

# The Languages of Nusa Tenggara: PAn Reconstruction and Subgrouping

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## 0.0 Introduction

- The majority consensus on the demographic history of the speakers of the Austronesian family of languages is that they originated on Taiwan (after having migrated from southern China), and proceeded through insular Southeast Asia.
- This migration model crucially predicts that linguistic innovations at any point along the migration path must carry over into subsequent areas of dispersal, with phonological mergers (and lexical replacements) being unrecoverable once they have occurred.
- The distinctions between \*C and \*t, \*S and \*h, and \*N and \*n have only been recognized in the Formosan languages of Taiwan, having merged in all extra-Formosan Austronesian languages.

## 0.1 The Problem

- A group of phonological distinctions have been preserved in the Nusa Tenggara (NT) region (which coincides with the Central Malayo-Polynesian node of the above tree), the majority of which have not been preserved in the Formosan languages.
- Several of these distinctions appear to have also been preserved in other parts of the Malayo-Polynesian area.

Here, we will be concerned with the Macro-Sumba subgroup, which includes the languages of Sumba, Savu, Dhao, and Bimanese (spoken in eastern Sumbawa):

[Proto-Sumba [Bimanese [Savu-Dhao]]]

## 0.2 The Present State of Austronesian reconstruction

The consensus inventory of PAn consonants is the following:

(1)

p	t	C	c	k	q	ʔ
b	d	j	z	g		
	s		S			h
m	n		ɲ	ŋ		
	l		N			
w	r	R	y			

\*C, \*j, \*z, \*s, \*S, \*N, and \*R are firmly established, but their phonetic interpretation is still debated. \*g, \*r, \*ɲ, and \*c are comparatively low-frequency, and \*c also has a restricted geographic distribution in western Indonesia, limited to frozen monosyllabic morphemes.

## 1.0 Evidence for additional PAn distinctions in Proto-Macro-Sumba

### 1.1 Implosive vs plain voiced stops

(2) Correspondences for implosive and plain voiced stops at four places of articulation:

PAn	PMS	Proto Sumba	Bima	Dhao	Savu
*b	*ɓ	*ɓ	ɓ	b~ɓ	ɓ
*b	*β	*w	w	h	w
*d	*ɗ	*ɗ	ɗ	d~ɗ	ɗ
*d	*r	*r	r	r	r
*z	*ʃ	*r	ɗ	ʃ	ʃ
*z	*ʒ	*r	r	ʃ	ʃ
---	*ɠ	*g	g	ɠ	ɠ
*k	*ɣ	*ɣ	h	ʔ	ʔ

(3) Examples of PMS \*β < PAn \*b

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
stone	*batu	*ba[t/ʈ]u	*βaʈu	*watu	wadu	haʈu	wadu
buy, cost	*beli	*bəli	*βəli	*wəli	weli	həli	wəli
fruit	*buaq	*buaq	*βua	*wua	wua	hua	wue

(4) Examples of PMS \*ɓ < PAn \*b

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
widow	*balu	*ɓalu	*ɓalu	*ɓalu	---	balu	ɓalu
iron	*besi	*ɓəsi	*ɓəsi	*ɓəsi	ɓesi	ɓəsi	ɓəhi
sugarcane	*CebuS	*ʈəbuç	*ʈəbu	*təbu	doɓu	---	dəbu

(5) Examples of PMS \*r < PAn \*d

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
blood	*daRaɓ	*daʈaɓ	*raʈa	*raʈa	raa	raa	raa
leaf	*daSun	*daçun	*raʈun	*raʈun	rɔo	rəu	rəu
alive	*ma-quɗip	*ma-quɗip	*morip	*morip	mori	muri	muri

(6) Examples of PMS \*ɗ < PAn \*d

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
in(side)	*dalem	*ɗaləm	*ɗalə	*ɗalə	---	dara	ɗara
at, above	*di (aCas)	*ɗi (aʈas)	*ɗi-aʈa	*ɗi-ata	ɗi	---	ɗi-da
head covering	*tedun	*təɗun	*təɗun	*təɗun	---	təɗu	təɗu

## (7) Examples of PMS \*j &lt; PAn \*ʃ

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
road	*zalan	*ʃa[an	*ʃa[ə	*lara (met.)	---	ʃara	ʃara
rain	*quzaN	*quʃaʎ	*uʃaŋ	*uraŋ	ura	əʃi	əʃi

## (8) Examples of PMS \*f &lt; PAn \*ʃ

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
far	*zauq	*ʃauq	*ʃau	*rau	dɔo	ʃəu	ʃəu
near	*qazaNi	*qaʃaʎi	*ʃani	*rani	deni	---	---

## (9) Examples of PMS \*ɣ &lt; PAn \*g

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
tree	*kaSiw	*gaçiw	*ɣaju	*ɣaju	haju	aʃu	aʃu
louse	*kuCu	*guʃu	*ɣuʃu	*utu	hudu	uʃu	udu
fear	*ma-Cakut	*ma-ʃagut	*n-ʃaɣut	*ndaut-ə	dahu	ɖaʔu	daʔu

## (10) Examples of PMS \*k &lt; PAn \*k

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
split	*bekaq	*bəkaq	*bəka	*bəka	---	bəka	bəka
bite	*kaRaC-i	*kaʃaʎ-i	*kaʃi	*kati	---	kaʃi	kadi
scratch	*kaRaw	*kaʃaw	*kaʃo	*kaʃu	kao	kao	kao

## (11) Examples of PMS \*ɟ

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
right (side)	*wanaN	*[ɟw]anaʎ	*[ɟw]ana	*wana	wana	ɟana	ɟana
pick, pluck	---	---	*ɟətu ~ *ɟuta	---	---	ɟətu	ɟətu
night	---	---	*ɟadi	*gadi	gadi	---	---

If traditional PAn \*g is reanalyzed as \*G, the following development can be posited between PMS and more "traditional" languages:

## (12) Development of PAn obstruents in PMS vs "traditional" languages:

PAn	plain voiced stops		implosive stops		
	PMS	Other An	PAn	PMS	Other An
*b	*β	*b	*ɓ	*ɓ	*b
*d	*r	*d	*ɗ	*ɗ	*d
*ʃ	*ʃ	*ʃ	*ʃ	*ʃ	*ʃ
*g	*ɣ	*k	*ɟ	*ɟ	???
*G	*g	*g	---	---	---

## 1.2 Bilabial stop vs labiodental fricative

(13) Correspondences for PMS \*p and \*f

PAn	PMS	Sumba	Bima	Dhao	Savu
*p	*p	*p	p	p	p
*p	*f	*p	f	ɸ	ɸ

(14) Examples of PMS \*p < PAn \*p

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
warm/hot	*panas	*panas	*panas	*panas	pana	pana	pana
seven	*pitu	*pi[t/ʈ]u	*piʈu	*pitu	pidu	piɖu	pidu
four	*Sepat	*çəpat	*əpat	*pat	upa	əpa	əpa

(15) Examples of PMS \*f < PAn \*f

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
dream	*S-in-ipi	*ç-in-ifi	*nifi	*nipi	nifi	nii	nii
rice	*pajay	*faɖaj	*fare	*pare 'millet'	fare	are	are
fire	*Sapuy	*çafuj	*afi	*api	afi	ai	ai

## 1.3 Alveolar stop vs retroflex stop

Until now, \*t and \*C were distinguished only in Formosan languages. However, PMS \*ʈ generally corresponds to PAn C:

(16) Correspondences for PMS \*t and \*ʈ

PAn	PMS	Sumba	Bima	Dhao	Savu
*t	*t	*t	t	t	t
*C	*ʈ	*t	d	ɖ	d

(17) Examples of PMS \*t < PAn \*t

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
three	*telu	*təlu	*təlu	*təlu	tolu	təlu	təlu
pole for boat	*tuku	*tuku	*tuku	---	tuku	ta-tuku	---
knee	*tuSud	*tuçud	*tuu	---	ta-tuu	tuu	tuu

(18) Reflexes of PMS \*ʈ < PAn \*t

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
blind	*ma-buCa	*ma-ɖuʈa	*(m)ɖuʈa	---	mbuda	bəɖu	bədu
eye	*maCa	*maʈa	*maʈa	*mata	mada	maɖa	mada
egg	*qiCeluR	*qiʈəluʈ	*ʈəlu	*təlu	dolu	ɖəlu	dəlu

#### 1.4 Alveolar lateral vs retroflex lateral

(19) Correspondences for PMS \*l and \*ɭ

PAn	PMS	Sumba	Bima	Dhao	Savu
*l	*l	*l	l	l	l
*l	*ɭ	*l	r	r	r

(20) Examples of PMS \*l < PAn \*l

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
sail	*layaR	*lajaɾ	*laja	---	lodʒa	lai	lai
five	*lima	*lima	*lima	*lima	lima	ləmi	ləmi
day	*qalejaw	*qaləɖaw	*ləɖo	*ləɖo	liro	loɖo	loɖo

(21) Examples of PMS \*ɭ < PAn \*l

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
ear of grain	*buliR	*buliɾ	*βuli	*wuli	wuri	huri	wuri
skin	*kuliC	*gulit	*ɣulit	*ka-lit	huri	ka-ʔuri	k-uri
eight	*walu	*walu	*walu	*walu	waru	aru	aru

#### 1.5 Alveolar fricative vs palatal stop

(22) Correspondences for PMS \*s and \*ç

PAn	PMS	Sumba	Bima	Dhao	Savu
*s	*s	*s	s	s	h
*s	*ç	*ç	c	c	h

(23) Examples of PMS \*s < PAn \*s

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
iron	*besi	*bəsi	*bəsi	---	besi	bəsi	bəhi
torch	*suluq	*suluq	*sulʉ	*sulu	---	suru	huru
ripe	*ma-[C]a-esak	*ma-ʈa-əsak	*ma-ʈasa	---	ntasa	ma-ɖasa	---

(24) Examples of PMS \*ç < PAn \*ç

Gloss	Trad. PAn	Revised PAn	PMS	Sumba	Bima	Dhao	Savu
one	*isa	*ica	*ica	*iça	ica	əci	əhi
nine	*siwa	*ciwa	*ciwa	*çiwa	ciwi	ceo	heo
sated	*ma-besuR	*ma-bəcuɾ	*m-bəcu	*mbə[s/ç]u	mbocu	bəcu	bəhu

## 2.0 Interpretation of other PAN phonemes

### 2.1 PAN \*j and \*R as retroflex \*ɖ and \*ɽ

(25) Reflexes of PAN \*ɖ and \*ɽ in various Austronesian languages (from Blust 2009: 572, 582)

Reflexes of PAN *ɖ		Reflexes of PAN *ɽ	
Acute	Grave	Acute	Grave
t	---	---	w
d	k	d	k
dz	g	---	g
s	x	s	x
ð	ŋ	ð	ŋ
---	---	z	R
l	ʔ	l	---
ɬ	---	ɬ	h
n	0	n	0
---		ɽ	
r		r	
c		---	
ʃ		ʃ	
---		ʎ	
j		j	

Note that PAN \*ɖ only occurs in medial and final position, never in initial position, indicating that its perception relies on formant transitions from a preceding vowel.

(26) Reflexes of \*ɖ and \*ɽ in the Formosan languages

PAN	Pazeh	Thao	Sai	Ata	Saa	Knkn	Rukai	Bunun	Amis	Kav	Pai	Puy
*ɖ	z, -t	ð	z	0	ʃ	l	g	0	n	n	d	ɖ/d
*ɽ	x	ɬ	ɽ	ɣ, r, 0	r	r	r, 0	l	ɭ	ɣ	0	r

### 2.2 PAN \*S and \*N as palatal \*ç and \*ʎ

These are the two phonemes that are genuinely distinguished only in the Formosan languages:

(27) Formosan reflexes of dental and palatal sibilants

PAN	Pazeh	Thao	Sai	Ata	Saa	Knkn	Rukai	Bunun	Amis	Kav	Pai	Puy
*s <sub>1</sub>	z	t	h	h, x	s, 0	c	θ, s, 0	c	c	s	t	s
*ç	s	ʃ	ʃ	s	0	s	s	s	s	s	s	0

(28) Formosan reflexes of alveolar and palatal laterals

PAN	Pazeh	Thao	Sai	Ata	Saa	Knkn	Rukai	Bunun	Amis	Kav	Pai	Puy
*l	r	r	ɭ	l	0	0, l	ɭ	h-, 0	ɭ	r, ɣ	ɭ	ɭ
*ʎ	l	ð	ʎ	ʎ	ʃ	n	l	n	ʃ	n	ʎ	l

### 3.0 Conclusion

The revised PAN consonant system suggested here is the following:

(29) Revised Proto-Austronesian consonant inventory

p	t	t̚	c	k	q	ʔ
b	d	d̚	ɟ	g	g	
β	ɖ		ʃ	ʒ		
f	s		ç			h
m	n		ɲ	ŋ		
	l	l̚	ʎ			
w	r	ɾ	j			

Evidence for this system is preserved in the following areas (NS = North Sarawak, WOc = western Oceanic; see Appendix 1 for examples):

(30) Evidence for selected PAN consonants by region

Phoneme	Formosan	PMS	Other An
*β, *ɖ, *ʃ, *ʒ	---	✓	Chamic, Java, northern Borneo, Sulawesi, WOc
*g	---	✓	NS, Barrier Islands, Kadorih-Keremoi, WOc
*f	---	✓	Kadorih-Keremoi, WOc
*t̚ (*C)	✓	✓	Kadorih-Keremoi
*l̚	(indirect)	✓	Philippines
*c	---	✓	NS, WOc, Sulawesi (?)
*ç (*S)	✓	---	(indirect)
*ʎ (*N)	✓	---	sporadic (initial position only)

The fact that the languages of the NT region preserve as many distinctions as they do presents a problem for the Out-of-Taiwan hypothesis:

- The evidence may be more consistent with a theory that posits both Taiwan and NT as refugia that originated when the Sunda shelf became flooded at the end of the last Ice Age.
- It also calls for a significant reconsideration of what has by now become the accepted phylogenetic tree of Austronesian languages.

### Appendix 1: Data external to Proto-Macro Sumba

Examples of the plain vs implosive voiced stop contrast can be found in Proto-North Sarawak (PNS), Proto-Sabahan (PSab), and Old Javanese (OJ):

#### (31) Reflexes of PAn \*b

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
ash	*qabu	*qabu	*aβu	*abuh	*aβu	hawu
female	*b-in-ahi	*b-in-ahi	*βinai	---	*βinai	wini
fruit	*buaq	*buaq	*βua	*buaʔ	*βuaq	wwah

#### (32) Reflexes of PAn \*b

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
weevil	*bukbuk	*δukδuk	---	*buδuk	*δuδuk	bubuk
stab	*tebek	*təbək	*təbək	*təbək	*təbək	(təwək)
sugarcane	*CebuS	*təbuç	*təbu	*təbu	*təbu	təbu

#### (33) Reflexes of PAn \*d

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
blood	*daRaq	*daɾaq	*raʔa	*raʔa	raa	raa
leaf	*daSun	*daçun	*raʔuŋ	*raʔuŋ	roo	rəu
alive	*ma-qudip	*ma-qudip	*morip	*morip	mori	muri

#### (34) Reflexes of PAn \*d

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
in(side)	*dalem	*dāləm	*dālə	---	*dāləm	dāləm
tongue	*lidaq	*lidaq	---	*lidaʔ	---	liɖah
wall	*diŋdiŋ	*diŋdiŋ	*diŋdiŋ	---	*diŋdiŋ	diŋdiŋ

#### (35) Reflexes of PAn \*j

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
point	*tuzuq	*tujuq	*tuju	(*tuʃuʔ)	*turuʔ	tuduh
rain	*quzaN	*qujaɳ	*uʃaŋ	*uʃaŋ	*uran	hudan

#### (36) Reflexes of PAn \*f

Gloss	Trad. PAn	Revised PAn	PMS	PNS	PSab	OJ
far	*zauq	*fauq	*fau	*[j/ʃ]auʔ	*duʔ	dwah
tip	*quzuŋ	*quʃuŋ	---	*uʃuŋ	*udʃuŋ	---



Examples of the voiceless and voiced velar stop contrast can be found in Proto-Western Oceanic (PWOc), Proto-North Sarawak (PNS), and Proto-Barrier Islands (PBI):

(37) Reflexes of PAn \*g

Gloss	Trad. PAn	Revised PAn	PMS	PWOc	PNS	PBI
tree	*kaSiw	*gaçiw	*ɣaju	*ɣaju	*gajuh	*gaju
louse	*kuCu	*guɕu	*ɣuɕu	---	*gutuh	*gutu
fish	*Sikan	*çigan	*iɣan	*iɣan	---	*igan

Examples of the contrast between \*p and \*f can be found in Proto-Western Oceanic (PWOc) and the Kadorih-Keremoi language(s) (KK) spoken on southeast Borneo:

(38) Reflexes of PAn \*f

Gloss	Trad. PAn	Revised PAn	PMS	PWOc	KK
dream	*S-in-ipi	*ç-in-ifi	*nifi	*m-nivi	*nuhpi
thick	*ma-kapal	*ma-gafal	*ma-gafal	---	*kahpan
fire	*Sapuy	*çafuj	*afi	*(j)avi	*ahpui

Examples of the contrast between \*t and \*ɕ in intervocalic position can be found in the Seranggorang-Nilanapo language(s) (SN) spoken on Lembata as well as Kadorih-Keremoi:

(39) Reflexes of PAn \*t

Gloss	Trad. PAn	Revised PAn	PMS	SN	KK
louse	*kuCu	*guɕu	*ɣuɕu	*uhtu	*kuhtu
die	*maCay	*maɕaj	*maɕe	*mahta	*mahtoj
stone	*batu	*ba[t/ɕ]u	*βaɕu	*wahto	*bahtu

Examples of the contrast between \*l and \*ɭ can be found in Proto-Philippines (PPh):

(40) Reflexes of PAn \*l

Gloss	Trad. PAn	Revised PAn	PMS	PPh
egg	*qiCeluR	*qitəluɕ	*təlu	*ʔiklúg
five	*lima	*lima	*lima	*limáʔ
buy	*beli	*bəli	*βəli	*bəlirʔ

(41) Reflexes of PAn \*ɭ

Gloss	Trad. PAn	Revised PAn	PMS	PPh
moon	*bulaN	*buɭaɭ	*βuɭan	*búɭan
ten	*puluq	*fuɭuq	*fuɭuq	*púɭuʔ
eight	*walu	*waɭu	*waɭu	*waɭúʔ

Examples of the contrast between \*s and \*c can be found in Proto-North Sarawak:

(42) Reflexes of PAn \*s

Gloss	Trad. PAn	Revised PAn	PMS	PNS
paddle	*beRsay	*bərsaj	*βəse	*bəsaj
error	*salaq	*sa[l/ɭ]aq	*sa[l/ɭ]a	*salaʔ
flesh	*Sesi	*çəsi	*isi	*əsi

(43) Reflexes of PAn \*c

Gloss	Trad. PAn	Revised PAn	PMS	PNS
wet	*ma-baseq	*ma-ḃacəq	*m-ḃaca	*baçaʔ
satiated	*ma-besur	*ma-ḃəcuɽ	*m-ḃəcu	*bəçur
nine	*siwa	*ciwa	*ciwa	*çiwa

## Appendix 2: Austronesian-Kra-Dai Comparisons

Proto-Tai (PT), Proto-Be (PB), and Proto-Hlai (PHL) forms are compared below with the revised PAn reconstructions proposed here.

Plain voiceless stops are generally preserved as such, and PAn \*q regularly merges with \*k:

(44) Plain Voiceless Stops

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
grandparent	*apu	*puuh	---	*p <sup>h</sup> uuʔ
pat, light slap; wing	*pik	*piik	*pi[i]k	*p <sup>h</sup> iik
seven	*pitu	---	---	*t <sup>h</sup> uu
leech	*qaɭi-matəq	*daak <sup>1</sup>	*taak	*t <sup>h</sup> aak
fart	*qətut	*k-tɤt	*twət	*t <sup>h</sup> uu[t/c]

Plain voiced stops devoice initially:

(45) Plain Voiced Stops

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
mouth	*baqbaq	*paak	*paak	---
buy; exchange	*bəli	---	---	*pləj
weave; make rope	*bəɭbəɭ	---	*pəənʔ	*p <sup>h</sup> ən
eat; feed, fodder	*gaən	*kɤŋ	---	*k <sup>h</sup> ən
hold in hand	*GəmGəm	*kam	---	---
ribs	*tagəraŋ	*kraaŋʔ	---	*k <sup>h</sup> aaŋʔ

<sup>1</sup> The initial in this form may be the result of prenasal voicing: \*m-t > \*nt > d

Intervocally, they are prone to lenition<sup>2</sup>:

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
shoulder	*qabaʒa	*C-baah	*C-biaʔ	*C-vaafi
crustacean	*qudaŋ	---	*ruaŋ	*Cuʔaaŋ
live, raw	*ma-qucip	*C-dip	*C-rjəp	*Cuʔiip
lsg	*(a)gu	*kuu	---	*ɦuu < *Vɣuu
scurf	*dagi	*ɣɯj	---	*k <sup>h</sup> ii < *gii

Implosives are preserved as such:

(46) Implosives

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
floodwaters; overflow	*baʒaq	*baah	---	*baafi
blind	*buʒa	*boot	---	---
boat; boat clsfr	*qabaŋ	*baaŋ	---	---
small; child	*kədiik	*dek	---	*diʔ

The following examples are exceptions to the rules above, with unexpected correspondences between plain voiced and implosive stops:

(47) Exceptional plain-implosive stop correspondences

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
moon	*bu aɮ	*ɬlɯəŋ	---	(*C-ɲaan)
dark; black	*dəmdəm	*C-dam	*C-ram	*dəm

PAn \*f is (presumably) preserved in initial position, but voiced to \*v intervocally and (if the 'centipede' comparison is valid) undergoes fortition to \*p in final position:

(48) PAn \*f

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
ten	*fu uq	---	---	*fuut
tooth	*ifən	*van	(*sjən)	*fjən
fire	*ʒafuj	*vɤj	*wii	*fii
centipede	*qa uʒifan	*q-sip	*rjəp	*C-riip

<sup>2</sup> See also PAn \*quʒaɮ, Proto-Kra \*jəl 'rain'

PAn \*ʈ is preserved at the left edge of the syllable, but merges with \*t in original clusters and word-finally:

## (49) PAn \*ʈ

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
louse	*guʈu	*t <sup>h</sup> raw	---	*tʃ <sup>h</sup> wuu
eye	*maʈa	*p-taa < *b-taa	*taa	*tʃ <sup>h</sup> aa
die	*m-aʈay	*p-taaj < *b-taaj	*taaj	---
blind	*buʈa	*ʈoot	---	---
skin, hide; peel	*qaʈiʈ	---	---	*hliit

The comparison between PAn \*dʉca 'two' and PHl \*tʃ<sup>h</sup>wuʔ 'three' and/or \*tʃ<sup>h</sup>awʔ 'four' is problematic (but see PAn 'three' below), but if valid shows that \*d devoiced regularly to \*ʈ. \*d is preserved in PT, but lenited intervocally in PHl. The final example, 'worm', assumes metathesis:

## (50) PAn \*d

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
two	*dʉca	---	---	*tʃ <sup>h</sup> wuʔ 'three', < *ʈwuʔ *tʃ <sup>h</sup> awʔ 'four' < *ʈawʔ
sun; star	*qaləɖaw	*daaw	---	*C-ɾaaw
worm	*quləɖ	*dʉwəl	---	---

PAn \*ʎ generally merged with PAn \*ʈ as \*r:

## (51) PAn \*ʎ

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
sesame	*ʎŋa	*r-ŋaa	---	*hŋuuu
to plant	*muʎa	---	---	*Curaa
head	*quʎu	*krawʔ	---	*Curəwʔ
exchange; sell	*saʎiw	---	---	*riiw
eight	*waʎu	---	---	*ruu

## (52) PAn \*ʈ

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
taro	*biʈaq	*pruək	*ʃaak	*raak
shoulder	*qabaʈa	*C-baah	*C-biaʔ	*C-βaafi
ribs	*taɖəʈaŋ	*kraaŋʔ	---	*k <sup>h</sup> aaŋʔ

Palatals, raised a following low vowel [a] to [ɿ], which with one exception ('scales' below) raised in turn to [ɯ]:

(53) PAn \*c

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
one	*ica	---	---	*tʰɯu

The correspondences between the forms for 'centipede' are irregular, and the PT form may be a Mon-Khmer (Palaungic?) loan:

(54) PAn \*ç

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
2pl	*gaçu	*suu	*su	*səw
centipede	*qaɭuçifan	*q-sip	*rjəp	*C-riip
floodwaters; overflow	*baçaq	*baah	---	*baafi

Beyond the irregular initial mentioned above, 'moon' shows additional irregularities in its lateral correspondences; if valid, metathesis between \*ɭ and \*ɮ may have to be assumed:

(55) PAn \*ɮ

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
child	*aɮak	*ɭuuk	*ɭuk	*hɭuuk
skin, hide; peel	*qaɮiɿ	---	---	*hliit
scales	*quçəɮap	---	---	*C-ləəp
to hear	*tumaɮa	---	---	*pluu < *bluu
bee; wasp	*waɮu	---	---	*pluu < *bluu
weave, braid	*bəɮbəɮ	---	*pəən?	*p <sup>h</sup> ən
moon	*buɮaɮ	*ɬɭwən	---	(*C-ɲaan)

The comparison between PAn 'three' and PHl 'two' is semantically difficult (but see the note about PAn 'two' above):

(56) PAn \*l

Gloss	PAn	Proto-Tai	Proto-Be	Proto-Hlai
buy; exchange	*bəli	---	---	*pləj
saliva	*ɲalay	*mlaaj	*ma(a)j	*hləəj
three; two	*təlu	---	---	*hluu?
worm	*quləɖ	*ɖuəɭ	---	---

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