The Austronesian monosyllabic root, radical or phonestheme

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This paper represents a report on and reaction to Blust's "Beyond the morpheme: Austronesian root theory and related matters" (1988 — a more comprehensive update is in press with Benjamins). It also touches on other subjects brought up for discussion at the Stanford Symposium. However, it is clear that issues relating to phonesthemes are of interest to scholars working on all major language families. This article is therefore timely, albeit premature insofar as certain problems remain or cannot be treated adequately herein.

1. Types of evidence and the validity of reconstructions

In the establishment of etyma, it is crucial that the kinds of linguistic evidence that are brought to bear on the process of reconstruction be considered and weighed. In two previous articles (Zorc 1982, 1984), I have reiterated Dempwolff's two classic distinctions and introduced a third. Firstly, there is test evidence — where one synchronic phoneme descends from one (and only one) historically posited phoneme. (A list of abbreviations is in Appendix I.).

Pai *ts* < PAN *$*C*$
Ami *s* < PAN *$*S*$
Ilk *ə* < PAN *$*ə*$

Secondly, there is criterion evidence — where one synchronic phoneme descends from two (or more) proto phonemes, and is therefore the result of a merger. However, with the evidence of additional languages, the comparativist can "triangulate" on the most probable correspondence set, e. g.:

WBM *z*   < PPH *-d-*   or *-j-*
Knk *g*   < PPH *j*   or *g*

Therefore, WBM *ngazan* and Knk ngágan 'name' < PPH *nga:jan.*

Thirdly, there is witness evidence which is useful in establishing the antiquity of an etymology, but not its phonemic shape. I propose that whenever a synchronic phoneme relates to four or more proto phonemes, this be considered witness evidence, e. g.:

Akl -*E*-	< PAN *-D-*	*uEáŋ* < PHN *quDáŋ*	'crustacean'
	< PAN *-d-*	*huEám* < PAN *Sədám*	'borrow'
	< PAN *-j-*	*páEay* < PAN *pa:jay*	'rice plant'
	< PAN *-l-*	*úEuh* < PAN *qu:luH*	'head'
	< PAN *-Z-*	*uEán* < PAN *quZáN*	'rain'
	< PAN *-z-*	*taEúm* < PAN *Cazəm*	'sharp'
Tag *h*	< PAN *S*	*káhoy* < PAN *ka:Siw*	'tree'
	< PAN *H*	*alupíhan* < PAN *qaluHi:pan*	'centipede'
	< PAN *-l-*	*báhay* 'house' < PMP *baláy*	'building'
	< PAN *-∅*	*asawáh-in* 'be married' < PAN *qasa:wa*	
Ib -*ʔ*	< PAN *-ʔ*	*pukiʔ* < PAN *pukiʔ*	'vulva'
	< PAN *-H*	*baraʔ* < PAN *ba:RaH*	'live coals'
	< PAN *-S*	*kayuʔ* < PAN *ka:Siw*, PHN *ka:yuh* 'tree'	
	< PAN *-R*	*ikuʔ* < PAN *i:kuR*	'tail'

There is also negative evidence, which is sociolinguistic in nature, i. e., leading to a false cognate because the form is borrowed: Tag *taŋháliʔ* 'noon' — etymologically *təŋáq* + *qaRi, but a loan from Malay *təngah hari.* Note that historical records indicate that a Brunei Malay community had been established at Tondo-Manila when the Spanish arrived. Besides the above, careful study has revealed that a language offers legitimate secondary evidence when phonemes do not manifest their regular reflexes. Usually, some irregular changes or dialect developments occurred within the history of the language itself. These are exemplified by the sporadic Tagalog reflexes of *h* and *∅* alongside more regular *l* from PAN *l*; the apparent splitting of PAN *R* into Ilokano *g* and *r*; assimilation of *ə* to *u* or *i* in some Bisayan dialects; etc.

As an illustration, in positing PHF *Su:lij* 'sleep together', I consider that Pai *sulid* offers test evidence for each phoneme (except vowel length), whereas Akl, S-L *húlid*, WBM, Tsg *hulid*, Abr *ʔulid* offer the following kinds of evidence:

h	Akl, S-L, WBM, Tsg	*criterion* (< PAN *S* or *H*)
ʔ	Abr	*witness* (< PAN *S-*, *H-*, *q-*, *∅-* or *ʔ*)
ú:	Akl, S-L	*test* (for vowel length; but see below)
u	Akl, S-L, Tsg	*criterion* (< PAN *u* or *ə*)
u	WBM, Abr	*test*
l	Akl, Tsg	*witness* (< PAN *l*, *-d-*, *-D-*, *-j-*, *-r-*, *-Z-*, PMP *-z-* in environment with PAN *i*)
l	S-L, WBM, Abr	*test* (< PAN *l*)
i	Akl, S-L, Tsg	*criterion* (< PAN *i*, but also *ə*/*i*)
i	WBM	*test*
d	Akl, S-L, WBM, Tsg	*criterion* (< PAN *-d*, *-D*, *-j*)

Note that each language contributes something to the reconstruction, but each phoneme within the word of each language can have a different status.

2. Kinds of reconstructions

Doublets are reconstructions that are formally and semantically similar. In the course of comparative research, many can be unified:

dalan & *zalan* 'road' (but unified as *ZalaN*)
udan & *huzan* 'rain' (but unified as *quZaN*)
tuwa & *tuha* 'old' (but unified as *tuqaS*)
tuDuR & *tiDuR* 'sleep'
baNaw & *baNaR* Smilax

Disjuncts are reconstructions that have an overlap of cognate sets (see Blust 1970: 112—113 and 1980: 25 ff., who introduced this term):

gumi or *kumis* > Fj *kumi* 'beard'
hakəs or *hakus* > Han *hákus* 'hug, embrace'

reñay or *rinay* 'aftermath of a storm' > Tag *lináy* 'cessation of wind after a storm'
wawaw or *babaw* > Mar *oaoao* 'to weed'

Synonyms are reconstructions that occupy the same "semantic space", e. g.:

beRŋi & *Rabi?iH* 'night'.

'Monosyllabic roots' are here taken to be equivalent to phonesthemes (e. g., *buk* 'pound', *suk* 'enter'), not functors (e. g., *si* 'name marker', *ni* 'agentive, possessive', *na* 'ligature, apposition', etc.). Dyen (personal communication) suggested that these be called 'radicals' since the term 'root' is so well established with the normal results of the application of the comparative method, and might lead to confusion. However, if used consistently in a phrase, such as 'monosyllabic root', 'root candidate' (etc.), the meaning should be clear and ambiguity avoided.

The isolation procedures of 'root candidate(s)' must be stated explicitly and followed rigorously; otherwise 'methodological chaos' is probable.

Blust (in press) outlines the following methodology:

1. No terminal -CVC sequence will be accepted as a root unless corresponding sequences of closely similar meaning are attested in at least four etymologically independent morphemes. Either
   a) the root candidate must occur in at least one morpheme that is reconstructed at a high level (Proto-Austronesian, Proto-Malayo-Polynesian, or Proto-Hesperonesian), and at the same time in three or more etymologically independent morphemes, even if the latter are confined to a single language or close-knit subgroup, or
   b) the root candidate must show a distribution over subgroups comparable to that in reconstructed words under condition (a), but need not appear in any reconstructed morpheme. By contrast, a root candidate that is confined to a single language or close-knit subgroup in all its occurrences is not considered further.
2. All relevant sound changes in the languages from which material is cited will be taken into account, i. e., strict controls on the sound correspondences, including morphophonemic and/or allophonic variation, must be observed in all cases.

3. Cognate morphemes will be treated as a single witness.
4. Root variation will be recognized only where there is unequivocal evidence of patterning.
5. The recognition of formatives will be subject to the same methodological controls as the recognition of roots.

Thus, under condition (1 a) Blust derives:

*bək 'dust of decaying wood' (1) PMP **bək+bək* > WBM *bəkbək* 'pulverized by pounding or stepping on', OJv *bəbək* 'grind, pulverize', To *popo* '(of wood) rotten, decaying'; (2) Knk *gəbók* 'rotten, with rotten haulm, stalk, culm'; (3) Itb *kugbək* 'dust'; (4) Knk *talbók* 'beaten, etc. to pieces, pulverized'.

And following condition (1 b):

*kas 'begin' (1) Bal *aŋkas* 'be always just about to do something, be always prevented from doing what one intends'; (2) Mar *bəkas* 'introduction, preface; begin an activity'; (3) Mar *gəkas* 'begin; opening remark, preface'; (4) Bal *ləkas* 'begin, be going to do; beginning'; (5) Mad *poŋkas* 'beginning').

Along similar lines, Dyen and Zorc (in a personal conversation in 1974) outlined the following criteria for establishing a monosyllabic root:

1. Find a doubled monosyllable and a form with an established affix, e. g., **puk+puk* 'beat, pound', **ka-púk* 'beaten fibres'.
2. Look for ineluctible parallelism of meaning, e. g., **suk+suk* 'put in or on', **pa-suk*, **ma-suk* 'enter'.
3. Identify partial reduplications: **CV+CVC* — **su+suk* 'prick, pierce'.
4. Identify any instances of resyllabification, i. e., **CVC+VC* > **CV.CVC*, especially if **CVC + -VC* (suffix). Although this has not been found to be as productive as final CVC types, note the following possible interpretations: **taŋan* 'hand' = **taŋ* 'grasp' + **-an*, **paRaw* 'hoarse' = **paR* 'id.' + **-aw*, **bakíʔ* 'frog' = **bak* 'pounding noise' + **-iʔ*.
5. Identify any binding of bases (i. e., compounds), e. g., *rak+suk* 'put on', **ruk+sak* 'destroy'.

6. Establish splitting of bases with an epenthetic laryngeal (i. e., *CVC > *CV?VC) or *CVhVC, e. g., *su?uk 'enter' (*suk), *pi?ǝt 'narrow' (*pit) or a semivowel, e. g., PHN *yak > *iyak 'cry' or PPH *siw 'chick' > *siyu? (cf.: PPH *siw+siw).

3. Reduction vs. expansion hypotheses (see Blust 1976: 110 ff.)

In its extreme, a reduction hypothesis propose that all Proto-Austronesian roots were disyllables (following the Austronesian norm) which reduced:

*bu?uŋ+bu?uŋ	— *bu+buŋ	'ridge of roof'
*pi?et+pi?et	— *pit+pit	'cramped, pinched'
*su?uk+su?uk	— *pa+suk	'enter'
*tahan+tahan	— *tan+tan	'cessation, desisting'

Whereas an expansion hypothesis in its extreme proposes that all roots were monosyllables, some of which were expanded by insertion of a laryngeal, by reduplication, or by some other means:

*bu > *bu+bu or *bu?u 'fish trap' (Cf. Mar bo?o, WBM bu?u)

*buŋ > *bu+buŋ or *bu?uŋ 'ridgepole' (Cf. Mar bo?oŋ, bo?oŋ-an)

*pit > *pi?et 'narrow' (Cf. Tag pi?ít 'cornered, surrounded', Ceb pi?út, pig?ut 'narrow, not affording enough space', Kal piǝt 'narrow', Mar pi?ot 'diminish in size; too tight')

*suk > *su?uk 'enter' (Cf. WBM su?uk 'enter the mouth of a river; possess a person (said of evil spirit)')

*suŋ > *suŋ+suŋ or *su?uŋ 'go against' (Cf. Tag su?óŋ 'daring to go against the odds')

*tup > *tu?up 'cover' (Tag tu?óp 'with hand extended to cover').

Determining the status of roots with a medial laryngeal is also a complex problem (Blust 1988: 30). Based on various evidence, both an expansion and a reduction hypothesis can be maintained; this is in keeping with the general assumption amongst most scholars that these were monosyllabic roots. In at least some instances the Philippine evidence supports a hypothesis that a monosyllabic root was

compounded with a form ending in a laryngeal. Ceb *dipʔit* 'put something with some height close to something else so that it is touching or nearly touching', Ceb *lipʔit* 'put in between two flat surfaces' are probably formed from the root **pit* and additional elements **diʔ* or **liʔ*; the glottal stop can only occur after a consonant and would have metathesized. Furthermore, since many Philippine languages show syncope of **ə*, an hypothesis of shwa loss may appear attractive, although this need not be the explanation in or for each instance. Thus, Ceb *pigʔut* 'narrow' is from **piʔət* with a pluralizing *-g*-infix, not from ***pigəʔut* or ***piʔəgut*. Similarly, Knk *gabʔún* 'fill up (with earth, etc.), to earth up, to cover' is more likely to be from **gaʔ* + **bun* (with later metathesis of the glottal cluster) than from a ***ga+bəʔun*.

Simple monosyllabic roots or word bases posited by the abovementioned criteria can be found in Appendix II. They are proposed (or assumed by some scholars) to exist in the following reconstructions.

Type A: Full reduplication, i. e., CVC+CVC (130 in Dempwolff 1938, called "root iteration"):

*baq+baq	'mouth'
*bəj+bəj	'wind around'
*bək+bək	'pulverized; decayed to dust' (Dbl: *buk+buk*)
*biR+biR	'lips' (Dbl: *bi+bíR* — Type B)
*buD+buD	'chop to bits, mince; porridge'
*buk+buk	'powdery (of decayed wood); wood weevil'
*bun+bun	'gather; heap, pile' (Dbl: **bun* 'abundant, copious')
*bus+bus	'leak, spill out' (but Tag *búhos* 'pouring, spilling')
*Dah+Dah	'chest, breast' (revised by Zorc based on Itb *rahdah*)
*dak+dak	'beat with a stick or hammer'
*daŋ+daŋ	'to heat' (Dbl: **da+daŋ* — Type B)
*gut+gut	'gnaw off' (Dbl: **kut+kut*; Cf: *gu+gut* — Type B)
*kaŋ+kaŋ	'spread apart' (cf: Tag *kaʔáŋ* 'of legs or feet')
*kəb+kəb	'cover'

*kis + kis	'scrape, shave, grate'
*ñam + ñam	'taste' (cf: WBM naʔamnaʔam 'taste if food is good')
*pus + pus	'finish, terminate'
*səl + səl	'regret'
*tas + tas	'rip up, cut'

Type B: Partial reduplication, i. e., CV + CVC (48 in Dempwolff 1938, called "root reduplication")

*bu + buŋ	'ridge of roof' (Dbl: buŋ + buŋ 'ridgepole — Type A)
*Də + Dəm	'dark' (Dbl: Dəm + Dəm — Type A)
*lə + ləs	'lose consciousness'
*lu + lun	'roll together'
*pi + pis	'rub away, grind down'
*pu + put	'blow' (Dbl: *put + put — Type A)
*si + sip	'penetrate'

Type C: CV + CV (29 in Dempwolff 1938)

*ba + ba	'carry (usually on the back)'
*da + da	'cry of pain'
*pi + pi	'cheek'
*si + si	'shellfish'
*su + su	'breast'

Morphological additions or formatives. Blust (in press) concludes that these are a "semantically vacuous open class". Some relate to known affixes, e. g., *i-, *di-, *ka-, *ma-, *pa-, but do not always carry their recognized or "established" function or meaning. According to the strictest tenets of the comparative method, this formal and semantic discrepancy presents the greatest problem:

*sa + kaŋ	'bow-legged'
*si + kaŋ	'wide apart (of the legs)'
*pa + ŋah	'branch'
*sa + ŋah	'branch; bifurcation'

Nasal accretion also occurs with such formatives, with no statable function or meaning. For example, contrast *bən + tas 'hack a passage through' with *bə + tas 'rip, tear'. Note also:

ta(m)	+ *bun*	'to heap'
ti(m)	+ *bun*	'to heap'
bə(ŋ)	+ *kaŋ*	'unbent'
eŋ	+ *kaŋ*	'walk with legs astraddle'
sə(ŋ)	+ *kaŋ*	'crossbeam'
ga(ŋ)	+ *pit*	'keep together'
ha(m)	+ *pit*	'hold, keep together'
ka(m)	+ *pit*	'hold together'
kə(m)	+ *pit*	'hold together, clasp'
lə(m)	+ *pit*	'fold'
sə(m)	+ *pit*	'narrow'
su(m)	+ *pit*	'narrow; blowpipe'.

4. Root variation, sets, and sound symbolism

Blust (1988: 35 ff.) notes the following variations with regard to vowels:

bak	— *bək*	—	*buk*	'pound, thud'
gak	— *gək*	— *gik*	— *guk*	'throaty sound'
ŋaC	— *ŋəC*	— *ŋiC*	— *ŋuC*	'gnash the teeth (as in anger)'

Where: *a* is harsh and discordant,
 ə is muffled,
 i is high-pitched, and
 u is deep.

With non-onomatopoetic sets, semantic reversal has been observed (Blust 1988: 38):

kəb — *kub* 'cover'	*kab* 'open, uncover'
	kib 'open a little'
kəs — *kus* 'wrap'	*kas* 'loosen, untie'

Blust also makes the following observations regarding consonants (Blust 1988: 39 ff.): Initial voiced stops generally signal a louder sound in onomatopoetic roots than the homorganic voiceless stop.

gak 'loud crowing, cackling or raucous laughter'
kak 'cackling of adult fowls or ordinary laughter'

> *gik* 'squealing of pigs and the like'
> *kik* 'peeping and chirping of bird, giggling, etc.'

"It appears that the symbolic value of consonants overrides that of vowels in the sense that *gik* refers to noises that would in general be louder (and made by larger animals) than those symbolized by *kak*" (Blust 1988: 42).

Blust (1988: 53 – 57 and in press) indicates that consonant symbolism is found in many Proto-Austronesian or Proto-Malayo-Polynesian reconstructions, akin to English *gl-*:

> *ŋ-*   'mouth or lip area or action' (10 etyma)
> *-y-*   'swing, sway, rock' (12 etyma)
> *-l*   'blunt, dull, dim-witted' (6 etyma and 50 uniques)

5. Contributions to theory

The isolation of a monosyllabic root can lead to the disambiguation of a proto-form. Thus, an ambiguously reconstructed PMP *pi(cs)ik* 'sprinkle, as water with the fingers', may be modified to PMP *picik* if Ml *rəcek* 'sprinkled with rosewater; speckled with gold' is brought into the comparison and the root *cik* is established (Blust, in press).

The identification of a monosyllabic root can lead to the correction of correspondence sets. Thus, Jv *baTik* 'fabric worked by the batik process' must be secondarily developed because it is incompatible with Jv *patik* 'spots, freckles' on the basis of internal evidence alone, and all the more so if compared with Pai *vətsik*, Kel *bətik* 'tattoo'. The root here is PAN *Cik* (and not *Tik*).

Such roots may assist in establishing the validity of reconstructed phonemes as in the following two areas.

6. Wolff's objections against *c, *g, and *r

Although evidence for the reconstruction of *c is limited to a few Western Indonesian languages, widespread evidence (including Formosan languages) suggests there were roots with the latter two phonemes, e. g., Pai *gutsguts* 'scratch' (< *guC*), Pai *i-gərgər* 'tremble' (< *gər*); cf. Wolff 1972, 1974, 1988.

7. Zorc's problem — the laryngeals

If doubleting involves phonemes other than laryngeals (e. g. *kub* — *kup* 'cover', *kuk* 'bent, crooked' — *kug* 'curl, curve' — *kuŋ* 'bend'), Blust does not appear to express the same reservations as when *ʔ, *S or *h are involved (Blust 1988: 29 f.). Nevertheless, such distinctions are supported, even at the Proto-Austronesian level where *kuS+kuS* 'fingernail' yields a monosyllabic root *kuS* reflected in PPH *ku+kúh* 'fingernail' (Type B), that differs from a PAN *kuH* 'elbow, joint', as in:

PAN *sí+kuH* 'elbow, corner' > Akl, Ceb *si:kuh*, Itb *sicuh*, (Ib *siku*), Tkd *cikuh* 'elbow', Sm *siʔu* 'edge' (Note Pai *piku* 'elbow')
PMP *bu+kúh* 'joint, node' > Akl, Ceb, Tsg *bukúh*, WBM *buku*, Ib *bukuʔ* 'id.', Fj *mbuku-mbuku* 'elbow'
PHN *lə+kúh* 'lie down (on all fours, like an animal)' > Akl *Eukúh*, Hil *lukúh*, Isg *lakkó*, Mar, *ləko*, WBM *ləku* 'lie down (of an animal)', Ib *ukoi me-ləkuʔ* 'the dog is curled up', Lawangan *lokuʔ* 'lie down'. Note: Ceb *lu:kuʔ* is dismissed from this comparison because of both the vowel length (a short penult vowel would be the regular reflex of *ə) and the disagreement with final *-h* in other Bisayan varieties.

Contrast the above with the following evidence for *kuʔ*:

PMP *lə+kuʔ* 'folding part of the body' > Ceb *lukuʔ-lukuʔ-an* 'inside of knee', Ilk *lakkó* 'popliteal space', Ml *tə-ləku* 'rest elbows on', Ib *ləkuʔ* 'convolution', *ləkuʔ pərut* 'the coils of the intestine'.
PHN *ti+kuʔ* 'bend, curve' > Akl, Hil, Sbl *tikúʔ*, Mar *tikoʔ*, Ib *tikuʔ*.

Furthermore, there is synchronic evidence of such doubleting. These are not "mutually contradictory ... examples" as Blust (in press) characterizes similar forms. Mar *boka* 'breakfast' vs. *bokaʔ* 'untie', Hil *bukáh* vs. *bukáʔ* 'open' descend from historically different etyma:

PMP *bu+káʔ* 'open' > Akl, Hil, Sbl *bukáʔ*, Moŋ, Tsg *bukaʔ*, Kal *buka-*, Lmp *bukaʔ*, Ml, Jv *bukak*. (Cf: Tbl *lemkaʔ* 'take off, open forcibly')
PHN/PPH *bu+káh* 'open up, break open' > Tag, Bik *buká*, Hil *bukáh*, Ceb *buk(a)h-* 'id.', Mar *boka* 'breakfast' Note: Ib *bukaʔ*

'open, loose, untie' is disjunctive for this or the above reconstruction.

These root candidates fit within the set Blust reconstructs as *ka(q) 'open forcibly' alongside the root series *kaq 'crack, split' (Cf: Ml reŋkah 'wresting open'), *kas 'loosen, undo, untie', *kaŋ 'spread open (as the legs)', *kab 'open, uncover'.

In another set, Blust reconstructs *ŋa(q) 'gaping, wide open', but see:

PMP *ŋa+ŋáh 'agape' > Akl ŋaŋáh, WBM gi-ŋaŋa, Ml ŋaŋa, Saa awa ŋaŋa

PMP *pa+ŋáh 'prong, fork(ing)' > Akl paŋáh 'hook for getting fruits', Ceb paŋáh 'forked stick', Ib paŋaʔ 'angle; forked; branching', NgD paŋa 'stocks', Fu, Sm maŋa 'fork, twig'

PMP *sa+ŋah 'branch (of road or river)' > Akl, Ceb saŋáh, Tag pag-saŋh-án, Ib saŋaʔ.

The above may be contrasted with:

PAN *b/al/a+ŋaʔ 'earthenware vessel' > Tag, Kpm balaŋáʔ, Mal belaŋa, Ib belaŋaʔ 'id.'; Pai valaŋa, Sir vaŋara 'mortar'; Akl, Ceb baŋáʔ, Itb vaŋaʔ.

To the extent that this kind of genetic comparison is valid and reliable, some roots need to be reconstructed with a series of laryngeals (i. e., as doublets). Zorc's problem is, of course, exacerbated by the lack of test evidence when criterion or witness evidence alone is available in the establishment of disjunctive roots like *piq vs. *piʔ vs. *pih vs. *piØ.

Cf: Bal *tampih* 'fold up, put in layers'   (test for *piq)
Cf: Tag *tupíʔ* 'fold, plait'   (criterion for *piʔ or *piq)
Cf: WBM *lumpi* 'fold up something'   (criterion for *pih or *piØ)

8. The reality of monosyllabic roots

Blust concludes that "the phonestheme might be described as a weed in the garden of language — an invader of boundaries which from time immemorial has sprouted wild between the cultivated

patches of contrast-defined linguistic units" (Blust 1988: 62). Three phenomena of which I am aware give evidence that these "weeds" have enjoyed an independent existence in the Austronesian garden: (1) They are not subject to the same synchronic phonotactic rules as are normal root words. For example, in Bisayan dialects the phonemes *l, ?,* and *h* do not occur preconsonantally in any observed roots or their derivatives (i. e., after syncope). Any such clusters metathesize, e. g., Akl *kilís :: kisl-i* 'wash rice prior to cooking', Ceb *tahúp :: táph-i* 'winnow (it)!'. However, doubled monosyllables break this phonotactic constraint: Akl, Ceb *bá?ba?* 'mouth', *súlsul* 'regret', Akl *múhmuh* 'rice crumbs fallen off the table' (although Ceb *múmhu* 'id.' follows the rule).

(2) Similarly, they appear to have avoided such constraints diachronically, as when PAN *$*k$ > $\emptyset$* in the Kalamian languages, except in doubled monosyllables. Thus, Kal *?utu?* 'louse' < PAN *$*ku{:}Cu$, siit* 'pain' < *$*sakít$, ana?* 'child' < *$*aNák$,* but *pakpak* 'wing', *saksak* 'stab', *kulkul* 'cough', *gakgak* 'crow', even *ukub* 'fingernail' an innovation derived from the monosyllabic root *$*kub$* 'cover(ing)'.

(3) Blust (1988: 48−51 and in press) presents some evidence for the "psychological reality" of the monosyllabic root based on the testing of native speakers' reactions to them. In the history of word coinage within any given language, when speakers play with these perceived word bits, they demonstrate their awareness of these entities:

Png	*bul + dut*	'body hair' < PPH *$*bul + bul$* and PNP
		$*dut + dut$
Snd	*bək + sək*	'cut down'
Snd	*ruk + sak*	'destroy'

Appendix I: List of abbreviations

Abr	Aborlan Tagbanwa	Ml	Malay
Akl	Aklanon	Ngd	Ngaju Dayak
Ami	Amis	Pai	Paiwan
Bal	Balinese	PAN	Proto-Austronesian
Bun	Bunum	PHF	Proto-Hesperonesian-Formo-
Ceb	Cebuano		san
Dbl	Doublet (of)	PHN	Proto-Hesperonesian
Fj	Fijian	PMP	Proto-Malayo-Polynesian

Fu	Futuna	Png	Pangasinan
Han	Hanunoo	PNP	Proto-Northern-Philippine
Hil	Hiligaynon	PPH	Proto-Philippine
Ib	Iban	PSP	Proto-Southern-Philippine
Ilk	Ilokano	Saa	Sa'a
Isg	Isneg	Sbl	Sambal
Itb	Itbayaten	S-L	Samar-Leyte (Waray)
Jv	Javanese	Sm	Samoan
Kal	Kalamian	Sir	Siraya
Kel	Bario Kelabit	Snd	Sundanese
Knk	Kankanay	Tag	Tagalog
Kpm	Kapampangan	Tkd	Takituduh Bunun
OJv	Old Javanese	Tsg	Tausug
Mad	Madurese	To	Tongan
Mar	Maranao	WBM	Western Bukidnon Manobo

Appendix II: Comprehensive list of monosyllables

The following data are derived from Blust 1976 (B-DM), or in press (B-ip; those reconstructions indicated as Z-nd come from my own research files. A form cited with an (O) indicates probable onomatopoeia.

*?ag	'sift' = Z-nd (cf. *?ag+?ag, *?/ay/ag)
*hak	'laugh(ter)' = Z-nd
*haŋ	'spicy, hot' = Z-nd
*qaŋ	'smell' = Z-nd (cf. *qaŋ+suH 'stench', *qaŋ+səj 'putrid', *qaŋ+tah 'rancid', etc.)
*hap	'grope, feel with hand' = Z-nd
*hiR	'water' = Z-nd
*hul	'shrill vocal sound (bark, whistle)' = Z-nd
*huR	'mix together' = Z-nd
*bag	'pound' = Z-nd (Dbl: *bak (1))
*bak (1)	'pound, thud' (O) = B-ip, Z-nd
*bak (2)	'split (open)' = Z-nd
*bak (3)	'frog' = Z-nd
*baR (1)	'tasteless, flat, insipid' = Z-nd
*baR (2)	'answer' = Z-nd
*bas	'cut off' = Z-nd
*bat	'answer' = Z-nd
*baw	'high, top' = B-ip, Z-nd
*bay	'be together' = Z-nd
*bəj	'wind around repeatedly' = B-ip; Z-nd = *bəd
*bək (1)	'decay, crumble; powder; dust of decaying wood' = B-ip, Z-nd
*bək (2)	'crack, whack' (O) = B-ip
*bəŋ	'block, stop, dam' = B-ip; Z-nd 'wall'
*biŋ	'jagged' = Z-nd
*bir	'edge, rim' = B-ip; Z-nd *biR
*bit	'hook' = B-ip, Z-nd

*bu-	'open' = Z-nd
*bu∅	'dust' = B-ip
*buq	'grow' = Z-nd
*buD	'scatter, strew' = Z-nd (Dbl: *buR (2))
*buk-	'open' = Z-nd
*buk (1)	'decay, crumble; powder, dust' (Dbl: *bək (1)) = B-ip, Z-nd
*buk (2)	'pound, thud' (O) = B-ip
*bun (1)	'heap up, pile, cover with earth' = B-DM, B-ip, Z-nd
*bun (2)	'water source, e. g.: cloud, well' = Z-nd
*buŋ (1)	'ridge' = Z-nd
*buŋ (2)	'hollow conduit' = Z-nd
*buR (1)	'rice gruel' = B-ip
*buR (2)	'sow, strew, scatter, spray' = B-ip, Z-nd
*buR (3)	'drive away' = Z-nd
*bus	'leak, spill' = Z-nd
*but (1)	'pluck, pull out, snatch' = B-ip, Z-nd
*but (2)	'hole' = Z-nd
*cak	'muddy' (O) = B-ip
*cək	'blind' = B-ip
*cəq	'in pieces' = B-ip
*cik	'splash, splatter, fly out' (O) = B-ip
*cit	'squirt out' (O) = B-ip
*cut	'squirt or slip out' (O) = B-ip
*Cay	"life principle" = Z-nd
*Cik	'mottled, spotted' = B-ip
*dab	'flame' = Z-nd
*dak	'beat, pound' = Z-nd
*daŋ	'heat (of fire)' = Z-nd
*dap	'flicker' = Z-nd
*dəl	'blunt, dull' = Z-nd
*Dəm (1)	'dark' = B-ip, Z-nd
*Dəm (2)	'think, brood' = B-ip, Z-nd
*DəR	'stand' = Z-nd
*Dət	'packed in, compressed' = B-ip
*DiR	'lean (upon)' = Z-nd
*diŋ	'cold' = Z-nd
*dul	'stuff, gorge' = Z-nd
*dun	'land (on), perch' = Z-nd
*duŋ	'sit' = Z-nd
*Duŋ	'shade, shelter' = Z-nd
*dut	'pluck, pull out, snatch' = B-ip; Z-nd 'feather'
*gak	'raucous throaty sound' (O) = B-ip, Z-nd
*gaŋ (1)	'dry, dehydrated' = B-ip, Z-nd
*gaŋ (2)	'split (open)' = Z-nd
*gas	'scratch(iness)' = Z-nd
*gaw	'stirred mixture' = Z-nd
*gək	'dull throaty sound' (O) = B-ip
*gəm	'grasp, grip, hold in the fist' = B-ip, Z-nd

*giØ   'tooth' = Z-nd
*gik   'shrill throaty sound' (O) = B-ip
*guC   'gnash the teeth, gnaw' (O) = B-ip
*guk   'deep throaty sound' (O) = B-ip, Z-nd
*guŋ   'deep resounding sound' (O) = B-ip, Z-nd
*gur   'purr, rumble' (O) = B-ip
*gut   'scrape, grate' (Mar *got* 'scale fish', Long Anap *gut* 'scraper, grater')
              = B-DM, Z-nd
*ka(q)   'open forcibly' = B-ip
*kaq   'crack, split' = B-ip
*kab   'open, uncover' = B-ip, Z-nd
*kaj   'unfold, spread open' = Z-nd
*kak   'cackle, laugh, loudly' (O) = B-ip
*kal   'boil (of water)' = Z-nd
*kaŋ (1)   'spread apart, as the legs' = B-ip, Z-nd
*kaŋ (2)   'bark, croak' (O) = B-ip
*kap (1)   'grope, touch' = Z-nd
*kap (2)   'skin, bark' = Z-nd
*kas (1)   'begin' = B-ip
*kas (2)   'loosen, undo, untie' = B-ip, Z-nd
*kas (3)   'swift, agile, energetic' = B-ip, Z-nd
*kay   'dig, rake' = Z-nd
*kəb (1)   'cover' = B-ip, Z-nd
*kəb (2)   'face downward' = B-ip, Z-nd
*kəC   'adhesive, sticky' (cf. *Lə+kəC* 'cling to, adhere'; *kə+kət* 'grab, hold
              on'; *də+kə́t* 'cling to, adhere'; *zə+kə́t* 'adhere, stick to'; *rə+kə́t* 'stick,
              adhere'; *ri+kət* 'sticky'; *lí+kət* 'sticky, adhesive') = B-ip, Z-nd
*kəl   'curl, coil, bend' = B-ip
*kəm   'enclose' = B-ip, Z-nd
*kəŋ   'cramps, stiffening of limbs' = B-ip
*kəp (1)   'cover' = B-ip, Z-nd
*kəp (2)   'fold, double over' = B-ip
*kəp (3)   'embrace, seize' = B-ip, Z-nd
*kəs   'encircle, wrap firmly around' = B-ip, Z-nd
*kiʔ   'vulva' = Z-nd
*kik   'shrill throaty sound' (O) = B-ip, Z-nd
*kiŋ   'clear ringing sound' (O) = B-ip
*kis   'shave, scrape' = Z-nd
*kit   'join along the length' = B-ip
*ku(q)   'bend, curve; bent, crooked' = B-ip; Z-nd *kuh* vs. *kuʔ*
*kub (1)   'cover' = B-ip, Z-nd
*kub (2)   'enclose, surround' = B-ip
*kuD   'scrape, grate' = Z-nd
*kug   'curl, curve' = B-ip
*kuk (1)   'bent, crooked' = B-ip, Z-nd
*kuk (2)   'cackle, cluck' (O) = B-ip
*kul   'curl, bend' = B-ip; Z-nd (+ 'snail')
*kum   'close by folding' = B-ip, Z-nd

*kuŋ (1)	'bend, curve' = B-ip, Z-nd
*kuŋ (2)	'deep resounding sound' (O) = B-ip
*kup (1)	'cover, close' = B-ip, Z-nd
*kup (2)	'enclose, surround' = B-ip, Z-nd
*kus	'wrap, wind around' = B-ip
*kut (1)	'bite' = Z-nd
*kut (2)	'hold, carry' = Z-nd
*laq	'split' = B-ip
*lab	'spread (of flame)' = Z-nd
*laj	'open, expose' = Z-nd
*lak-	'go, walk' = Z-nd
*lap	'flash, sparkle' = B-ip, Z-nd
*law	'light' = Z-nd
*lay	'hang' = Z-nd
*lem	'dark' = B-ip, Z-nd
*lij	'edge, ridge' = Z-nd
*liŋ	'clear ringing sound' (O) = B-ip
*liR	'flow' = B-ip
*lit (1)	'caulk; glue' = B-ip
*lit (2)	'wind, twist' = B-ip, Z-nd
*lud	'scrub' = Z-nd
*luk	'bend, curve' = B-ip, Z-nd (cf. **luʔək* 'bay')
*lun	'swallow' = Z-nd
*luŋ	'bend, curve' = B-ip
*luR	'flow' = B-ip
*lus	'slip off' = B-ip
*man	'repeat' = Z-nd
*mək	'crush, pulverize; powder' = B-ip, Z-nd (+ 'soft')
*məs	'squeeze, knead' = Z-nd
*mis	'sweet' = Z-nd
*muk	'crush, pulverize; powder' = B-ip
*muR (1)	'gargle; rinse the mouth' = B-ip, Z-nd
*muR (2)	'dew' = Z-nd
*mut	'little bit' = Z-nd
*na()	'mother' = Z-nd
*ñam	'savory, tasty' = B-ip, Z-nd
*nap	'complete' = Z-nd
*ñat	'stretchy, elastic' = B-ip; Z-nd **nat*
*ñaw	'bathe, rinse, wash' = B-ip; Z-nd **naw* (1)
*naw	'lake' = Z-nd
*nək	'biting insect' = Z-nd
*nəR	'hear, listen' = Z-nd (Dbl: *ŋəR*)
*niŋ	'clear, limpid (water)' = B-ip
*nis	'clean, polish' = Z-nd
*nut (1)	'pull out' = Z-nd
*nut (2)	'fibrous' = Z-nd
*ñut	'stretchy, elastic' = B-ip
*ŋa(q)	'gaping, wide open' = B-ip; Z-nd **ŋah* vs. *ŋaʔ*

*ŋah	'branch(ing)' = Z-nd
*ŋak	'raucous throaty sound' (O) = B-ip
*ŋaw	'fly (insect)' = Z-nd
*ŋəC	'anger, irritation' = B-ip, Z-nd
*ŋəR	'hear; noise' = B-ip
*ŋət	'gnash the teeth' (O) = B-ip
*ŋiC	'anger, irritation' = B-ip
*ŋik	"shrill throaty sound' (O) = B-ip, Z-nd
*ŋiŋ	'shrill buzz or hum' (O) = B-ip
*ŋis	'bare the teeth' = B-ip, Z-nd
*ŋuk	'deep throaty sound' (O) = B-ip
*ŋuŋ	'deep buzz or hum' (O) = B-ip
*ŋut	'mumble, murmur, mutter' = B-ip, Z-nd
*pad	'cut, prune' = Z-nd
*pak (1)	'clap, slap' (O) = B-ip, Z-nd
*pak (2)	'break, crack, split' = B-ip, Z-nd
*paR (1)	'spread out (flat)' = Z-nd
*paR (2)	'other side' = Z-nd
*pas	'peel, rip or tear off' = B-ip
*paw	'excess of liquid' = Z-nd
*pay	'swing, wave' = Z-nd
*pək	'decay, break, crumble; powder, dust; brittle (wood)' = B-ip
*pəl	'plug, stopper; to cram' = B-ip, Z-nd
*pəs	'deflate, be empty' = B-ip, Z-nd
*pət	'plugged or stopped up, closed off' = B-ip, Z-nd
*pi(q)	'fold' = B-ip; Z-nd *pi?
*pik	'pat, light slap' (O) = B-ip
*pil	'attach, join' = B-ip
*pin	'cover, lining' = Z-nd
*piŋ	'cheek' = Z-nd
*pis (1)	'deflate, be empty' = B-ip
*pis (2)	'thin, tenuous' = B-ip, Z-nd
*pit	'press, squeeze together; narrow' = B-ip, Z-nd
*pu()	'master, lord' = Z-nd
*puk	'beat, clap; break, crack; thud, throb' (O) = B-ip, Z-nd
*pul	'blunt, dull' = B-ip, Z-nd
*pun	'assemble, collect, gather' = B-ip, Z-nd
*puŋ	'bunch, cluster' = B-ip, Z-nd
*pus (1)	'end, finish, terminate' (Mar *pos*) = B-dm, B-ip, Z-nd
*pus (2)	'sound of escaping air' (O) = B-ip
*put	'blow' (Mar *pot*) = B-DM, Z-nd
*puy	'tired' = Z-nd
*Ras	'hard, solid' = Z-nd
*riC (1)	'sound of grating, ripping' (O) = B-ip
*riC (2)	'scratch a line' = B-ip
*ris	'rustle, scratch lightly' (O) = B-ip
*rud	'grate, scrape' (O) = B-ip, Z-nd
*Rud	'grate, scrape' = Z-nd (Dsj: *gud* / *rud*)

Rup   'sip, slurp' = Z-nd

rus   'rustle' (O) = B-ip

sap   'chip (away), whittle' = Z-nd

sək (1)   'insert, stick into a soft surface' = B-ip, Z-nd

sək (2)   'cram, crowd' = B-ip

səR   'strong' = Z-nd

sip   'insert, penetrate' = Z-nd

sir   'hiss' (O) = B-ip

siw   'chick' (O) = Z-nd

suk   'enter, insert, penetrate' = B-ip, Z-nd

sun   'pile (up)' = Z-nd

sup   'suck' = Z-nd (Dbl: *sip*, *səp*)

sut   'insert' = Z-nd

tad   'cut' = Z-nd

Tak   'crack, split; knock' (O) = B-ip, Z-nd *tak*

Taŋ   'full resounding sound' (O) = B-ip

taR   'flat, level' = Z-nd

tas   'cut through, sever, rip, tear' (O) = B-ip, Z-nd

taw   'float, buoy' = Z-nd

tay   'hang (as bridge)' = Z-nd

tə(q)   'viscous fluid' = B-ip

tək   'mud' = B-ip

Tək   'sound of light knocking' (O) (Mar *tək* 'sound of dropping something hard') = B-DM, B-ip 'click' (O); Z-nd *tək*

tər   'shiver, tremble' = B-ip

təs   'rip, tear' (O) = B-ip, Z-nd

tik   'flicking motion' = B-ip

Tik   'tick' (O) = B-ip; Z-nd *tik*

til   'small protruding object' = B-ip, Z-nd

Tiŋ   'clear ringing sound' (O) = B-ip; Z-nd *tiŋ*

tir   'shiver, tremble' = B-ip

tuk   'bend, curve' = B-ip

Tuk   'sound of heavy knocking' (O) (Mar *tok* 'thud, sound of dropping a hard object') = B-DM; B-ip + 'pound, beat' (O); Z-nd *tuk* (1)

tuk (2)   'crest (forehead; summit)' = Z-nd

tuŋ   'layer (over)' = Z-nd

Tuŋ   'deep resounding sound' (O) = B-ip, Z-nd

tup   'cover' = Z-nd

tus   'cut through, sever, break (rope)' (O) = B-ip

tut   'stench' = B-ip, Z-nd

wak   'flow' = Z-nd

waŋ   'open, clear' = Z-nd

wit   'hook' = B-ip, Z-nd

zəg   'stand erect' = B-ip; Cf: Z-nd *DəR*

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