The intraradical glottal stop in Philippine languages: Innovation or retention?

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Abstract

It is now well-established that many Austronesian languages, including those in the Philippines, contain both simple morphemes, and morphemes that include a submorphemic sound-meaning association within them, as with Ifugaw *ukpít* 'to hold by pressing s.t. between the knees, or between the elbow (or upper arm), and the side of the body', Naga Bikol *yaʔpít* 'narrow (as a passage), tight (as clothes)', Hanunóo *tipít* clamps, holders, as used to fasten house walls down', or Hiligaynon *lágpit* 'rat trap', all containing a reflex of the Proto-Austronesian root *-pit 'to press, squeeze together; narrow' (Blust 1988, to appear). However, unlike languages in other parts of this large language family, Philippine languages have added an additional layer of complexity in that these -CVC elements (known since Brandstetter 1916 as 'roots') sometimes appear in the shape -CʔVC. The question addressed here is whether the glottal inclusions in such cases are part of the original root, or are products of secondary change. Evidence is presented in support of the latter position, but it is also noted that in a very few cases a bound root appears to be identical to a CVCVC free morpheme (in the present case, *piqit), suggesting that some -CVC roots derive from free morphemes of the shape CVqVC. Because of inescapably contradictory evidence this matter is left open, although it is clear that the great majority of submorphemic sound-meaning associations had the shape -CVC.

Keywords: *Submorphemic sound-meaning associations, intrusive glottal stops, test languages*

1. Introduction: roots, simple and complex

Like many other Austronesian (AN) languages, the languages of the Philippines make extensive use of submorphemic -CVC sequences in word-formation, as seen in the recurrent sound-meaning association that unites word families like Ilokano *gemgém* 'fist', *ag-gemgém* 'to clench the hand' (part of a cognate set that reflects PAN *gemgem 'fist; to clench in the fist'), Ilokano *iggém* 'to hold; have or keep in the grasp', Bikol *gugóm* 'a clenched fist', Cebuano *kugúm* 'to hold onto s.t. with fingernails or claws', *sákgum* 'to hold s.t. in both hands', all containing reflexes of *-gem 'to grasp in the fist', or Casiguran Dumagat *lagtás* 'to chop in two (vine, rope or string)', Kankanaey *kísat* (<M) 'the sound of tearing up cloth', Botolan Sambal *lentah* 'to come unsewed, rip or cut into', Tagalog *bagtás* 'a passage or trail across wilderness', Tagalog *bigtás* 'unstitched', Bikol *rugtás* 'to pull or tear s.t. apart; to tear down', Cebuano *báktas* 'to cut across (take a short cut)', *lúgtas* 'to break a rope, thread, string, etc. by pulling on it with force', Binukid *lutas* 'to wean a child', or Tiruray *fagutas* 'game in which contestants cut through a bundle of reeds with one

stroke', all containing reflexes of *-tas 'to sever, rip apart, cut through; short cut'. Blust (1988, to appear) has identified over 400 such recurrent submorphemic sound-meaning associations in over 5,400 morphemes, making the reality of this phenomenon throughout a wide range of AN languages in Taiwan, the Philippines, Indonesia-Malaysia, and (more marginally) the Pacific difficult to deny. However, members of the Philippine subgroup appear to be unique in sometimes showing a postconsonantal glottal stop within the root, as in Hiligaynon *yábʔuk* 'dust, dirt', Aklanon *eúbʔók* 'rotting, decaying (fish)', next to reflexes of *-buk 'to decay, crumble; powder' in many other languages, both within and outside the Philippines.

The explanation for this glottal stop that sometimes appears within a -CVC root has been unclear for some time, but I hope to show in this paper that where it appears it is almost always the product of metathesis from the syllable immediately preceding the root. The two key types of evidence for this conclusion are first, that words which appear to contain a -CVC root sometimes also show a supraglottal consonant rather than a glottal inclusion within the root, as with Bikol *suklób* 'to cover, as with cloth' < *sulkub (Root: *-kub-$_1$ 'a cover; to cover'), Hanunóo *tikláŋ* 'step, pace' < *tilkaŋ (Root: *-kaŋ 'to spread apart, as the legs'), or Binukid *hublut* 'draw (bolo, etc.)' < *hulbut (Root: *-buC 'to weed, pluck, pull out')'. In many cases the medial heterorganic consonant clusters in such ancestral forms may themselves have arisen from schwa syncope (*suləkub, *tiləkaŋ, *huləbut, etc.), but this assumption goes beyond what is needed to explain the data in this paper, and will not be pursued further. Second, comparative data from languages that are known to reflect -CʔVC roots may reflect the same root in other morphemes without a glottal inclusion, suggesting that where it appears within a root it is secondary. The general conclusion that these observations point to is that the submorphemic root in AN languages was, indeed, a monosyllable of the shape -CVC.

However, against this interpretation are several free morphemes that appear to be antecedents to -CVC roots, and have the shape CVqVC or CVʔVC. The relationship between these disyllabic free morphemes and -CVC roots remains to be determined, but given the general directionality of historical change from free to bound morphemes, they may well be the key to understanding the origin of monosyllabic roots.

2. Test languages for the intraradical glottal stop.

Before we can begin to examine data relating to this problem it is necessary to establish a set of languages that are critical witnesses, or **test languages,** for -CʔVC roots.[1] (1) lists 48 roots under their standard -CVC shapes and (2) follows this with a list of test languages that instead reflect CʔVC. This list does not pretend to be complete, but includes languages of the Northern Luzon, Central Luzon and Greater Central Philippine (GCP) subgroups of Philippine languages, showing that this phenomenon is common to much of the archipelago. Evidence of test languages for -CʔVC is given after each language name, with numerical reference to the standard shape of the root under (1):

(1) STANDARD SHAPES OF 48 ROOTS CONTRASTING -CVC AND CʔVC (Blust 1988, to appear)

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[1] The notion of 'Test language' goes back to Dempwolff (1934-1938), who recognized 'Test-Sprachen' as languages that distinguish two or more proto-phonemes, and 'Kriterien-Sprachen' as pairs of languages that, used together, allow similar distinctions to be made (1934:1:65-68).

1. *-baw-1 'high; upper surface'
2. *-bit 'to hook, clasp; grasp with fingers'
3. *-buk-1 'to decay, crumble; powder'
4. *-bun 'to heap up, cover with earth; collect, gather'
5. *-buŋ-1 'deep resounding sound'
6. *-buR-3 'to strew, sow; sprinkle'
7. *-cit 'to squeeze or squirt out'
8. *-dek-1 'to hiccough, sob'
9. *-gak-1 'proud; to boast'
10. *-gak-2 'raucous, throaty sound'
11. *-gik 'shrill throaty sound'
12. *-guC 'to pull with a jerk'
13. *-guk 'deep throaty sound'
14. *-kab-1 'to open, uncover'
15. *-kaŋ-2 'to spread apart, as the legs'
16. *-kuŋ-1 'to bend, curve'
17. *-kup 'to enclose, cover'
18. *-laC 'to shine; flickering or flashing light'
19. *-leb 'to sink, disappear under water'
20. *-leC 'interval, gap, intervening space'
21 *-lem-1 'dark; obscure'
22. *-lus 'to slip off, slide down'
23. *-mek 'to crush, pulverize; powder'
24.. *-mis 'sweet'
25. *-muR-1 'dew'
26. *-muR-2 'to gargle, rinse the mouth; to hold in the mouth
27. *-naŋ 'to shine, sparkle'
28. *-naw 'lake, pond; enclosed body of water'
29. *-nit 'to remove, detach'
30. *-Naw 'clear, pure (of water)'
31. *-Neŋ 'to stare, look fixedly'
32. *-ŋab 'to gape; open, of the mouth'
33. *-ŋar 'to howl, shout, scream'
34. *-ŋaw-3 'leaking air, vapor'
35. *-ŋeŋ 'to buzz, hum'
36. *-pag 'to strike, beat'
37. *-pak-1 'to break, crack, split'
38. *-pak-2 'to peel bark from a tree'
39. *-pak-3 'to slap, clap'
40. *-pit-2 (or *piqit?) 'to press, squeeze together; narrow'
41. *-puŋ-1 'a bunch, cluster'
42. *-rit 'to scratch a line'
43. *-Rud 'to scrape'
44. *-sek-2 'to insert, stick into a soft surface'
45. *-suk 'to insert, penetrate, enter'
46. *-tak-2 'the sound of cracking, splitting, knocking'

47. *-waŋ 'wide open space'
48. *-wit 'a hook; hook shaped'

(2) DISTRIBUTION OF CʔVC FORMS IN PHILIPPINE TEST LANGUAGES

Northern Luzon

Ilokano (11 roots):
2. *sabʔít* 'hook, hanger', 10. *sagʔák* 'to clear the throat (with phlegm, stuck food, etc.)', 12. *bagʔút* 'to pull out, uproot', 18. *salʔát* 'lightning', 20a. *balʔét* 'to go (be inserted) in between', 20b. *salʔét* 'to be intercropped', 24. *samʔít* (< M) 'sweet', 28. *banʔáw* 'pool in a stream; lake, pond', 30. *sinʔáw* 'clear, transparent', 32. *suŋʔáb* 'quick, heavy breathing; gasp', 34. *saŋʔáw* 'breath; to exhale', 47. *bawʔáŋ* 'gorge, ravine'.

Bontok (15 roots):
1. *labʔew* 'to be higher socially than one's companions', 2. *sabʔít* 'to hang up', 4. *gabʔón* 'to cover', 7. *posʔít* 'to exude, as pus from a boil', 13. *sogʔok* 'to cause s.o. to cough, as dust or smoke', 15. *sakʔaŋ* 'to carry a child on the hip', 26. *gasimʔól* 'to chew on, as candies', 27. *wanʔáŋ* 'to illuminate, to light', 31. *sinʔéŋ* 'to scrutinize, examine closely', 34. *seŋʔew* 'to have a pleasant smell (of things cooking)', 36. *papʔág* 'to knock the side of an elongated object against s.t., as a pestle against the mortar', 40. *pipʔít* 'to be crowded; to be packed in, as many people in a room', 42. *kolʔít* 'to mark, as with a pencil', 44. *isʔek* 'to plant, of vegetables', 45. *sosʔók* 'to stick an object lengthwise into a bound load'

Kankanaey (8 roots):
2. *sabʔít* 'to hang up, to hand upon, to hook', 4. *gabʔún* 'to fill up with earth', 16. *bukʔóŋ* 'curved, bent, crooked (as back of old person)', 24. *samʔít* (< M) 'sweet', 31. *sinʔéŋ* 'to look at, to observe', 34. *seŋʔéw* 'sweet-smelling, fragrant', 42. *kulʔít* 'to write', 46. *pitʔák* 'to split, to cleave (as a cane)'.

Ifugaw (8 roots):
2. *libʔít* 'to carry s.t. with one hand', 4a. *gabʔún* 'the act of covering s.t. with earth, gravel, stones', 4b. *tabʔún* 'what is covered with the earth, stones, vegetation, etc. of an avalanche', 16. *bukʔóŋ* 'hunchbacked', 18. *kilʔát* 'lightning', 34. *hoŋó* 'fragrance', 39. *tipʔák* 'a resounding slap in the face of somebody', 42. *kúlʔit* 'decorative lines engraved on spear shafts, handles of knives, lime tubes, etc.', 46. *pitʔák* 'a crack, small fissure (as in a plank)'.

Ibaloy (5 roots):
10. *tegʔak* 'to cough with the intent of bringing up phlegm', 16. *boʔkoŋ* 'to sag, as a horse's back from heavy load', 18. *kiʔdat* 'to spark', 34. *seŋʔew* 'aroma, fragrance, pleasant smell (as from roasting coffee, flowers)', 48. *kaʔwit* 'to hook s.t. of substantial weight'.

Central Luzon

Botolan Sambal (4 roots):

2. *habʔít* 'to catch, hang, pin on', 24. *tamʔíh* 'sweet', 35. *aleŋéŋ* 'to moan or groan with pain', 38. *lopʔák* 'to peel off (as paint), to remove a scab, to peel bark from a tree or log'.

Greater Central Philippines

Hanunóo (3 roots): 14. *lukʔáb* 'separation, disjoining, as of the skin from a blow causing a serious wound', 20. *bálʔut* 'alternation (as of colors of beads or stripes)', 41. *tápʔuŋ* 'haystack, stacked grain'.

Hiligaynon (11 roots):
2. *sábʔit* 'to hang to accidentally', 3. *yábʔuk* 'dust, dirt', 6. *sábʔug* 'to scatter, sow', 11. *tígʔik* 'shriek, choking sound', 14. *húkʔab* 'to loosen and fall off (as in removing a tire from a car), 15. *lákʔaŋ* 'a big step, a step which is as far as the legs can extend', 21. *gálʔum* 'rain cloud, gray cloud', 24. *támʔis* 'sweetness', 30. *tínʔaw* 'clear, of water', 41. *dápʔuŋ* 'bonfire', 48. *káwʔit* 'hook'.

Aklanon (15 roots):
2. *sábʔit* 'to hang up (on the wall)', 3a. *eúbʔok* 'rotting, decaying (fish)', 3b. *yábʔok* 'dust, dirt', 9. *búgʔak* 'proud, haughty, boastful', 13. *eágʔok* 'to swallow, gulp (liquids)', 15. *eákʔaŋ* 'to walk with big steps, take long strides', 19. *súeʔob* 'to overflow, flood over', 20a. *sáeʔot* 'to insert, put into', 20b. *sílʔot* 'to push in, squeeze in', 21. *gáeʔom* 'rain cloud; heavily overcast', 22. *dáeʔos* 'to slip, fall', 23. *gámʔok* 'dirt, litter, rubbish, trash', 24. *támʔis* 'to sweeten', 25. *hámʔog* 'dew', 29. *gánʔit* 'to pull out with force, jerk out', 30. *tinʔaw* 'to become clear or clean', 41. *dápʔoŋ* 'bonfire, trash fire', 48. *káwʔit* 'hook'.

Cebuano (15 roots)
2. *sábʔit* 'to put s.t. small around s.t. that holds it or pierce it with a hook', 8. *yádʔuk* 'to swallow down a liquid', 11. *tígʔik* 'to make a high-pitched, suppressed cry', 13. *lágʔuk* 'to gulp down a liquid', 15a. *gákʔaŋ* 'to squat, sit on one's heels, 15b. *lákʔaŋ* 'to stand or squat with legs wide apart', 17. *líkʔup* 'to close, cover a passage (as in blocking a road)', 20. *sálʔut* 'butt in on a conversation', *sálʔut - sálʔut* 'be arranged alternately, do s.t. alternately', 22. *dálʔus* 'to drag or slide slowly in a downward direction', 24. *támʔis* 'sweet', 25. *hámʔug* 'damp and moist', 30. *tínʔaw* 'clear, not turbid or muddied', 37. *súpʔak* 'to split s.t. lengthwise', 40. *lúpʔit* 'to press s.t. tightly between two surfaces', 47. *háwʔaŋ* 'empty', 48. *káwʔit/kaláwʔit* 'to get s.t. with a hook; to hook s.t. onto s.t.'.

Binukid (9 roots):
2. *sabʔít* 'to hang s.t. on a hook', 5. *sikabʔuŋ* 'to splash loudly, as when a monitor lizard jumps into the water', 13. *dagʔuk* 'to gulp down (a liquid)', 20. *balʔet* 'for two things to be placed in alternate sequence; to alternate with', 22. *hulʔus* 'to slip off (s.t. that is tightly fitted)', 28. *balanʔaw* 'puddle (of water)', 33. *tiŋʔal* 'for a dog to yelp or howl', 43. *lagʔud* 'to rub hard, scrape across', 44. *pasʔek* 'to drive s.t. upright or erect into the ground'

Some other Philippine languages might be said to qualify as test languages for the presence or absence of root-internal glottal stop, despite lacking, or usually lacking examples of this structure. Thus, the Bikol of Naga City (Mintz and Britanico 1985), allows glottal stop in consonant clusters

only in preconsonantal position, but if it has a word with -CVC root corresponding to -CʔVC in another language it clearly functions as a counter-indication of root-internal glottal stop, since what we would expect it to have corresponding to -CʔVC is -ʔCVC.

What may be a somewhat more complicated situation exists in Keley-i, where root-containing words that end with -ʔCVC occur often, as they do in Bikol, but some words also have -CʔVC. Data from both of these languages will be used as 'controls' to determine whether a glottal inclusion in one or more test languages justifies its reconstruction to PPH.

3. The reconstruction problem

In Blust (1988) -CVC roots that show unexplained glottal inclusions in Philippine languages were presented in two forms, one of which was the commonly attested -CVC, and the other was this root expaned by the addition of *eq or a copy vowel + *q after the first consonant. These are:

(3) VARIABLE SHAPES OF -CVC ROOTS IN BLUST (1988)

*-bun (or *-bequn?) 'heap, pile, cover with earth; collect, assemble'
*-dek (or *-deqek?) 'hiccough, sob'
*-gik (or *-giqik?) 'shrill throaty sound'
*-guŋ (or *-guquŋ? 'deep resounding sound',
*-kak (or *-kaqak?) 'to cackle, laugh loudly'
*-kaŋ-$_1$ (or *-keqaŋ?) 'to spread apart, as the legs'
*-kuŋ-$_1$ (or *-kuquŋ?) 'to bend, curve'
*-NaR (or *-NaqaR?) 'ray of light'
* -ŋeC (or *-ŋeqeC?) 'angry; to gnash the teeth'
*-pak-$_3$ (or *-paqak?) 'to slap, clap'
*-pik (or *-piqik?) 'to pat, slap lightly'
*-pit-$_2$ (or *peqit?) 'to press, squeeze together; narrow'
*-rit (or *-reqit?) 'to scratch a line'
*-suk (or *-suquk?) 'to insert, penetrate, enter'
*-Taŋ (or *-taqaŋ?) 'clanging sound'
*-Tuk (or *-Tuquk?) 'to knock, pound, beat'
*-Tuŋ (or *-Tuquŋ?) 'deep resounding sound'[2]

The stage has now been set to ask whether any of the 406 roots in Blust (to appear) might have deviated from the standard -CVC template. To answer this question each of the 48 roots shown to have a glottal inclusion in at least one test language under (2), will be compared with reflexes of the same root in other morphemes in the same language, or in other test languages, to see whether other witnesses support or contradict this feature.

(1) *-baw-$_1$ 'high; upper surface'. Bontok *labʔew* ' to be higher socially than one's companions' appears to reflect *-baw-$_1$ with an unexpected glottal inclusion. If this was in fact a feature of this root, the same root in other morphemes, both in Bontok and in other test languages, should also have a glottal inclusion, but that is not the case.

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[2] *-Taŋ, *-Tuk, and *-Tuŋ are now written *-taŋ 'clanging sound', *-Cuk 'to knock, pound, beat', and *-Cuŋ 'deep resounding sound' respectively.

The common root in Ilokano *rabáw* 'top of, highest point on something', Kankanaey *lábew* 'committing excesses', Hanunóo *bábaw* 'top, uppermost surface; mountain, as opposed to lowlands', *lábaw* 'quality of being higher, above, exceeding', Cebuano *babáw* 'place up somewhere', *labáw* 'jut out higher than s.t.; be more, over in degree or number; be ahead in a contest' lacks the glottal inclusion. Given the preponderance of the evidence, then, it is clearly simplest to assume *-baw, with a historically secondary change in Bontok *labʔew*.'[3]

Each of the remaining forms in (1) shows a similar pattern. This needs to be documented to be convincing, but it would be tedious to do this for all 48 roots, so these are cited in full in Appendix 1, and only the highlights of the analysis are summarized here. The historical source of glottal stop in Philippine languages is typically the PAN uvular stop *q, but many glottal stops appear to have other sources, leading Zorc to posit PPH *ʔ (Zorc 1982, 1996, 2020:408-415). Two groups of Philippine languages are test languages for medial *q vs. zero, namely the Kalamianic languages (Kalamian Tagbanwa and Agutaynen), and the Bilic language Tboli. These languages can be used to eliminate the possibility that a -CVC root with a glottal inclusion was actually -CVqVC, but under the rules proposed by Zorc (1982, 1996, 2020) they cannot be used to eliminate the possibility that such a root was -CVʔVC. On the other hand, because they often reflect *q as a uvular stop, and show no clear evidence of an earlier phoneme *ʔ, Formosan languages that reflect a -CVC root without a glottal inclusion will be assumed to provide unambiguous testimony for -CVC.

The second root, *-bit 'to hook, clasp; grasp with fingers' shows a slightly different pattern, in that a glottal inclusion is found in Ilokano *sabʔít* 'hook, hanger', and all cognates of this morpheme in other test languages (hence Bontok, Kankanaey, Botolan Sambal, Hiligaynon, Aklanon, Cebuano and Binukid), as well as the same root in the unrelated Ifugaw morpheme *libʔít* 'to carry s.t. with one hand'. For this Blust and Trussel (2020) therefore posit *saqebit 'to hook onto s.t.; entangle', where *q may have been *q or *ʔ.

Since the same root in other forms shows no glottal inclusion in test languages that reflect it (Appendix 1), it appears simplest to conclude that Ilokano *sabʔít* and related forms reflect *saqebit, as shown in Blust and Trussel (2020), and that Ifugaw *libʔít* reflects an earlier form *liqebit/liʔebit for which a more inclusive etymology is unknown. As noted already, the question whether this laryngeal inclusion was a reflex of PAN *q, or was a phoneme *ʔ that was innovated later in Proto-Philippines, is a matter of controversy (Zorc 2020:408ff, Blust 2020:466ff), but will not be considered further here. The primary conclusion reached in this paper is that the glottal inclusion in most -CVC roots is historically secondary in Philippine languages, whether it reflects *q or *ʔ.

The next question, then, is how *saqebit moved the glottal reflex of *q inside the root. First, schwa syncope in the environment VC__CV is pervasive in the AN languages of Taiwan, the Philippines, and Indonesia-Malaysia. Second, with few exceptions Philippine languages tolerate a glottal stop in contact with another consonant only in pre-consonantal or post-consonantal position, with most languages falling into the second category. Naga Bikol, by contrast, allows only preconsonantal glottal stops, as in *saʔbít* 'to hang s.t. up, as on a wall; to place s.t. on a hook', and Ibaloy inconsistently has preconsonantal glottal stop in some forms and postconsonantal glottal stop in others corresponding to a postconsonantal glottal stop in all other test languages. Given these canonical patterns it is clear that a glottal stop reflecting either *q or

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[3] Note that Philippine languages do not allow triliteral consonant clusters, so forms like Ilokano *rimbáw* 'top, peak, summit', Hanunóo *sakbáw* 'uplands, mountains', or Cebuano *ígbaw* 'at the top of something' do not count as evidence for either -CVC or -CʔVC.

*ʔ that became preconsonantal as a result of medial schwa syncope would normally metathesize, and hence produce a modified -CʔVC root.

       This analysis is strengthened by evidence of supraglottal consonants that have metathesized into the root. There are many of these, but the following short list should suffice to show that the process has operated in many languages:

(4) SUPRAGLOTTAL CONSONANT INCLUSIONS IN -CVC ROOTS

Bikol

haklás 'to detach, peel off ' < *halkas	(Root: *-kas 'to loosen, undo, untie')
haklóp 'to cover a frame' < *halkop	(Root: *-kup 'to enclose, cover')
hulpós 'to slip or slide off' < *huplos	(Root: *-lus 'to slip off, slide down')
suklób 'to cover, as with cloth' < *sulkub	(Root: *-kub-1 'a cover; to cover')

Hanunóo

pakpút 'apply sticky substance' < *papkut	(Root: *-keC 'adhesive, sticky')
suklúb 'covering, top' < *sulkub	(Root: *-kub 'a cover; to cover')
tikláŋ 'step, pace' < *tilkaŋ	(Root: *-kaŋ 'to spread apart, as the legs')

Hiligaynon

áslum 'sourness' < *alsum	(Root: *-sem 'sour')
búktut 'hunchback' < butkut	(Root *-kuC 'hunched over, bent')
dúplaʔ 'to spit on' < *dulpaʔ	(Root: *-paq 'to spit')
lákbaŋ 'to stride' < *labkaŋ	(Root: *-kaŋ-2 'to spread apart, as the legs')
tádluŋ 'straight' < *talduŋ	(Root *-deŋ 'straight; to straighten')
táplik 'to flick' < *talpik	(Root: *-pik 'to pat, slap lightly')
tíklup 'to fold over' < *tilkup	(Root: *-kup 'to enclose, cover')

Cebuano

búnlut 'pull with force, as hair' < *bulnut	(Root: *-NuC 'to pull out, uproot'?),
dáplay 'to hang over an edge' < *dalpay	(Root: *-pay 'to drape over, hang down'?)
káblit 'to move w/ curled fingers' < *kalbit	(Root: *-bit 'to hook, grasp with fingers'?)
sáklub 'lid; cover with a lid' < *salkub	(Root: *-kub 'a cover; to cover')

Binukid

anlag 'to shine, glow' < *alnag	(Root: *-NaR 'ray of light')
buktut 'hunchback' < *butkut	(Root *-kuC 'hunched over, bent')
hublut 'draw out (bolo, etc.)' < *hulbut	(Root: *-buC 'to weed, pluck, pull out')
takles 'fasten s.t. around waist' < *talkes	(Root: *-kes 'to wrap firmly around')
taklub 'cover w/ a lid' < *talkub	(Root: *-kub 'a cover; to cover')
tiplak 'chip pieces from s.t.' < *tilpak	(Root: *-pak-1 'to break, crack, split')

This sample should suffice to show that the metathesis of /l/, /p/, /t/, or /b/ from the penultimate syllable into a -CVC root is well-attested. It is not always clear what motivates a sporadic metathesis, although a low tolerance for preconsonantal //l/ appears to be especially common in Central Philippine languages, and the general constraint in Philippine languages against allowing both -ʔC- and -Cʔ- virtually guaranteed that there would be a large number of lexical bases with medial clusters derived by schwa syncope that use metathesis as a repair to remove the disallowed sequence. Where the only order allowed in such clusters was -Cʔ-, and the last syllable of such a word was a -CVC root, it was forced to host the displaced glottal stop, creating the illusion that many -CVC roots had -CʔVC variants.

The third root in Appendix 1 is *-buk₁ 'to decay, crumble; powder'. Once again, the evidence for a glottal inclusion is contradictory. Hiligaynon *yábʔuk* 'dust, dirt', Aklanon *eúbʔók* 'rotting, decaying (fish)' both reflect *-buk with a glottal inclusion, but evidence against this interpretation is seen in forms such as Hanunóo *gabúk* 'dust; rotten', Hiligaynon *gabúk* 'rotten, decayed', Aklanon *gabók* 'to rot, become rotten', Cebuano *dábuk* 'to crush by pounding; crushed to fine bits', *hábuk* 'to fertilize plants with compost', Binukid *gabuk* 'for wood, fiber, etc., to be weakened from decay; to rot'.

There is no need to continue, as the remaining evidence for contradictory indications of Glottal inclusions is contained in its entirety in Appendix 1. The evidence presented here shows, then, that many, perhaps most, or even all instances of intraradical glottal stops in Philippine languages are products of metathesis from a preceding syllable. It would be satisfying to be able to stop here and say that the problem of the intraradical glottal stop in Philippine languages has been solved, but the matter does not appear to be that simple.

4. CVqVC roots?

While the preceding data show clearly that -CʔVC roots in Philippine languages are most plausibly attributed to historically secondary metathesis from forms that were earlier CVʔCVC (and still earlier CVʔəCVC or CVqəCVC), there are some well-established   -CVC roots that also appear in some languages as free morphemes of the shape CVqVC. The most convincing examples of these appear below:

4.1. *-pit₂ 'to press, squeeze together; narrow'

This is the most robustly-attested root identified to date, found in some 70 etymologically independent morphemes, where it appears to be a monosyllable (Blust 1988, to appear). However, next to the numerous cases in which it is reflected as an unambiguous monosyllable (Ilokano *daípit* 'to crowd, throng; press, stick together', Bontok *ípit* 'to squeeze, to squash', Kankanaey *alípit* 'to carry under (one's arm, etc.)', Ifugaw *kuhípit* 'narrowness of things', Bikol *sagipít* 'a clip; pincers; tongs', Hanunóo *tipít* 'clamps, holders, as used to fasten house walls down', Cebuano *ípit* ~ *ipít* 'to jam; wedged in between two things', etc.), a few languages reflect *piqit as a free morpheme:

PWMP	*piqit	closed tightly, as the eyes
WMP: Casiguran Dumagat	piít	tight, narrow, crowded
Tagalog	piʔít	squeezed, pressed tightly between two persons or things
Malay (Brunei)	pihit	to press down; to weigh down

Kadayan	pihit	to pinch
Banggai	piit	shut, of the eyes

It is very hard not to see a connection between this disyllabic free morpheme and the monosyllabic root *-pit, but whatever connection exists is obscured by contradictory indications of shape. While Tagalog, Brunei Malay and Kadayan in Brunei all appear to support *piqit, Agutaynen *(ma)piet* 'narrow; tight; crowded', and Tboli *lufit* 'pincers; hair clip, bobby pin; to put or clip on' show no evidence of *-q-, nor do Formosan languages that preserve *q as a uvular stop, as seen in Thao *qpit* 'to pinch, press, as in holding a book between arm and side', *qa-qpit* 'tongs', Amis *kepit* 'to close the eyes', *ʔalapit* 'tweezers, chopsticks', or Paiwan *sapitj* 'book', *s<m>apitj* 'to put in a pile (papers, etc.)'.

Given the position adopted by Zorc (1982, 1996, 2020:408ff), this might be taken as evidence that the disyllabic base should be reconstructed as *piʔit. However, Zorc (1982:128-130, 1996) is clear in stating that his *ʔ does not yield /h/ in Malay, a phoneme that normally reflects *q. It is hard not to conclude then, that we are confronted with contradictory evidence: if the free morpheme *piqit was somehow 'captured' within a larger phonological word and became a root, it appears to have lost its medial laryngeal in the process.

4.2. *-luk 'bend, curve'
This is also a robustly-attested root, found so far in 28 etymologically independent morphemes (Blust 1988, to appear), where it appears to be a -CVC monosyllable, as in Ilokano *sillók* 'arched, bent into the shape of an arch'. However, next to this submorphemic sound-meaning association there is also a disyllabic free morpheme that appears to be related:

PWMP		*luqek/luquk	bay
WMP:	Ifugaw	luʔék	cove, sheltered bay
	Casiguran Dumagat	lúʔuk	bay
	Palawano	luʔuk	bay, gulf, harbor
	Cebuano	lúʔuk	bay
	Binukid	luʔuk	flat area adjoining a river (at the foot of a hill, etc.)
	Banjarese	luhuk	bay

Zorc (1982:129) proposed *lu:ʔek 'bay' for this, but Banjarese *luhuk* points clearly to medial *q. In either case, what it suggests is that the root *-luk in morphemes such as Casiguran Dumagat *súluk* 'corner', Ngaju Dayak *hulok* 'bay, gulf', Sundanese *dəluk* 'somewhat bent in form (as very tall persons)', Javanese *beŋkeluk* 'bent at the end (as a pen with a bent point)', or Sangir *biruluʔ* 'to wind into coils (as a snake)', may have originated as a disyllabic free morpheme that became 'captured' in two or more longer phonological words, and then took on a life of its own as a recurrent submorphemic sound-meaning association.

4.3. *-suk 'to enter'
A third example of an apparent monosyllabic root that has also been found as a disyllabic free morpheme is PPH *suquk or *suʔuk This appears to be a monosyllabic root in 37 etymologically independent morphemes including Ayta Abellen *bahokhok* 'to insert', Kayan *belasuk* 'to push

along, push into', Maranao *bisok* 'to poke, inject; injection', Waray-Waray *dasók* 'to keep or insert s.t. haphazardly or hastily', or Cebuano *tágsuk* 'to pierce; plant into but not through', to name a few Blust (to appear). However, it also appears as a disyllabic free form in the following Philippine languages:

PPH	*suquk/suʔuk	to enter
WMP: Kankanaey	s<um>óok	to enter, to penetrate (a place densely covered with bushes, grass, etc.)
Maranao	soʔok	to enter into, as the Devil enters
Western Bukidnon Manobo	suʔuk	of a supernatural who has entered into a person, to influence him to do evil; of a fish in a large stream, to enter into a smaller stream during a flood

Once again, the evidence appears to be contradictory: the Kankanaey, Maranao and Western Bukidnon Manobo forms cited above suggest *suquk/suʔuk 'to enter', but Formosan reflexes of this root show no trace of *q, and it has never been securely established that Zorc's *ʔ existed outside the Philippines: Amis *pacok* 'to slaughter, to kill with a knife or sword', Amis (Kiwit) *mi-patsuk* 'to stab', Kavalan *suksuk* 'key', Amis *cokcok*, Puyuma *suksuk* 'to lock', Puyuma *tusuk* 'to pierce', *ki-tusuk* 'to get an injection'.

4.4. PMP *-kit 'to bite'

A fourth example of an apparent monosyllabic root that has also been found as a disyllabic free morpheme is *-kit, but also Western Bukidnon Manobo *kiʔit* 'to bite off s.t. with the front teeth'. With this root it is hard to show that the evidence is contradictory, as Fomosan reflexes are unknown, although Tboli *ékét* '(of a human, animal, insect), a bite' does appear to rule out *kiqit, although not *kiʔit.

There is not a great deal more to say. The appearance of non-onomatopoetic monosyllabic free morphemes that otherwise function as roots, as in *-mit 'small, slight', but Iban *mit* 'small, little', *-ñam 'savory, tasty', but Melanau (Mukah) *ñam* 'taste',   *-Neŋ 'to stare, look fixedly', but Paiwan *Ɽeŋ* 'to look at', Maranao *neŋ* 'to observe by sight; sight', Murik *neŋ* 'face', Kayan *i-neŋ* 'to see, look; face', or *-waŋ 'wide open space', Sika '*waŋ* 'the opening of a door' raise no questions about glottal inclusions, but do raise questions about the possible origin of -CVC roots as independent morphemes. However, most of these can probably be explained as reflexes of disyllables that had a penultimate schwa which was lost through regular sound change. On the other hand, discrepancies of root shape such as those in *-NaR 'ray of light' (reflected as -CVC in a number of Formosan languages), but PPH *banaʔaR 'rays of the rising sun', or *-Ruŋ 'to roar, rumble' (also reflected as -CVC in a number of Formosan languages), but Maranao *dagoʔoŋ* 'thunder' show contradictions in the shape of the root rather than its ability to occur as either a bound root or a free morpheme.

5. Closing comments

Where do we go from here? This is a topic that has not been carefully addressed before, so we have few guidelines on what conclusions to draw. However, the one observation that emerges

clearly from the previous discussion is that the great majority of intraradical glottal stops in Philippine languages are products of historically secondary sound change that involved 1. medial schwa syncope (*ə > Ø/VC__CV), and 2. metathesis of a derived preconsonantal glottal stop.

The relationship of bound *-CVqVC or *-CVʔVC roots to free morphemes of similar shape and meaning suggests that at least a small number of -CVC roots were actually disyllabic, although the contraction of roots such as *-piqit to -CVC monosyllables in various Formosan languages is then left unexplained (unless Zorc's *ʔ can be assigned to PAN despite the multiple problems with this cited in Blust (2013:574-581)).

In the last analysis, this is a very frustrating comparative issue to deal with in Philippine linguistics, but it is best that the problems be laid out clearly rather than sweeping them under the proverbial rug, or deferring their solution to the indefinite future.[4]

APPENDIX 1: CONTRADICTORY GLOTTAL INCLUSIONS IN -CVC ROOTS

The following compilation of data provides clear evidence of contradictory inferences about -CVC vs. -CʔVC roots.   Each   example   begins   with   languages   that   support   the *-CʔVC inference ('For'), and is followed by those that contradict it ('Against'). It is important to note that -CCC- sequences are disallowed in Philippine languages, so that forms such as Cebuano *láŋgut* 'for a fish to break a line', or Ilokano *hampák* 'to slap' cannot be used as unambiguous evidence for a -CVC root, since a -CCʔ- cluster is impossible, leaving the -CVC vs. -CʔVC distinction outside the range of observation.

1. *-baw-₁ : 'high; upper surface'

FOR: Bontok *labʔéw* 'to be higher socially than one's companions'.

AGAINST: Ilokano *rabáw* 'top of, highest point on something', Kankanaey *lábew* 'committing excesses', Hanunóo *bábaw* 'top, uppermost surface; mountain, as opposed to lowlands', *lábaw* 'quality of being higher, above, exceeding', Cebuano *babáw* 'place up somewhere', *labáw* 'jut out higher than s.t.; be more, over in degree or number; be ahead in a contest'.

2. *-bit 'to hook, clasp; grasp with fingers'

FOR: Ilokano *sabʔít* 'hook, hanger', Bontok *sabʔít* 'to hang up', Kankanaey *sabʔít* 'to hang up; to hook', Ifugaw *libʔít* 'to carry s.t. with one hand', Keley-i *liʔbit* 'to pick up or lift up s.t.', Botolan Sambal *habʔít* 'to catch, hang, pin on', Hiligaynon *sábʔit* 'to hang to accidentally', Aklanon *sábʔit* 'to hang up (on the wall)', Cebuano *sábʔit* 'to put s.t. small around s.t. that holds it or pierce it with a hook', *Binukid sabʔít* 'to hang s.t. on a hook'.

AGAINST: Amis *kafit* 'attached to, stuck to; to hang', Ilokano *sábit* 'to pin a medal on', Bontok *sibít* 'general term for thorny plants; thorn', Kankanaey *kábit* 'to hook, to catch with a hook; to sew, to stitch', *sibít* 'thorn, prickle; bramble, briar', Ifugaw *kábit* 'a small hook', Bikol *kabít* 'to

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[4] In a small number of cases found to date, a random postconsonantal glottal stop that is not part of a -CVC root has also been added for reasons that remain obscure, as with PAN *kasaw > Ifugaw *kahʔó* 'rafter of an Ifugaw house' (Lambrecht 1978).

attach, fasten, clamp', Cebuano *kulumbábit* 'to hang or cling onto s.t.', *labít* 'to stitch with a look that holds but can be unravelled', *sibít* 'safety pin'.

3. *-buk-₁ 'to decay, crumble; powder'

FOR: Hiligaynon *yábʔuk* 'dust, dirt', Aklanon *eúbʔók* 'rotting, decaying (fish)'

AGAINST: Hanunóo *gabúk* 'dust; rotten', Hiligaynon *gabúk* 'rotten, decayed', Aklanon *gabók* 'to rot, become rotten', Cebuano *dábuk* 'to crush by pounding; crushed to fine bits', *hábuk* 'to fertilize plants with compost', Binukid *gabuk* 'for wood, fiber, etc., to be weakened from decay; to rot'.

4. *-bun 'to heap up, cover with earth; collect, gather'

FOR: Bontok *gabʔón* 'to cover', Kankanaey *gabʔún* 'to fill up with earth', Ifugaw *tabʔún* 'what is covered with the earth, stones, vegetation, etc. of an avalanche', Keley-i *taʔbun* 'to purposely cover s.t., i.e. cover a dead animal with soil to bury it'.

AGAINST: Ilokano *tábon* 'burial', Hanunóo *tabun* 'cover, covering', Cebuano *tabun* 'to cover s.t. to protect or conceal it'.

5. *-buŋ-₁ 'deep resounding sound'

FOR: Binukid *sikabʔuŋ* 'to splash loudly, as when a monitor lizard jumps into the water'.

AGAINST: Puyuma (Tamalakaw) *tevuŋ* 'dull sound of dropping into water, as a stone', Kankanaey *gíbuŋ* 'to resound; applied to the barking of many dogs'.

6. *-buR-₃ 'to strew, sow; sprinkle'

FOR: Hiligaynon *mag-sabʔúg* 'to scatter, to sow'.

AGAINST: Ilokano *sibúg* 'water used for watering plants', Bontok *sibóg* 'to water plants', Bikol i-sabóg 'to sow by scattering seeds', Kankanaey *sibug-án* 'to water, to irrigate, to besprinkle', Ifugaw *hibúg* 'sprinkling of water', Bikol

7. *-cit 'to squeeze or squirt out'

FOR: Bontok *posʔít* 'to exude, as pus from a boil'.

AGAINST: Bontok *pisít* 'to press between finger and thumb in order to squeeze out the contents of s.t.', Hanunoo *pusít* 'to spurt, spurting, as of blood'.

8. *-dek-₁ 'to hiccough, sob'

FOR: Cebuano *yádʔuk* 'to swallow down a liquid'

AGAINST: Ilokano *eddék* 'to grunt, heave', Bontok *alindadek* 'hiccough'.

9. *-gak-1 'proud; to boast'

FOR: Aklanon *búgʔak* 'proud, haughty, boastful'.

AGAINST: Aklanon *hágak* 'bragging, boastful, proud'.

10. *-gak-2 'raucous, throaty sound'

FOR: Ilokano *sagʔák* 'to clear the throat (with phlegm, stuck food, etc.)', Ibaloy *tegʔak* 'to cough with the intent of bringing up phlegm'.

AGAINST: Kankanaey *ígak* 'break out into laughter', Kankanaey *tagák* 'to cackle', Bikol *lagák-lagák* 'the sound made when swallowing liquids', Bikol *rigák-rigák* 'the sound of a croaking frog'.

11. *-gik 'shrill throaty sound'

FOR: Hiligaynon *tígʔik* 'shriek, choking sound'

AGAINST: Kankanaey *galokígik* 'to neigh', Ifugaw *dagík* 'noise', Cebuano *ígik* 'for pigs to squeal', Cebuano *iwígik* 'for pigs to squeal'.

NOTE: Also Cebuano *agíʔik* 'to creak, squeak, which appears to reflect a *-CVqVC or *-CVʔVC root.

12. *-guC 'to pull with a jerk'

FOR: Ilokano *bagʔút* 'to pull out, uproot'.

AGAINST: Ilokano *bagót* 'to pull out, uproot', Ifugaw *bagút* 'to pull out a piece of wood that is pressed between two other pieces of wood, therefore requiring an effort', Ibaloy *bagot* 'to pluck s.t., as a hair'.

13. *-guk 'deep throaty sound'

FOR: Bontok *sogʔók* 'to cause s.o. to cough, as dust', or smoke', Bikol *haʔgók* 'to take deep breaths, as one tired or ill with asthma; to gasp', *laʔgók* 'to gulp down liquids; to wolf down food', Binukid *dagʔuk* 'to gulp down (a liquid)'.

AGAINST: Kankanaey *igók* 'to swallow', Hiligaynon *huragúk* 'to snore', Cebuano *búguk* 'to take a mouthful of liquid to gargle', Cebuano *háguk* 'to snore'.

14. *-kab-1 'to open, uncover'

FOR: Hanunoo *lukʔáb* 'separation, disjoining, as of the skin from a blow causing a serious wound', Hiligaynon *húkʔab* 'to loosen and fall off (as in removing a tire from a car)'.

AGAINST: Ilokano *ma-lekkáb* 'to be taken apart, torn off, severed, separated', Ilokano *lukáb* 'to pry open (oyster, etc.), open from the bottom', Bontok *lokáb* 'to raise, as the edge of a pot lid in order to look into the pot', Kankanaey *lukáb* 'to lift up, heave up; raise up; pull up', Cebuano *hukáb* 'to open, remove a cover through forceful or non-human action', Cebuano *ukáb* 'to open with an upward or lifting motion'.

15. *-kaŋ-₂ 'to spread apart, as the legs'

FOR: Hiligaynon *lákʔaŋ* 'a big step, a step which is as far as the legs can extend', Cebuano *gákʔáŋ* 'to squat, sit on one's heels', Cebuano *lákʔaŋ* 'to stand or squat with legs wide apart'

AGAINST: Paiwan *ma-vakaŋ* 'to walk bowlegged, or with feet splayed outwards', Ilokano *bákaŋ* 'bandy-legged', Bontok *ákaŋ* 'to step over, as a rock or a sleeping person', Hanunóo *balakáŋ* 'the space between one's legs', Agutaynen *bakaŋ* 'bowlegged; for one's walk or stance to be slightly bowlegged', Aklanon *bakáŋ* 'to walk with the knees apart', Cebuano *bakáŋ* 'bowlegged; deprecatory term for the Japanese', Cebuano *lákaŋ* 'to step across'.

NOTE: Also PPH *sakáqaŋ/sakáʔaŋ 'to walk or stand with legs wide apart'.

16. *-kuŋ-₁ 'to bend, curve'

FOR: Kankanaey *bukʔóŋ* 'curved, bent, crooked (as back of old person)'.

AGAINST: Ilokano *súkoŋ* 'deep; concave (plates)', Ibaloy *bokoŋ* 'to sag (as horse's back from heavy load), be stooped, as a person with heavy load', Cebuano *lukuŋ* 'to make a coil, form a circle from s.t. stiff'.

17. *-kup 'to enclose, cover'

FOR: Cebuano *líkʔup* 'to close, cover a passage (as in blocking a road)'.

AGAINST: Ilokano *okóp* 'sitting hen, brooder', *takúp* 'to patch, mend by patching', Bontok *ókop* 'to cover, as a sore; to line, as a rusty container before putting in the contents', Kankanaey *súkup* 'shutter; cover (of a basket)', Hanunóo *takúp* 'cover, lid, top', *t<al>akúp* 'door (sliding type)', Cebuano *takúp* 'shutter', Cebuano *tíkup* 'closed tight, without holes or spaces in between'.

18. *-laC 'to shine; flickering or flashing light'

FOR: Ifugaw *kilʔát* 'lightning', Ilokano *salʔát* 'lightning'.

AGAINST: Amis *felat* 'to flicker; light appearing and then disappearing, as of a lighted match', Puyuma (Tamalakaw) *meLaTiLaT* 'to sparkle, glitter', Hanunóo *kílat* 'lightning', Hiligaynon *kilát*

'lightning', Aklanon *kilát* 'a flash of lightning, lightning bolt', Cebuano *kílat* 'lightning', Binukid *kilat* 'lightning'.

19. *-leb 'to sink, disappear under water'

FOR: Aklanon *súeʔob* 'to overflow, flood over'.

AGAINST: Agutaynen *man-delep* 'to bathe, play or swim in the ocean, lake or river'.

NOTE: No clear reflexes of *-leb without a glottal inclusion are known in diagnostic Philippine witnesses. The Agutaynen form cited here contains a reflex of the root doublet *-lep 'to sink, submerge'. It could not contain a root inclusion with *q, although *ʔ remains a possibility.

20. *-leC 'interval, gap, intervening space'

FOR: Ilokano *balʔét* 'to go (be inserted) in between', Ilokano *salʔét* 'to be intercropped', Hanunóo *bálʔut* alternation (as of colors of beads or stripes)', Aklanon *sáeʔot* 'to insert, put into', Aklanon *sílʔot* 'to push in, squeeze in', Binukid *balʔet* 'for two things to be placed in alternate sequence; to alternate with'.

AGAINST: Paiwan *qelets* 'a joint in bamboo', Hanunóo *ʔúlut* 'level, layer, floor, including the space or interval between such levels', Aklanon *hueót* 'room divider, partition, division', *ueót* 'interval, space, unit of space', Cebuano *ulút* 'to have a boundary in between'.

21 *-lem-₁ 'dark; obscure'

FOR: Hiligaynon *gálʔum* 'rain cloud, gray cloud', Aklanon *gáeʔom* 'rain cloud; heavily overcast'.

AGAINST: Paiwan *velyelem* 'cloud shadows; overcast', Ilokano *lúlem* 'overcast, clouded over, darkish', *malém* 'afternoon', Bikol *mag-sulóm* 'to be dark, obscure (as a house without lights)', Hanunoo *dulúm* 'darkness', Aklanon *dueóm* 'to get darker', Cebuano *dulúm* 'for a night to be dark and moonless', *kilum-kílum* 'dusk'.

22. *-lus 'to slip off, slide down'

FOR: Binukid *hulʔus* 'to slip off (s.t. that is tightly fitted)'.

AGAINST: Amis *ploc* 'to pull off (a a ring), disengage (as to let down a baby that has been tied on its mother's back', Bikol *palós* 'to get off, dismount', Hiligaynon *palús* 'to slip off, free from grip', Cebuano *hilús* 'for s.t. tied securely in place to slip off, move out of place by sliding', Binukid *hulus* 'to slip s.t. off; to slide down'.

23. *-mek 'to crush, pulverize; powder'

FOR: Aklanon *gámʔok* 'dirt, litter, rubbish, trash'.

AGAINST: Puyuma (Tamalakaw) *ma-Tumek* '(of trees and bamboos), crumbling, falling to pieces', Paiwan *sulʸamek* 'powder', Ilokano *simék* 'to pulverize, triturate, comminute', Bontok *tomék* 'to crush, as stone, break into small pieces, as lumps of rice', Kankanaey *tumék* 'pounded to piees, crushed, pulverized'.

24. *-mis 'sweet'

FOR: Ilokano *samʔít* 'sweet', SblBt *tamʔíh* 'sweet', Hiligaynon *tamʔis* 'sweetness', Aklanon *támʔis* 'to sweeten'.

AGAINST: Ibaloy *amis* 'sweetness, delicious taste', Bikol *hamis* 'sweet', Binukid *emis* 'sweet, tasty, delicious'.

25. *-muR-$_1$ 'dew'

FOR: Aklanon *hámʔog* 'dew'.

AGAINST: Saisiyat (Taai) *lamoL* 'dew', Hanunóo *námug* 'dew (morning)', Cebuano *yámug* 'dew'.

26. *-muR-$_2$ 'to gargle, rinse the mouth; to hold in the mouth'

FOR: Bontok *gasimʔól* 'to chew on, as candies'.

AGAINST: Puyuma (Tamalakaw) *HumuR* 'cram mouth with food or water', Paiwan *qumu* 'water held in the mouth (not saliva)', Ilokano *mulúmog* 'to rinse the mouth, gargle', Hiligaynon *límug* 'to gargle'.

27. *-naŋ 'to shine, sparkle'

FOR: Bontok *wanʔáŋ* 'to illuminate, to light', Keley-i *taʔnaŋ* 'to be mid-morning; the position of the sun at mid-morning'.

AGAINST: Keley-i *linaŋ* 'describes s.t. as shining', Bikol *lináŋ* 'describing something smooth and shiny; sleek; slick', Agutaynen *linaŋ* 'smooth, silky; shiny'.

NOTE: The Agutaynen form cited here could not contain a root inclusion with *q, although *ʔ remains a possibility. However, if the root in Bikol *lináŋ* contained a glottal inclusion, as it does in Bontok, we would expect a *preconsonantal* glottal stop medially in this form.

28. *-naw 'lake, pond; enclosed body of water'

FOR: Ilokano *banʔáw* 'pool in a stream; lake, pond', Ilokano *danʔáw* 'lake, pond', Binukid *balanʔaw* 'puddle (of water)'.

AGAINST: Ilokano *dánaw* 'lake, pond', Ifugaw *bannó* 'dam in a river; small pond', Hanunóo *danáw* 'lake, pond', Hiligaynon *línaw* 'brook, stream', Aklanon *danáw* 'lake, pond', Cebuano *bagánaw* 'pool of water (after rain, etc.)', *bánaw* 'for liquids to be spread over an area'.

29. *-nit 'to remove, detach'.

FOR: Keley-i *yaʔnit ~ yapnit* 'to pull by jerking', Aklanon *gánʔit* 'to pull out with force, jerk out'.

AGAINST: Agutaynen *kanit* 'to remove hair from the hide of a pig which has been butchered', Cebuano *púgnit* 'to pick, pinch with the tips of the fingers and thumb', Binukid *lanit* 'to scrape, take off the outer later of s.t.'.

30. *-Naw 'clear, pure (of water)'

FOR: Ilokano *sinʔáw* 'clear, transparent', Aklanon *tínʔaw* 'to become clear or clean' Cebuano *tínʔaw* 'clear, not turbid or muddied'.

AGAINST: Bikol *galínaw* 'to see s.t. beneath the surface of the water', Hanunóo *línaw* 'a quiet, still body of water', Cebuano *línaw* 'undisturbed pool or lake'.

31. *-Neŋ 'to stare, look fixedly'

FOR: BON *sinʔéŋ* 'to scrutinize, examine closely', KAN *sinʔéŋ* 'to look at, to observe'.

AGAINST: Paiwan *ᵏeŋ* 'to look at', Agutaynen *mag-pa-sineŋ* 'to stare intently, carefully; to scrutinize', Tboli *teneŋ* 'to look at s.t. with awe, wonder, without blinking'.

32. *-ŋab 'to gape; open, of the mouth'

FOR: Ilokano *suŋʔáb* 'quick, heavy breathing; gasp'.

AGAINST: Ilokano *súŋab* 'mouth (of scoop nets); neck opening; entrance', Bontok *aŋáb* 'to take a bite out of s.t., as an apple; to bite on; snap, of a dog'

33. *-ŋar 'to howl, shout, scream'

FOR: Binukid *tiŋʔal* 'for a dog to yelp or howl'.

AGAINST: Bontok *áŋal* 'to answer back angrily; to challenge', Hiligaynon *uŋál* 'a howl'.

34. *-ŋaw-₃ 'leaking air, vapor'

FOR: Ilokano *saŋʔáw* 'breath; to exhale', Bontok *seŋʔéw* 'to have a pleasant smell (of things cooking), Ibaloy *on-seŋʔew* 'to give off a pleasant aroma, as coffee'.

AGAINST: Ilokano *seŋŋáw* 'vapor, steam; mist; breath', Ibaloy *on-seŋaw* 'to escape, go out into the air, of flavor, aroma, strength', Bikol *haŋáw* 'breath', Bikol *mag-suŋáw* 'to exude a vapor, air, etc.; to give off (as fumes)', Hanunóo *súŋaw* 'leaking, escaping, as of steam, gas, liquids, etc.'.

35. *-ŋeŋ 'to buzz, hum'

FOR: Botolan Sambal *aleŋʔéŋ* 'to moan or groan with pain; to have a pitiful voice when begging for s.t.'

AGAINST: Kankanaey *ŋeŋéŋ* 'to talk through the nose', Ibaloy *man-ŋeŋŋeŋ* 'to speak words that are not distinguisheable (as a crowd of people, all talking, new song being sung, deaf mute talking)'

36. *-pag 'to strike, beat'

FOR: Bontok *papʔág* 'to knock the side of an elongated object against s.t., as a pestle against the mortar'

AGAINST: Kankanaey *pagípag* 'to bang, knock, bounce', Ifugaw *hípag* 'blow in general, but not with a weapon (e.g. a stick); mostly used of blows with one's fist', Ibaloy *tipag* 'to strike s.t. against s.t. else'.

37. *-pak-$_1$ 'to break, crack, split'

FOR: Cebuano *súpʔak* 'to split s.t. lengthwise'

AGAINST: Ilokano *leppák* 'to separate at the joints (bones, roasted chickens, palm spines, etc.)', Bontok *apák* 'split or divided, as a forked stick or a tree with a divided trunk', Ibaloy *Kepak* 'to split along a grain (as coconut husks and bamboo tubes break)', Cebuano *hupák* 'to develop a crack', *ipák* 'to split, break a piece of s.t.', *lipák* 'to cut bamboo into slats', *upák* 'to break off a piece for s.o.'.

38. *-pak-$_2$ 'to peel bark from a tree'

FOR: Botolan Sambal *lopʔák* 'to peel off (as paint), to remove a scab, to peel bark from a tree or log'.

AGAINST: Ifugaw *upák* 'dry leaf of a betel nut tree; usually it hangs down along the stern of the tree', Bikol *úpak* 'the bark of aparticular tree used to put the finishing touches on boats', Hiligaynon *úpak* 'peeling, skin of fruits', Aklanon *úpak* 'skin, peeling (of fruits, vegetables); rind; to peel, take off the skin or peeling', Cebuano *úpak* 'bark of trees; to peel off, get peeled off'.

39. *-pak-$_3$ 'to slap, clap'

FOR: Ifugaw *tipʔák* 'a resounding slap in the face of somebody', Keley-i *siʔpak ~tiʔpak* 'to slap with open palm'

AGAINST: Kankanaey *kipák* 'to clap, clash', Aklanon *dapák* 'to slap lightly, pat', Cebuano *lugápak* 'slapping, cracking sound'.

40. *-pit-₂ 'to press, squeeze together; narrow'

FOR: Bontok *pipʔít* 'to be crowded; to be packed in, as many people in a room', Bikol *yaʔpít* 'narrow (as a passage), tight (as clothes)', Cebuano *lúpʔit* 'to press s.t. tightly between two surfaces'.

AGAINST: Kavalan *ipit* 'pincer of crustaceans; tongs for picking up hot embers; chopsticks', Amis *ʔalapit* 'tweezers, chopsticks', Ilokano *daʔípit* 'to crowd, throng; press, stick together', *sípit* 'tongs; forceps, chopsticks', Bontok *sípit* 'pincers, ason a crab', Kankanaey *alípit* 'to carry under (one's arm, etc.)', *sípit* 'pliers, pincers, nippers, tongs, tweezers', Ifugaw *kuhípit* 'narrowness of things', Bikol *sagipít* 'a clip; pincers; tongs', Hanunóo *sípit* 'tongs, pincers', *tipít* 'clamps, holders, as used to fasten house walls down', Hiligaynon *mag-sipit* 'to carry under one's arm', Cebuano *ipít ~ ípit* 'jammed, wedged in between two things'.

41.. *-puŋ-₁ 'a bunch, cluster'

FOR: Hanunóo *tápʔuŋ* 'haystack, stacked grain', Hiligaynon *dápʔuŋ* 'bonfire', Aklanon *dápʔoŋ* 'bonfire, trash fire'.

AGAINST: Puyuma *sarəpuŋ* 'to gather', Paiwan *qupuŋ* 'a swarm of honeybees'. Ilokano *lípoŋ* 'a crowd of people', *tarapóŋ* 'to join, come together, unite, gather' Bikol *úpoŋ* 'rice stalks bundled by the handful', Aklanon *upóŋ* 'to gather rice stalks and bundle them together during the harvest'.

42. *-rit 'to scratch a line'

FOR: Ifugaw *kúlʔit* 'decorative lines engraved on spear shafts, handles of knives, lime tubes, etc.', Keley-i *kuʔlit* 'a mark or writing made with a writing instrument'.

AGAINST: Ilokano *gárit* 'striped, streaked; color, shade', *orárit* 'streaked', *urít* 'line, stroke, dash (in wood, etc.); stripe, streak (in cloth)', Ibaloy *korit* 'to make a line (as in underlining, drawing on the ground)', Bikol *kurit* 'a line (as 'a straight line'; streak)', Cebuano *kúlit*   'to   carve   or engrave'.

43. *-Rud 'to scrape'

FOR: Binukid *lagʔud* 'to rub hard, scrape'

AGAINST: Ilokano *águd* 'scraping the edge of a a board, of a strip of bamboo, etc., with the edge of a tool', Bontok *ágod* 'to sharpen to a point, as a post, stick, or pencil', *kagód* 'to remove rice grains from the stalk by scraping or trampling, preparatory to planting', Cebuano *kagúd* 'to grind s.t. to shreds by grinding or scraping it; to abrade, wear off', *ságud* 'for a rope or string to be worn out by friction', Binukid *kagud* 'to scrape s.t. out of s.t. else (as meat out of a coconut)', *lugud* 'to scrub, rub (one's body) hard'.

44. *-sek-₂ 'to insert, stick into a soft surface'

FOR: Bontok *isʔék* 'to plant, of vegetables', Keley-i *luʔhek* 'stake (used, e.g. in holding growing beans upright)', Binukid *pasʔek* 'to drive s.t. upright or erect into the ground', *pusʔek*   'to plant s.t. in the ground'.

AGAINST: Amis *tsek* 'to pierce, stab', Paiwan *tsetek* 'to have an injection', Bontok *desék* 'to thrust a stake into the ground; to stick a knife or other pointed object into s.t., such as wood', Ifugaw *dohók* 'to prick, sting with or without purpose; to hurt by using a sting or sting-like thing', Bikol *hasók* 'to plant rice or corn seeds by dibbling', Cebuano *hasúk* 'to make a hole to sow seeds in'.

45. *-suk 'to insert, penetrate, enter'.

FOR: Bontok *sosʔók* 'to stick an object lengthwise into a bound load'

AGAINST: Amis (kiwit) *mi-patsuk* 'to stab', Puyuma *tusuk* 'to pierce', Puyuma (Tamalakaw)   *Resuk* 'to fix a stick or post in the ground', Ilokano *y-ósok* 'to insert, etc. from below', Keley-i*lehuk* 'to dig soil with a shovel or a wooden spade', Bikol *rasók* 'peg', Hiligaynon *tisúk* 'to stick into', Cebuano *hasúk* 'to make a hole to sow seeds in'.

NOTE" Although Bontok *sosʔók* clearly contains the root variant *-suk 'to insert, penetrate, enter', the counterexamples in Bikol, Hiligaynon and Cebuano are all ambiguous for *-sek-₂ 'to insert, stick into a soft surface' or *-suk 'to insert, penetrate, enter'.

46. *-tak-₂ 'the sound of cracking, splitting, knocking'

FOR: Kankanaey *pitʔák* 'to split, to cleave (as a cane)', IFG *pitʔák* 'a crack, small fissure (as in a plank)'.

AGAINST: Ilokano *sítak* 'the sound of clashing swords', *tarakátak* the sound of heavy rain, of water falling from the eaves, etc.', Kankanaey *pátak* 'to begin raining; the rain comes down in thick drops', *piták* 'to split, cleave (a cane, etc.)', Bikol *gaták* 'split, cracked', *lagaták* 'sound of a dull smack, a slamming door', *lapaták* to fall with a splat, as large drops of rain', Bikol *ruták-ruták* 'the cracking sound of body joints'

47. *-waŋ 'wide open space'

FOR: Ilokano *bawʔáŋ* 'gorge, ravine', *lawʔáŋ* 'the universe; nature; space', Cebuano *háwʔaŋ* 'empty'.

AGAINST: Ilokano *giwáŋ* 'gap, breach', Ifugaw *bawáŋ* 'the interior of an Ifugaw house; spacious', Ibaloy *bawaŋ* to open the outlet from the irrigation canal', *e-dawaŋ* 'to be spacious, roomy, as the inside of a house, a field, shoes that are too big', Aklanon *gawáŋ* 'door', Cebuano

awáŋ 'the space between the upper two front teeth', *gawáŋ* 'door; hole in floor or wall', *giwáŋ* 'fissure, narrow crack'.

48. *-wit 'a hook; hook shaped'

FOR: Aklanon *káwʔit* 'hook', Cebuano *káwʔit/ kaláwʔit* 'to get s.t. with a hook; to hook s.t. onto s.t.'.

AGAINST: Amis *korawit* 'to grasp or pull in with a hook', *ŋawit* 'to pull the trigger of a gun', Ilokano *káwit* 'hook', Kankanaey *sokláwit* 'to hang (blanket, etc.) on something more or less pointed', Ibaloy, *kaʔwit* 'to hook s.t. of substantial weight', Bikol *káwit* 'a hook; hook-shaped', Hanunóo *káwit* 'hook', Hiligaynon *káwit*, Aklanon *kawit* 'hook'.

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