

REFLEXES OF PROTO-OCEANIC IN THE TRUKIC LANGUAGES OF MICRONESIA

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1. INTRODUCTION¹

The Trukic (TK) languages are spoken by approximately 45,000 people who make up the populations of the large majority of the inhabited high islands and atolls in the Caroline Islands of Micronesia,² and by the 4,000 descendants of recent migrants from the central Carolines who now reside on the island of Saipan in the Northern Mariana Islands.³ Excluding Saipan, the area covered by islands where TK languages are spoken indigenously extends almost 1,500 miles from 132° - 154° E. longitude, and from 3° - 10° N. latitude. Quackenbush (1968:2) has estimated that the number of islands where the TK languages are spoken is at least sixty-six. The number of distinct and separate 'languages' has been estimated at as few as three (Bender 1971) to as many as thirteen (Quackenbush 1968). For the purposes of this paper, we shall assume at least seven distinct languages, which are listed here together with the sources from which data have been obtained.⁴

Lagoon Trukese (TRK)	Goodenough and Sugita 1980; Sugita forthcoming; Dyen 1965
Ulithian (ULI)	Sohn and Bender 1971; Elbert 1947; personal notes
Pulo Ana (PUA)	Oda 1977; Capell 1969
Mortlockese (MRT)	personal notes
Pulwatese (PUL)	Elbert 1972; Elbert 1974
Satawalese (STW)	personal notes
Woleaian (WOL)	Sohn 1975; Sohn and Tawerilmang 1976; personal notes

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Although two separate and distinct languages may prove to be subsumed here under the label MRT, and the language of Tobi (TBI) may also prove to be distinct from PUA, all evidence indicates that the above seven languages are representative of TK, and that accurate reconstructions may be made from their testimony.

It is clear phonologically, morphosyntactically, and lexically that the TK languages form a distinct subgroup of Oceanic. The languages with which they are most closely related are almost certainly Kiribati (Gilbertese) (KIR), Ponapeic (PP), Marshallese (MRS), and probably Kosraean (Kusaian) (KSR), although the status of that language is somewhat problematical.⁵ These languages, together with TK, are referred to as nuclear Micronesian (MC) (Bender 1971).

It is not at all clear, however, which languages or language groups outside of Micronesia are most closely related to TK. Pawley (1977) has tentatively assigned MC (and, thus, TK) to Remote Oceanic, almost solely on the basis of somewhat ambiguous data from KIR. Other evidence, however, suggests other groupings. (See Jackson, in preparation, for discussion.)

In the following section of this paper I briefly present the phonological system reconstructed for Proto-Trukic (PTK); in the next section this system is related to Proto-Oceanic (POC), with a discussion of problematic reflexes. The final section offers some tentative conclusions.

2. PROTO-TRUKIC PHONOLOGY

Table 1 presents the consonant correspondences among eight TK languages. Phonemes are represented using the orthography of the standard reference works for each language, with phonetic transcriptions added as necessary in square brackets.

As the table demonstrates, most of the TK reconstructions are quite straightforward, the only problematic cases being those symbolised as *k, *c, and particularly *t and *θ. PTK *k (rather than, e.g., *x) is reconstructed because all those languages which show single [x] also show geminate [kk], and because all MC cognates also show [k]. A post-alveolar stop *c is reconstructed because all reflexes except PUA s are either retroflex or palatal, and because those languages which do not exhibit a stop in nongeminate reflexes do so when the reflex is geminate, as with *k.

The phoneme *t is reconstructed largely on the basis of external evidence (as will be seen, PTK *t regularly reflects POC *t), but also in view of the t reflex before a in WOL, ULI, and PUA. PTK *t having been reconstructed for this set of correspondences, a different reconstruction must be made for the set ULI d[θ], PUA-TRK-MRT-PUL-STW-CRL-WOL t which reflects POC *s, *ns. Marck (n.d.) has suggested the reconstruction of a palatal *tʲ for what I have written *t, and a plain *t for what I have represented as *θ. Although Marck's analysis is partly supported by the fact that t is also the reflex of POC *s in all other MC languages except KIR (where it is r), and although it is probably true that PTK *t (< POC *t) was in fact palatalised,⁶ Marck's suggestion does not provide an explanation of ULI d[θ], the development of which would in his analysis require a spirant (POC *s, *ns) to become a stop in PTK and then again a spirant in ULI.

Sohn et al. (1977) have suggested that ULI developed d from a PTK *s under the influence of neighbouring Yapese (YAP), which frequently reflects POC *ns and *s as [θ] (e.g. ULI duud, YAP thuuth < POC *(n)su(n)su *breast*). If this

Table 1: TK consonant correspondences

PTK	*p	*pw	*f	*t	*c	*θ	*k	*m	*mw	*n	*ŋ	*l	*r	*w
TRK	p	pw	f	∅, ² s	ch[t̚]	t	k,∅, ⁶ s ⁷	m	mw	n	ng,n ¹⁰	n	r	w
ULI	p	b[βw]	f	s, ² t	c[t̚]	d[θ]	g[x] ⁹	m	mw	l	ng	l	r	w
PUA	p	pw[βw] ¹	f	d[θ], ² t	s	t	k[x] ⁹	m	mw	n	ng	n	l	w
MRT	p	pw	f	∅, ² s	sh[ʃ] ⁵	t	k,∅, ⁶ s ⁷	m	mw	n	ng	l	r	w
PUL	p	pw	f	∅, ² h,ss ⁴	r[ʃ] ⁵	t	k,∅ ⁶	m	mw	n	ng	l	r	w
STW	p	pw	f	∅, ² s	rh[ʃ] ⁵	t	k,∅ ⁶	m	mw	n,l ¹¹	ng	l,n ¹¹	r	w
CRL	p	bw	f	∅, ² s	sch[ʃ] ⁵	t	gh[x],∅ ^{6,9}	m	mw	l	ng	l	r	w
WOL	p	b[βw] ¹	f	∅, ³ s, ¹³ t	sh[ʃ] ⁵	t	g[x],∅ ^{8,9}	m	mw	l ¹²	ng	l ¹²	r	w

¹voiceless stop [pwpw] when geminate

²usually before non-low vowels

³irregularly before non-low vowels

⁴h → s / when geminate

⁵voiceless stop [t̚ʃ] when geminate

⁶*k > ∅ / before low vowels and sporadically before mid vowels

⁷*k > s / ___ i sporadically (less frequent in MRT)

⁸*k > ∅ sporadically before low vowels

⁹voiceless stop [kk] when geminate

¹⁰*ŋ > n / ___ i in most cases

¹¹the distinction between *l and *n is apparently collapsing in STW

¹²both *n and *l are [l] singly, [nn] when geminate in WOL

¹³before non-low vowels and irregularly before a

is true, however, the influence must have been something other than a straightforward instance of borrowing. ULI includes many lexical items containing *d*, possible sources for which are not found in Yapese, and vice versa. Moreover, ULI always reflects POC **s*, **ns* as [θ], while YAP does not: e.g. ULI *taed*, YAP *daay sea water* (< POC **tansi(k)*); ULI *fidig*, YAP *qu-fi-n meat, flesh* (< POC **pinsiko*). Finally, ULI forms containing *d* are otherwise normal developments of PTK, showing no influence from YAP.

Several other OC languages reflect **s* or **ns* as a dental fricative in addition to ULI and YAP, including Fijian (FIJ) and languages of the South-East Solomons. Levy (1980) has in fact reconstructed **ð* as the Proto-Eastern Oceanic (PEO) reflex of POC **ns*. In these circumstances, and because TK merges POC **s* and **ns* (see Section 3 below), it is not implausible that PTK and YAP should separately reflect these consonants as **θ*.

All TK languages now have at least seven phonemic vowels (most have nine); vowel length is also distinctive. It is not yet clear whether all seven of the vowels need to be reconstructed for PTK, but it is certain that at least six do (both long and short):

* <i>i</i>	* <i>ú</i>	* <i>u</i>
* <i>e</i>		* <i>o</i>
	* <i>a</i>	

The high central unrounded vowel **ú* was in pre-TRK an allophonic variant of **u* in the environment of a nonround vowel, and of **i* before **u*. Marck (1977) has also suggested that there was an allophonic rule in PMC and PTK by which **u* became **ú* after what he terms "front consonants", specifically **p*, **t*, **m*, **n*, and **l*. However, it is clear that **ú* had become distinctive in PTK in, e.g. **núú coconut* (< POC **niu(R)*), and **θúú bathe* (< POC *(*n*)*su(η)ki*).

Other assimilatory vowel allophony must have been present in PTK as well, especially affecting the low vowel **a*, which apparently fronted to *á* [æ] before (C){ⁱ_e, raised to *é* [ə] before (C)*u*, and backed to *ó* [ɔ] before (C)*o*.

All TK languages also show evidence of a rule of phrase-final vowel devoicing and of the rule that Dyen (1949) has called "compensatory lengthening", by which the first vowel in an unaffixed bimoric noun is lengthened. These rules, too, must be reconstructed for PTK. (See Jackson, 1978, and Rehg, this volume, respectively, for discussion of the two rules.)

3. PROTO-TRUKIC REFLEXES OF PROTO-OCEANIC

The POC reconstructions that are compared in this section to PTK have been taken from many sources, including Grace (1969), Blust (1972), Blust (1978), Pawley (1979, n.d.), Lincoln (ms), and Ross (1977). A few new reconstructions are also proposed and supported. In addition, PEO reconstructions from Biggs (1965), Pawley (1972), and Geraghty (1979) have also been examined. All PTK reconstructions are reflected in at least three TK languages, and most are reflected in six or more.

The regular PTK reflexes of POC are shown in Table 2. Details of this pattern, and exceptions to it are discussed below. While all witnesses of such relatively rare POC reconstructions as **ŋp*, **ŋk*, **nd*, **y*, etc. are presented, only representative samples of the more frequently witnessed reconstructions are shown. All known exceptions, however, are presented.

Table 2: PTK reflexes of POC phonemes

POC:	*p	*mp	*ŋp	*k	*ŋk	*ʔ	*m	*ŋm	
PTK:	∅	*f	*p	*pw	*k	∅	∅	*m	*m̥w
POC:	*n	*ñ	*ŋ	*w	*y	*s	*ns	*j	(*nj)
PTK:	*n	*ñ	*ŋ	*w	∅	*θ	∅	∅	∅
POC:	*t	*nt	*nd	*d	*R	*l			
PTK:	*t	*c	∅	*r	∅	*l			
POC:	*a	*e	*o	*i	*u				
PTK:	*a	*e	*o	*i	*ú	*u			

3.1. The labial series of consonants

POC *p is normally lost before round vowels in PTK and reflected as *f elsewhere.

POC *p > PTK ∅

*pupu <i>fish-trap</i>	>	*uu
*(n)topu <i>sugarcane</i>	>	*tou
*pua <i>fruit, spherical object</i>	>	*-ua <i>general counting classifier</i>
*-ŋapulu <i>ten</i>	>	*-ŋaulu
*tapu(n)i <i>afterbirth</i>	>	*taúú
*puti(k) <i>pull, extract</i>	>	*útú
*punti <i>banana</i>	>	*úcú
*tapud,Ri <i>conch</i>	>	*tawii
*nupu <i>reef fish with poison spines</i>	>	*neu <i>stonefish</i>
*(n)sipo <i>downwards, east</i>	>	*θiwo ⁷
*mapo <i>heal</i>	>	*mao
*yapo <i>fish-line</i>	>	*ao
*napo <i>wave</i>	>	*nao
*ñ,nopo <i>stay, dwell, sit</i>	>	*noo <i>stay, dwell</i>
*poñu <i>turtle</i>	>	*(w)onú
*potu <i>outside, outward⁸</i>	>	*otu

POC *p > PTK *f

*faRi- <i>reciprocal prefix</i>	>	*fa-
*pale <i>house</i>	>	*fale
*panua <i>land, earth, village</i>	>	*fanúa <i>island, land</i>
*papine <i>woman</i>	>	*faifine ⁹
*paŋo <i>snort, blow nose</i>	>	*foŋo
*ŋapa <i>fathom</i>	>	*ŋafa
*palisi <i>grass</i>	>	*faθili ¹⁰
*palusa <i>paddle</i>	>	*faθula
*patu <i>rock, stone</i>	>	*fatú
*panda(n) <i>pandanus</i>	>	*faca
*ʔa paRa <i>shoulder</i>	>	*afara
*pi(n)sa <i>how much</i>	>	*fiθa-

*api	<i>fire</i>	>	*afi
*pili(?)	<i>select, choose</i>	>	*fili
*pinsiko	<i>meat, flesh</i>	>	*fiθúko
*pituʔu	<i>star</i>	>	*fútúú

Although there are few clear examples, POC *mp is apparently reflected as PTK *p before non-round vowels, and merges with POC *ŋp as the labiovelar *pw before round vowels.

POC *mp > PTK *p

*mpaya	<i>bait</i>	>	*paa
*tampi(d)a	<i>bowl</i>	>	*tapia
*mpampa	<i>board, plank</i>	>	*papa
*ʔe,ampa	<i>mat</i>	>	*e,apa <i>baby's mat or cloth</i>
*la(m)pas	<i>big, great</i>	>	*lapa
*mpa(ŋ)kiwak	<i>shark</i>	>	*pakewa

POC *mp/*ŋp > PTK *pw

*mpua	<i>betel nut</i>	>	*pwua
*(m)ponot	<i>shut, stop up</i>	>	*pwono
*mpo	<i>smell</i>	>	*pwoe
*tampu	<i>ban, taboo</i>	>	*tapwu
*(m)puli	<i>cowry</i>	>	*pwili
*(m)pulu	<i>resin, sap</i>	>	*pwuli
*(m)pono	<i>truth, correctness</i>	>	*pwono <i>agree to</i>
*(m)puto	<i>navel</i>	>	*pwutu ¹¹
*ŋponji	<i>night</i>	>	*pwoŋi

There are several exceptions to the above generalisations, however, where PTK appears to reflect nasal grade *mp where only oral grade *p has been reconstructed for POC:

POC *pupu	<i>leak, drip, spill out</i>	>	PTK *pwuu <i>flow of liquid</i> ¹²
*pupu	<i>kind of fish</i>	>	*pwupwu <i>triggerfish</i>
*puku	<i>knot, lump, swelling</i>	>	*pwukua <i>knee (?) /</i> *pwuka <i>knot, navel (?)</i>
*(n)tupa	<i>derris fish poison</i>	>	*tupa
*pili	<i>plait, wrap around</i>	>	*pili <i>plait, braid</i>
*peka	<i>faeces, defecate</i>	>	*pake,a
*patu	<i>knot, excrescence</i>	>	*pwatu <i>scar (?)</i>
*paRata	<i>north-west monsoon</i>	>	*parata <i>windstorm</i>
*pela	<i>dirty</i>	>	*pwpwelu (??)
*kapu	<i>buttocks</i>	>	*kapi ¹³

It should also be noted that Geraghty (1979) has suggested an alternative analysis for similar aberrant reflexes of POC *p in FIJ and the South-east Solomons. He has proposed for PEO (and, with qualifications, for POC) a contrast between *p and *v, where previously reconstructed PEO *p corresponds in most cases to his *v. Only three of Geraghty's PEO reconstructions with *p are apparently reflected in TK, but each form reflects a stop, as predicted under Geraghty's hypothesis, rather than a spirant: *papa *board, plank*, *puku *knot*, and *pela *mud, swamp* (PTK *pwela).

POC *m is reflected as PTK *mw before round vowels and as *m elsewhere, with three apparent exceptions.

POC *m > PTK *m

POC *n,lima <i>bail</i>	>	PTK *núma
*manaŋ <i>supernatural power, wind</i>	>	*mana
*mea <i>thing</i>	>	*mee(-θaa) <i>what?</i>
*inu(m) <i>drink</i>	>	*únúm- <i>drink (vt)</i>
*manu(k) <i>bird, animal, fish</i>	>	*manú <i>creature</i>
*mata <i>eye</i>	>	*mata
*matak(u) <i>afraid</i>	>	*matak(u)
*matudu(R) <i>sleep</i>	>	*matúru
*mate <i>die</i>	>	*mate
*masi <i>breadfruit</i>	>	*mai
*nsama <i>outrigger</i>	>	*θama
*kami <i>1st pl excl foc pron</i>	>	*kamami/*kami ¹⁴
*kamuyu [EO *kamiu] <i>2nd pl foc pron</i>	>	*kami
*dama <i>torch, light</i>	>	*marama <i>moon</i>
*lumi <i>fold, crease</i>	>	*lúmi
*maRa <i>ashamed</i>	>	*maa
*lima <i>five</i>	>	*lima

POC *m > PTK *mw

*mu <i>2nd sg poss pron</i>	>	*mwu
*mo,utu <i>cut off</i>	>	*mwetú <i>cut off, adopt</i>
*komu <i>mouthful, gargle</i>	>	*kumwu <i>rinse mouth</i>
*n,ñamo <i>lagoon</i>	>	*namwo
*muta(?) <i>vomit</i>	>	*(mw)mwuta
*ñamu <i>mosquito</i>	>	*namwu
*monse <i>sleep</i>	>	*(mw)mwee
*muʔa <i>front, precede</i>	>	*mwoa-
*ʔumu <i>oven</i>	>	*umwu
*mudi <i>behind</i>	>	*mwuri
*limut <i>seaweed, moss</i>	>	*lumwu
*ta-molu <i>man</i> ¹⁵	>	*tamwoolu <i>chief</i>

The apparent exceptions are two cases where POC *m is reflected as TK *mw before a non-round vowel, and one instance where it is deleted before a round vowel. If in fact the TK forms are cognate, I have no explanation for them.

*kima <i>giant clam</i>	>	*kamwee ¹⁶ (?)
*mali(ŋ) <i>bitter</i>	>	*(mw)mwale <i>sour</i> (?)
*(ñ)amu <i>taste, flavour</i>	>	*(n)nau <i>delicious</i> (?)

In the five instances where POC *ŋm seems to be reflected in TK, it is realised as *mw four times, and as *m once:

*Ruŋma <i>house</i>	>	*imwa
*ta-ŋmaʔane <i>man</i>	>	*mwaaane
*ŋmata <i>worm, snake</i>	>	*mwata <i>earthworm</i>
*ndaŋma <i>forehead</i>	>	*camwa
*ŋmalala <i>cleared ground</i>	>	*malaala (?)

3.2. The velar series of consonants

POC *k is consistently retained as *k in PTK, while *ŋk and *ʔ are always lost.

POC *k > PTK *k

*kapu	<i>buttocks</i>	>	*kapi
*katae	<i>lee side</i>	>	*katae
*toka	<i>land, arrive</i>	>	*toka
*matakū	<i>afraid</i>	>	*matakū
*kainana	<i>clan, descent group</i>	>	*kainana <i>clan</i>
*nsa(ŋ)kaRu	<i>reef</i>	>	*θakau <i>reef island</i>
*nsake	<i>up, rise</i>	>	*θake
*tuki	<i>strike, beat</i>	>	*túki
*ki(n)ta	<i>1st pl incl pron</i>	>	*kica
*masaki	<i>pain</i>	>	*maθaki
*-akini	<i>remote trans suffix</i>	>	*-akini
*kiñit	<i>pinch, pluck</i>	>	*kini
*koso	<i>husk coconuts</i>	>	*koθo
* (n)soko	<i>caught, captured</i>	>	* (y)oko
*ko	<i>2nd sg pron</i>	>	*ko <i>2nd sg subj pron</i>
*komu	<i>mouthful</i>	>	*kumwu <i>rinse mouth</i>
*kutu	<i>louse</i>	>	*kutú
*kuli	<i>skin, bark</i>	>	*kili

POC *ŋk > PTK ∅

*waŋka	<i>canoe</i>	>	*waa
*-ŋku	<i>1st sg poss pron</i>	>	*-i
* (n)suŋki	<i>bathe</i>	>	*θúú
*so(ŋ)ka(r)	<i>cross seat in canoe</i>	>	*toa (?)

POC *ʔ > PTK ∅

*ʔulapi	<i>parrot fish</i>	>	*ulafi
*paʔu	<i>tie, bind</i>	>	*faú(faú)
*ʔasu	<i>smoke</i>	>	*aθú
*taʔe	<i>not</i>	>	*tae,i
*ʔate	<i>liver</i>	>	*ate
*daʔa	<i>branch</i>	>	*raa
*muʔa	<i>front</i>	>	*mwoa
*tuʔu	<i>stand</i>	>	*túú
*taʔu	<i>season</i>	>	*taú
*leʔo	<i>speech</i>	>	*lewe <i>tongue, speech</i>
*paʔoRu	<i>new</i>	>	*fau

(There seems to be one exception to this pattern, however, as POC *ʔo(n)ta *raw* is reflected in PTK as *kocaa *raw food*. The rest of MC is ambivalent regarding the *k in this item, however, as *k is not reflected in KIR or KSR. It may well be that the *k in TK and PP is a reflex of a fossilised causative prefix *ka-.)¹⁷

With only one apparent exception, POC *ŋ is reflected in PTK as *ŋ. The exception is the word for *hermit crab*, which has been reconstructed for POC by Lincoln (ms) as *uŋa, apparently on the basis of FIJ and PPN. The PTK form for *hermit crab* is *umwa.

POC *ŋ	>	PTK *ŋ
*aŋin	>	*aŋi
*(n)toŋo	>	*toŋo
*laŋo	>	*laŋo
*taŋi(s)	>	*taŋi
*ŋuu	>	*ŋúú
*taliŋa	>	*taliŋa
*ŋapa	>	*ŋafa
*siŋi	>	*θiŋi
*saŋa	>	*θaŋa
*deŋa	>	*raŋa
*taŋiRi	>	*taŋiri

3.3. The coronal series of consonants

With only a few exceptions, POC *t is retained as PTK *t:

POC *t	>	PTK *t
*ta	>	*ta-/*te-
*tau	>	*tau- prefix to clan names
*ʔatop	>	*ato
*mata	>	*mata
*mate	>	*mate
*tama	>	*tama
*tano	>	*tano
*toko(n)	>	*toko
*ata(s)	>	*ata
*tasi(m)	>	*taim-
*tane	>	*tani
*tusi,u(k)	>	*tiθi
*mata	>	*(a)mata
*loto	>	*loto
*pitu	>	*fitu
*tansik	>	*taθi
*tido	>	*tiro
*Ratu	>	*(-ŋa)ratu classifier for thousands

The exceptions are of several types: (1) POC *watu *thither, toward addressee* and *natu *offspring*, in both of which the *t is lost in all TK languages.¹⁸ (2) The *t in POC *pati *four* is lost in TK and, in fact, in all MC languages. (3) POC *t is apparently reflected as PTK *θ in *kato *basket* > *kaθo *basket*, *tale *return, circumscribe* > *θale *walk around in circles, wander*, and, perhaps, *kita *see* > *kuθθa *find, look for*. These may be borrowings, but if so the sources are not known. (4) The TK forms for *urine* appear to reflect POC *tid,Ri *spurt, urine*, but the reconstruction is problematical. Adding to the problem is the fact that PTK reflects POC *sidi(t) *semen, masturbation* as *tiri *masturbate*. (The expected reflex of *sidi(t) is *θiri.) The TK data-sets for the two POC forms are as follows:

POC	*tid,Ri	<i>spurt, urine</i>	*sidi(t)	<i>semen, masturbation</i>
PTK	*tiri(?)	<i>urine</i>	*tiri	<i>masturbate</i>
TRK	siir		ir	
ULI	(not attested)		sir	
PUA	(not attested)		(not attested)	
MRT	siir		ir	
PUL	hiir		ir	
STW	siir		ir	
CRL	siir		ir	
WOL	(not attested)		siri	

The TK forms reflecting POC *sidi(t) correspond exactly, but unexpectedly, with a PTK *tiri, while those that appear to be cognate with POC *tid,Ri are aberrant in that the languages attesting the form fail to lose *t before the high vowel. The ULI and WOL forms for *urine*, where we might on the evidence expect a word homophonous with that for *masturbate*, is the euphemism *kkaleoleo*, literally *to make puddles*. One possible explanation of the aberrant reflexes for *urine* in the other languages is that the loss of *t would have led to homophony with the terms for *masturbate*, but this 'explanation' requires us in turn to postulate that the two forms were homophones in PTK. Presumably, the solution lies elsewhere.¹⁹

POC *nt merges with POC *nd as PTK *c, with no apparent exceptions:

POC	*punti	<i>banana</i>	>	PTK	*úcu
	*ki(n)ta	1st pl inc pron	>		*kíca
	*-(n)ta	1st pl incl poss pron	>		*-ca
	*ʔo(n)ta	<i>raw</i>	>		*kocaa
	*panda(n)	<i>pandanus</i>	>		*faca
	*ndanma	<i>forehead</i>	>		*camwa
	*-(n)danum	<i>water</i>	>		*canu
	*-(n)dau	<i>leaf</i>	>		*cau
	*nduRi	<i>bone</i> ²⁰	>		*cúú
	*-(n)tau	<i>person</i> (?) ²¹	>		*-caú anim num cls

This merger also occurs in the other MC languages, in one language of the Admiralties, and in many OC languages of the New Guinea North Coast (Ross 1977) but not, to my knowledge, elsewhere in OC.

With some exceptions (see below) POC *s, *ns and *j merge as PTK *θ:

POC *s > PTK *θ

*masaki	<i>pain</i>	>	*maθaki	<i>ill</i>
*kaso	<i>rafter</i>	>	*kaθo	
*koso	<i>husk coconuts</i>	>	*koθo	
*masawa	<i>open sea</i>	>	*maθawa	
*ʔasu	<i>smoke</i>	>	*aθu	
*sau(?)	<i>outside, far off</i>	>	*θaau ²²	
*ʔaRusa	<i>current</i>	>	*auθa	
*saRe	<i>tear</i>	>	*θaari(ŋ-) ²³	
*isu	<i>nose</i>	>	*(pwa)uθu	
*siŋi	<i>push, thrust</i>	>	*θiŋi ²⁴	
*sedu	<i>hiccough</i>	>	*(ma)θaru	
*ʔasu	<i>gall bladder</i>	>	*aθi	

POC *ns > PTK *θ

*anunsa <i>small island</i>	>	*anúθa
*nsama <i>outrigger</i>	>	*θama
*(n)sa <i>one</i>	>	*(te-)θa
*mansu(r,R) <i>full, abundant</i>	>	*maθu
*nunsi,o <i>squid</i>	>	*ηúθi/*ηiθo ²⁵
*ʔunsa(n) <i>rain</i>	>	*uθa
*tansi(k) <i>sea water</i>	>	*taθi
*wa(n)se <i>count</i>	>	*waθe
*(n)siwa <i>nine</i>	>	*θiwa
*(n)su(n)su <i>breast</i>	>	*θuθu ²⁶
*(n)sana <i>thigh, crotch</i>	>	*θaηa <i>inside of upper thighs</i>
*(n)soko <i>arrive, come</i>	>	*θoko

POC *j > PTK *θ

*aja(n) <i>name</i>	>	*iθa ²⁷
*maja <i>dry, low tide</i>	>	*(m)maθa
*pija <i>how much, how many</i>	>	*fiθa
*Ruja(n) <i>load, cargo</i>	>	*uθa
*(η)ija <i>when?</i>	>	*(i-)n,ηaiθa ²⁸

The exceptions are of two types: (1) unexpected loss of *s/*ns in: *masi *breadfruit* > *mai,²⁹ *(n)soko *caught, captured* > *(y)oko, and *monse *sleep* > *(mw)mwee; and (2) *s/*ns reflected as PTK *t in: *so(η)ka(r) *cross-seat in a canoe* > *toa, *suli *shoot, sucker* > *tili, *sidi(t) *semen, masturbation* > *tiri *masturbate*, *nsiqi *fart* > *tiŋi,³⁰ and *(n)sai *who?* > (i-)te,au.³¹ So far, these exceptions defy explanation.

Very unexpectedly, TK provides external evidence for the segment *nj, which has been reconstructed for several Siassi (SIA) subgroups in northern New Guinea (Ross 1977). Although only four of the forms reconstructed with *nj by Ross are reflected in PTK, in each instance the segment corresponding to the *nj is lost: *njalan *path, road* > PTK *ala; *kianjo *outrigger boom* > kiao; *tanjim *sharpen* > *taim-; and *panji³² *arm, wing* > *paú.³³ Ross writes that the SIA distinction between *ns and *nj "is a feature found nowhere else in Oceania" (p.54), and proposes that the distinction resulted from a split of POC *ns in several SIA groups (p.60). While these TK (and other MC³⁴) forms may be only coincidental aberrant reflexes of *ns, it appears more likely that they are systematic.

The PTK reflexes of *n and *ñ are only problematical in a few forms before high vowels, where they appear as *ŋ (see below). Otherwise, *n and *ñ merge as PTK *n:

POC *n > PTK *n

*niuR <i>coconut</i>	>	*núú
*ni <i>genitive marker</i>	>	*ni
*onom <i>six</i>	>	*ono
*inu(m) <i>drink</i>	>	*únúm-
*nana(?) <i>pus</i>	>	*nana
*ena <i>away from speaker</i>	>	*(ke)ena ³⁵
*napo <i>wave</i>	>	*nao
*natu <i>offspring</i>	>	*naú
*ʔuna <i>fish-scale, feather</i>	>	*úna

* <i>(n)</i> dani(?) <i>day</i>	>	*raani ³⁶
* <i>tina</i> <i>mother</i>	>	* <i>tina</i>
* <i>manaŋ</i> <i>supernatural power</i>	>	* <i>mana</i>
* <i>eno</i> <i>lie down</i>	>	* <i>(w)</i> ono

POC *ñ > PTK *n

*ñamu(k) <i>mosquito</i>	>	*namwu
*ña 3rd sg poss pron	>	*-na
*ñamu <i>taste, flavour</i>	>	* <i>(n)</i> naú
*maʔañu <i>float</i>	>	*maanú
*ñoRa <i>yesterday</i>	>	* <i>(na)</i> newa ³⁷
*mañawa <i>breathe, belly</i>	>	*manawa <i>life, existence</i>
*kiñit <i>pinch, pluck</i>	>	*kini
*n,ñopo <i>stay, dwell, sit</i>	>	*noo
*ʔan,ñitu <i>ghost, spirit</i>	>	*anútu
*n,ñamo <i>lagoon</i>	>	*namwo

In the environment /a_i, however, OC *n usually becomes the velar nasal *ŋ in PTK:³⁸

POC * <i>(n)</i> tani <i>source</i>	>	PTK *tani
*kani <i>eat</i>	>	*kaŋi
*mani <i>remember</i>	>	*maŋi <i>think, remember</i>
*kani <i>sharp</i> ³⁹	>	* <i>(k)</i> kaŋi

PTK *ŋ may also reflect POC *n in *nipon *tooth* > *ŋii and *nau 1st sg pron > *ŋaŋú. (In this example, it is the initial velar nasal that shows an aberrant TK reflex of POC *n (also found in other MC languages and in Rotuman). The appearance of the second velar nasal is problematic.⁴⁰) POC *ñ also is reflected as velar *ŋ in PTK *ŋúθi/*ŋiθo *squid* < POC *n,ñunsi,o and *ŋenú *shadow, ghost* < POC *n,ñun,ñu *shadow*, and in TRK, PUL, STW, CRL, WOL woon(i) *turtle* < POC *poñu.⁴¹

3.4. The liquids

While the TK reflexes of POC *l are straightforward, those for *r and, to even greater extent, those for *l are not.

With only two exceptions, POC *l is reflected as PTK *l:

POC *tolu <i>three</i>	>	PTK *telu
*lima <i>five</i>	>	*lima
*la(m)pa(s) <i>big</i>	>	*lapa
*lawa <i>stuck in throat</i>	>	*lawa
*lumi <i>fold, crease</i>	>	*lúmi
*malu <i>calm, quiet</i>	>	*malua <i>calm, of the sea</i>
*kali <i>dig</i>	>	*keli
*kila <i>know</i>	>	*kúla <i>know, see</i>
*laŋo <i>canoe roller</i>	>	*laŋo
*walu <i>eight</i>	>	*walu
*lumpa <i>hole</i> ⁴²	>	*lipwa
*d,lalo <i>inside, deep</i>	>	*lalo- <i>inside</i>
*s,jola <i>mix</i>	>	*θola
*lako <i>go</i>	>	*lako <i>dir suff: away, go</i>
PAN *ʔalejaw <i>day</i> ⁴³	>	*alo <i>sun</i> ⁴⁴

In the two exceptional cases, POC *l is replaced by PTK *r:

*kula <i>circumcise</i>	>	*kura
*sakulaya <i>sword-fish</i>	>	*θakul, raara ⁴⁵

POC *d is normally reflected as PTK *r, but there are four instances where the nasal grade *nd is reflected instead (as PTK *c).

POC *d > PTK *r

*ηodo <i>snore</i>	>	*ηoro
*ida 3rd pl foc pron	>	*ira
*dua <i>two</i>	>	*rua
*dau <i>hundred</i>	>	*(-ηa-)raú <i>high number</i>
*dama <i>light, shine</i>	>	*(-ma-)rama <i>moon</i>
*(-n)doŋo <i>hear</i>	>	*roŋo
*mudi <i>behind</i>	>	*mwuri-
*daku <i>scratch, scrape</i>	>	*raku
*k,ta-dawa <i>blue/green</i>	>	*karawa
*?uda(η) <i>lobster, shrimp</i>	>	*úra
*data <i>level, smooth</i>	>	*rata
*do(n)do <i>dark</i>	>	*roco
*era <i>existential verb</i> ⁴⁶	>	*ora
*dede <i>tremble with fear</i>	>	*rere

POC *d > PTK *c

*d,liki <i>small, little</i>	>	*ciki
*mada <i>fermented, soft, ripe</i>	>	*maca ⁴⁷
*daRa <i>blood</i>	>	*(-c)caa
*dede <i>tremble with fear</i>	>	*cece ⁴⁸

TK (and MC) reflexes of *R are extremely problematical. In the slight majority of cases, *R is lost, while in all but one of the other cases, it merges with *d as PTK *r. The one instance where it seemingly fails to follow either of these patterns is the reflex for POC *tarae *adze*, which is PTK *talee, perhaps indicating a loan. All TK reflexes of *R are presented here:

POC *R > PTK *∅

*maRa <i>ashamed</i>	>	*maa
*daRa <i>blood</i>	>	*(-c)caa
*pa?oRu <i>new</i>	>	*fau
*Ru?a <i>neck</i>	>	*ua
*suRi <i>bone</i>	>	*cúú
*uRa <i>sinew, vein</i>	>	*wa(ka) (?) ⁴⁹
*RuJa <i>load, cargo</i>	>	*uθa
*nsakaRu <i>reef</i>	>	*θakau
*kuRita <i>octopus</i>	>	*kúúta
*noRa <i>yesterday</i>	>	*(-na)newa
*tapud,Ri <i>conch</i>	>	*tawii
*?aRusa <i>current</i>	>	*auθa
*paRi <i>ray-fish, skate</i>	>	*faii ⁵⁰
*Rapi <i>evening</i>	>	*faka-afi <i>evening, evening meal</i>
*paRu <i>hibiscus</i>	>	*fau
*Ruŋma <i>house</i>	>	*inwa

POC *R > PTK *r

*Ratu <i>hundred</i>	>	*(-ŋa-)ratu <i>thousand</i>
*saRe <i>tear</i>	>	*θaari(ŋ-)
*puRi <i>wash</i>	>	*uro <i>wash (face) (?)</i>
*?apaRa <i>shoulder</i>	>	*afara
*maRa <i>light in weight</i>	>	*mara <i>fast (e.g. of canoes)</i>
*wakaRa <i>root</i>	>	*wakara
*paRata <i>north-west monsoon</i>	>	*parata <i>windstorm</i>
*takuRu <i>back</i>	>	*takuru
*(n)taŋiRi <i>kind of fish</i>	>	*taŋiRi <i>yellow fin tuna</i>

George Grace (p.c.) has suggested that *R may tend to be retained in MC between identical vowels, and lost between unlike vowels. Although this suggestion seems generally valid, the first two forms in the above list indicating loss of *R, and the first three forms in the list indicating its retention are counter-examples.

3.5. The glides

POC *w is regularly retained in PTK, while *y seems to be lost, with two exceptions.

POC *w > PTK *w

*watu <i>thither</i>	>	*wau
*walu <i>eight</i>	>	*walu
*awaŋ <i>mouth</i>	>	*awa
*mawap <i>yawn</i>	>	*mawo ⁵¹
*pa(ŋ)kiwak <i>shark</i>	>	*pakewa
*sawaŋ <i>channel</i>	>	*θawa
*wa(n)se <i>count, divide</i>	>	*waθe
*kawakawa <i>kind of fish</i>	>	*kawakawa <i>kind of reef fish</i>
*wan̄ka <i>canoe</i>	>	*waa
*(n)siwa <i>nine</i>	>	*θiwa
*mañawa <i>belly, existence</i>	>	*manawa

POC *y > PTK *∅

*mu(yu) <i>2nd pl poss pron</i>	>	*mii
*yaŋo <i>yellow, ginger</i>	>	*a o
*yapo <i>fish-line</i>	>	*ao
*mpaya <i>bait</i>	>	*paa

The apparent exceptional reflexes of *y are POC *yadu *mother of pearl* > *taru (?), and *sakulaya *swordfish* > *θakul,raara. The second example seems to be either a case of copying of the preceding consonant or, perhaps, the accretion of an unknown morpheme *-ra onto a cognate stem (i.e. POC *sakulaya > *θakulaa-ra, where the *y is lost between the two final vowels). The first example is inexplicable if indeed it is cognate.

3.6. The vowels

As the above cognate lists indicate, PTK reflexes of POC vowels are generally identical except for the allophony among the high vowels (discussed briefly in Section 2). As most unusual reflexes in the consonant lists have been treated in notes, no further discussion will be provided here.

4. CONCLUSIONS

The patterns of regular PTK reflexes of POC presented in Section 3 provide strong evidence for the integrity of the TK subgroup. To my knowledge, there is no other language or language group that combines all of the following phonological innovations (see Jackson, in preparation, for lexical and grammatical innovations of TK):

- (1) Loss of POC *p before round vowels;
- (2) Loss of POC *ŋk in all environments;
- (3) Loss of POC *ʔ in all environments;
- (4) Merger of POC *n with *ŋ in the environment /a_i;
- (5) Merger of POC *n and *ñ elsewhere;
- (6) Merger of POC *s, *ns, and *j;
- (7) Separate reflex of POC? *nj;
- (8) Merger of POC *nt and *nd;
- (9) The pattern of loss of *R and its merger with *r described in Section 3.5 above;
- (10) Loss of POC *y.

Innovations (1), (3), (8), and (9) are also attested in other MC languages, and (6) is attested in all MC except KSR (where POC *ns is apparently lost). This fact, in turn, provides some evidence for the integrity of that group. Additional evidence for MC is provided by the sharing of the rule by which POC *mp and *m are merged with *ŋp and *ŋm before round vowels, and by a general MC consistency in reflecting nasal and oral grade segments. (For example, for POC *daRa *blood*, *diki *small*, *mada *ripe*, *(n)dau *leaf*, *(n)danum *water*, *peka *faeces*, *(n)tupa *derris fish poison*, and many others, all MC-reflexes of the underlined segments are of nasal grade consonants.) It is beyond the scope of this paper to provide further evidence for a MC grouping (further evidence will be found in Harrison and Jackson, in preparation), but the above observations are suggestive.

Another task that is beyond this paper's scope is to attempt to determine the closest relatives of TK outside MC. However, it is perhaps appropriate at this time to mention that the distinct TK reflexes of *nj discussed in Section 3.3 are not the only characteristics that appear to link TK with languages of the New Guinea north coast. Jackson (in preparation) provides a list of such similarities.

NOTES

1. I am indebted to a great many people for comments, suggestions, and observations at different times in the development of this paper. Foremost among them are Paul Geraghty, Shelly Harrison, Jeff Marck, Ken Rehg, Ho-min Sohn, Hiroshi Sugita, Jude Wang, and the following Micronesians, who were always willing to answer still more questions about their languages: Marciana Akasy, Jesus Elameto, Rioichy Johnny, Tony Kaipat, Rosario Ngirbabul, Mike Olap, Frank Olopai, Tony Otto, Ancheres Rechim, Tony Tawerilmang, and Joe Tiucheimal. Naturally, however, any errors of reporting or interpretation are my own.
2. Non-Trukic languages are spoken on ten islands in the Carolines: Ponape, Ngatik, Pingelap, Mokil, Kosrae, Nukuoru, and Kapingamarangi in the east, and Yap, Babelthuap and Peleliu in the west. The high islands of Yap and Babelthuap, however, do have populations of Trukic immigrants from neighbouring atolls, and large numbers of Trukic speakers have resettled on Ponape in this century.
3. Goodenough and Sugita (1980) have also identified as Trukic the language spoken by earlier inhabitants of the island of Mapia, approximately 100 miles north of West Irian. They include no supporting evidence, however, and the small amount of data available to me are not conclusive, although Old Mapian does appear 'Micronesian'. (See also Bender 1975.)
4. In addition, I have also referred to my own notes on Saipan Carolinian (CRL), which is very closely related to STW.
5. Nauruan may also be a member of MC; it is difficult to know from the available data. Problems regarding the status of KSR are due in large part to its inconsistent reflexes of POC, probably suggestive of several layers of borrowing. (See Lee and Wang, this volume, and Harrison and Jackson, in preparation.)
6. In fact, pre-MC *t (> PTK *t) was probably palatalised as well, and there is evidence in MC to suggest that it had already developed a sibilant allophone, at least before *i. (See Harrison and Jackson, in preparation.)
7. The glide in this PTK form is expected. The most probable historical stages in pre-TK were: POC *(n)sipo > *θio, > PTK *θiwo.
8. This form is tentatively reconstructed on the basis of Lakalai (LAK) *potu outside*, *otu to go out*, Ponapean (PNP) *iei out*, and the TK forms.
9. The unexpected extra vowel in PTK *faifine must be reconstructed to account for, e.g. TRK *feefin* and WOL *faifilę woman*. Goodenough (p.c.) has suggested that the initial element of the form may be related to PAN *bahi *female, woman*.
10. The consonant metathesis that occurred in pre-TK to POC *palisi *grass* and *palusa *paddle* is also witnessed in PP, and the metathesised form for 'paddle' is witnessed in KIR, as well, implying that this change may have occurred in pre-MC. (No other MC language attests the forms at all.)
11. The final vowel is unexplained.

12. PTK *pwuu suggests a pre-TK *mpupu.
13. The change from final *u to *i in this form must presumably have antedated the rule velarising *mp before a back round vowel. Otherwise, the PTK form should be *kapwu.
14. TRK reflects only *kami, while the other TK languages reflect *kamami. ULI reflects both forms, although the reflex of *kamami is apparently more frequent.
15. This form is tentatively reconstructed on the basis of the TK forms and Gedaged tamol *man, male person*, Nguna and Sesaki (na)tamwoli *human being*, and perhaps Rotuman famori *human being*, the last three of which Pawley (1979a) assigns to a POC *ta-maquidip *living man*. PTK *tamwoolu, however, does not reflect Pawley's reconstruction.
16. TRK also has a form siim *medium sized tri'dachna*, which is a more likely reflex of POC *kima. However, no comparable form appears in other TK languages.
17. This analysis is weakened by the fact that the vowel after the *k is short. If the form in fact were derived from a hypothetical *ka-oca-a, then two moras would be expected in the first syllable. However, note that the final syllable in PTK *kocaa (cf. CRL oschaal *his raw food*) is long, which would be expected if the form were a fossilised causative.
18. The *t is reflected in the cognate forms in MRS and KIR, which means that it was certainly present in PMC. The loss of *t before non-low vowels has been spreading at differing rates through the lexicons of all TK languages (see Jackson, in preparation), so it is possible either that the loss in these forms had already occurred by the PTK stage, or that the *t was present in PTK but has since been lost in all TK languages.
19. Dyen (1949) has pointed out that TRK siir is a reflex of PAN *cirit *spray out, urine*. If PAN *c could be shown to be reflected distinctively in other forms in TK, then the mystery of this form's development would be solved, and another segment would be reconstructed for PTK (and POC). However, there is no corroborating evidence, and, as Blust (1978) points out, it is inappropriate to reconstruct a distinction in POC on the basis of one form in one group of languages.
20. POC *nduRi *bone* is also reflected in the Admiralties (Blust 1978) and in Proto-Sepik-Madang of the New Guinea north coast (Ross 1977).
21. Although PTK reflects POC *tau *person* as *tau- *prefix to clan names*, there is also found in MRT, PUL, STW, and CRL the animate number classifier *-ca'í. Although the latter form may be an innovation, I have tentatively concluded that it derives from a nasal grade alternant of the POC form. Other evidence exists in TK for such alternants (e.g. PTK *fici *to shoot a weapon, such as a slingshot or bow, to spear*; *pici *to snap, spring* (cf. FIJ vidi *to snap*)).
22. The long vowel in PTK *θaau is unexplained.
23. The long vowel is unexplained.
24. The long vowel is unexplained.
25. There is no obvious explanation for the two forms for *squid* in TK. PTK *ŋiθo is reflected in TRK, PUL, WOL, ULI, and PUA; apparent *ŋúθi is reflected in MRT, STW, and CRL.
26. An alternate form *tuθu *breast* must be reconstructed for several TK languages. Interestingly, Ross (1977) has reconstructed the same form for his Proto-North Coast in New Guinea.

27. The high front vowel found in PTK *iθa *name* is unique in MC, but it is witnessed in LAK *isa* (Chowning 1973).
28. It is possible that the alternate forms for *when?* in TK may reflect a distinction similar to that found in LAK *alaisa when?* (past), *gaisa when?* (future). It is difficult to tell, however, as no single TK language reflects both forms for *when*.
29. Cf. PPN **mei breadfruit*.
30. TK forms for *fart* are problematical in the same way as those for *urine* discussed above: they reflect failure to lose the *t in TRK, PUL, MRT, STW, and CRL, where such loss is expected.
31. Cf. Gedaged *itai who? (male)*.
32. Ross reconstructs this form only for Proto-Manam.
33. The form **pau arm, wing* is also witnessed in the Admiralties, where there is no other evidence for a distinct *nj. The PTK form, thus, may not in this case reflect loss of that segment. The other three forms remain of interest, however.
34. In addition to TK, MRS and PP reflect PMC **ala road* and **kiao outrigger boom* (KIR and KSR reflect an apparent PMC **kiaso* for the latter form); all MC languages reflect PMC **pau arm, wing* and **taim- sharpen*.
35. This form is probably derived from *ko '2nd sg pron' and **ena away from the speaker*. It is attested throughout TK, but apparently in no other languages.
36. Vowel length is unexplained.
37. Loss of rounding from a vowel following insertion of a rounded glide is frequent in TK.
38. The TK forms **kaŋi eat* and *(k)*kaŋi sharp* are also attested elsewhere in MC.
39. This form is tentatively reconstructed on the basis of MC and several languages in the New Hebrides (Tryon 1976).
40. As Harrison (p.c.) has pointed out, the initial *ŋ in PTK **ŋaŋú '1st sg foc pron'* may well not reflect POC *n at all, but may instead reflect a prefixal element *ŋ-. Evidence for this is provided by the fact that all KIR focus pronouns reflect such a prefix.
41. MRT, ULI and PUA reflect the expected alveolar nasal.
42. This form is tentatively reconstructed on the basis of TK and PAN **lubaŋ hole*.
43. This PAN reconstruction is from Blust n.d.
44. Tryon (1976) reports many instances of *alo sun* in the New Hebrides, and Blust (1978) has also reported it for the Admiralty Islands. Presumably, therefore, **?alo sun* must be reconstructed for POC in competition with already reconstructed POC **?anso sun*. PUL, STW, and CRL *alet sun* may reflect the *j of PAN **?alejaw*, through a hypothetical PTK **aleθi*. So far as I know, however, this consonant is not reflected elsewhere in MC.
45. In this form, the expected *l is reflected in all languages except TRK and WOL, and TRK has a doublet with the expected reflex.
46. This form is reconstructed on the basis of PTK **ora*, MRS or, and PAN **era 'existential verb'*.

47. Reflexes of the nasal grade variants of POC *mada *ripe, fermented, etc.* and *daRa *blood* are attested in the Admiralties (Blust 1978), the North Coast of New Guinea (Ross 1977), and throughout MC.
48. There is apparently no distinction in meaning between PTK *rere and *cece *shake, tremble*.
49. Although a pre-TK *ua could reasonably evolve into PTK *wa (cf. the fact that many CRL speakers say wa and wwa for *fruit* (< PTK *uwa)), I am unable to identify the final *ka in *waka *sinew, vein*.
50. Final vowel length is unexplained.
51. The final vowel in PTK *mawo *yam* is presumably the result of progressive assimilation from the preceding glide. This is unusual, however.

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