have been **Dəqak*, and which has no justification for *S), **bǎhaR* (no justification for *S), **ũDǎhi* (no justification for *S) (Blust 1974), surely the Fm counterevidence on *eight forms*, and the need to reconstruct *q or only *h in several other instances does not make the hypothesis compelling. The appearance of doublets in Sarangani Manobo, *baha?* and *ba?ba?* 'mouth' need not be evidence for *S (or even *h) since (a) SarMb is basically an *h-losing language, (b) *ba?ba?* is the regular Manobo development from **baqbaq*, and (c) *baha?* may be an early loan from Bilic languages where the -h- is a reflex of *b, i.e. **baqbaq* > Bilic **baba?* > **baha?* > SarBlāan *ba?* 'mouth'.

25. Nothofer (1975:166-168) relates PMJ phonemes to PAN as follows:

PMJ *h- < PAN *h-, *q-, *S₄-
 PMJ *-h- < PAN *-q-, *-Q₁-
 PMJ *-h < PAN *-h, *-q, *-Q₂

The only instance of final *-h is Dyen's **rapuh* (PMJ **rapuh*) 'brittle' which should be PMP **Rǎpuq* (P08). Looking at these correspondences from 'the top down' we get (according to Nothofer's reflexes with **rapuh* corrected):

PAN *h, *S > PMJ *h- -∅- -?
 PAN *q, *Q > PMJ *h- -h- -h
 PAN *?, *x > PMJ *?- -∅- -?

It is clear that only PAN, PHN *q is retained systematically, and PAN *H and *S > PHN *h has been subject to some diverse changes as explained herein (section 6). The status of PMJ *? on the basis of Sd ? is also open to question, but may be maintained on the evidence of Md, Ml, Jv, Lm, and Ib. Nothofer (1975:24) mentions that "in West Madurese final h occurs in contrast with final vowel, but only before pause. In the citation of Md material this contrast is indicated by writing a final h in parentheses, e.g. *buđi(h)* 'back'". Historically this appears to be a prosodic feature, much like the development of final Sd -?. Forms reconstructed with *-∅ have this -h: Md *mata(h)* < PAN **mǎCa∅* 'eye'. Therefore no direct evidence for PMJ, PIN, or PHN *-h is given by West Md.

26. Dyen posited the retention of PMP *-h- only between like vowels (1953:12), citing Ml *dahak* 'phlegm' (M of **Dəqak*) and *tahan* 'restrain, endure' (**tǎqən*). He took Ml *bah* 'flood' (< **bǎhaq*) as an exception. He recognised the total loss of PMP *-h (17f), and the sporadic loss of PMP *h- in some Ml cognates (32f). Unfortunately, many of the Tag forms cited with h- can be shown to be loans from Ml, and the correct reconstruction is with *q (Tag *hala:man* < **qala:mən*, Tag *hi:la* < **qila*, Tag *hi:lis* < **qiris*, *hali:maw* < **qa+Rim?aw*, Tag *hǎrap* < **qaDəp*, *ha:tol* < **qatu[Rr]*, etc.).
27. Blust (1978:26f) posits the development of PHN **haba:Rat* > Ml *barat* as regular, in that *a₃ > ə and *h (< *q or *S/*H) was lost if it did not precede a prenasalised stop (thus Ml *təlur* < **qiCəluR* 'egg', but Ml (h)əmpədu < **qa(m)pəju∅* 'gall, gall-bladder'). This change (loss of *ha₃-) preceded the change *-aba- > Ml -awa-. I agree with Blust in this observation, but I have noted that **qa₃-* was not always lost; despite **qanibuŋ* > Ml *niboŋ* *Oncosperma*, there is Ml *halipan* < **qaluHi:pan* (P89), Ml *halia* < pre-Ml

*qaluya < *lǎquya 'ginger', Ml halaman < *qala:mən 'lawn, grass, weeds', Ml hanau < *qana:haw 'sugar palm', Ml (h)aru < *qaRu:hu? (P130). It would thus appear that Ml generally tended to retain h < *q, but not h < *S/*H.

28. Note further that Ami (which has a productive ?u marker) has forms such as wáma 'father', wina 'mother', wikul 'tail', along with wacu 'dog'. To date no PAN *w- has been proposed on the reconstructions *ama, *ina, or *i:kuR, and need not be if these forms derive from *u+ama, *u+ina, *u+i:kuR. James Collins' fine paper at TICAL (Prothesis in the languages of Central Maluku: an argument from PAN grammar, see pp.187-200 in this volume) surveys precisely this kind of area. Therein he proposes that PAN *si and *u markers (and possibly an *i marker as well) have led to otherwise irregular reflexes in the languages he studies. The fact that we cannot yet precisely ascertain the function and meaning of these markers does not obviate the need for reconstructing them, as substantial and widespread evidence indicates the existence of such markers in genetically diverse Austronesian languages today. Nor is the appeal to such morphophonemic or grammatical evidence *ad hoc* — at least no more *ad hoc* than the reconstruction of a new PAN phoneme (*W). In each case scholars are attributing an anomaly observed amongst daughter languages to a system of the proto-language, either its phonology or its grammar.

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