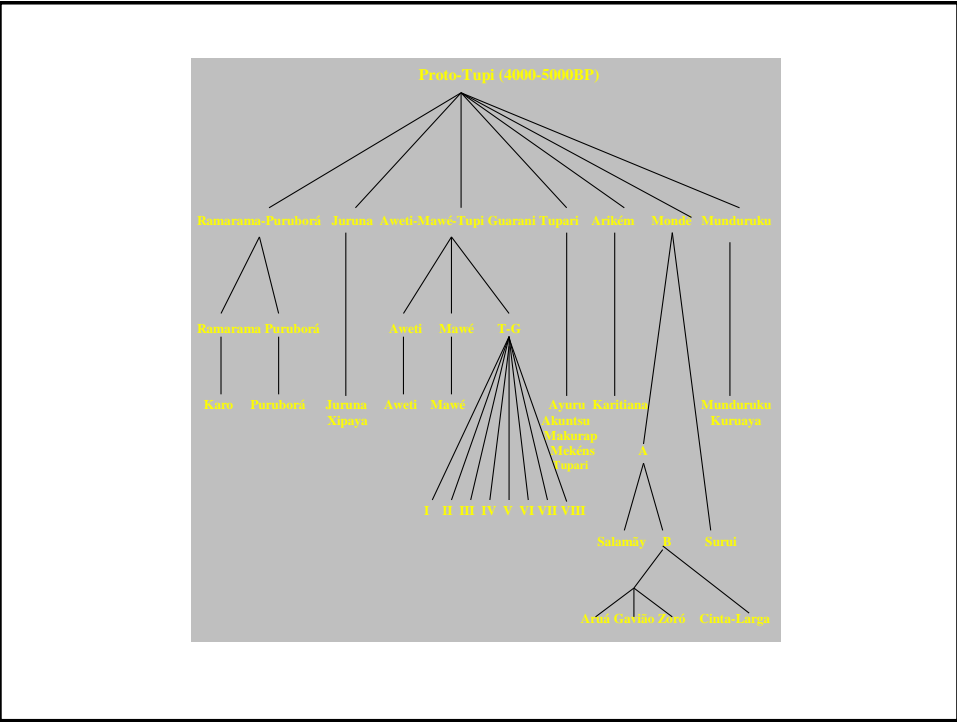


Diachronic Aspects of the Tupi Linguistic Family

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Rodrigues (1959, 64) proposes the first well-informed lexico-statistical classification of the Tupi Stock, based on word lists ranging from 100 to 200 cognates. In his classification, six families other than Tupi-Guarani were posited, namely Arikém, Juruna, Mondé, Puruborá, Ramarama, and Tuparí. Mawé and Aweti were considered to be languages of the Tupi-Guarani family, which is understandable, given the large number of cognates shared by them and Tupi-Guarani languages. Munduruku was classified as a Tupi-Guarani language, although it was mentioned in a footnote that it could constitute a family on its own.



- How do we know that Tupi languages really form a genetic unit?
- The evidence discussed in this presentation will be mainly phonological in nature: there are recurring sound correspondences (the typical result of sound change) in cognates (words of common origin) occurring today among all languages of the Tupi stock, enabling us to reconstruct words that existed in the mother language.

- Rodrigues (1964) hypothesizes that the homeland of all Tupi languages (where the speakers of Proto-Tupi lived) was in the present state of Rondônia.
- Rondônia is proposed as the center of dispersion of Tupi peoples because languages belonging to 6 Tupi families are still spoken there today: Arikém, Mondé, Puruborá Ramarama, Tupari (all limited to Rondônia), and Tupi Guaraní (spread widely in Brazil and other South American countries).



Rodrigues (1985) classifies Tupi Guarani languages in 8 subgroups:

- I: Guarani Antigo, Guarani, Mbyá, Xetá, Nandeva, Kaiwá, Guayakí, Tapieté, Chiriguano, Izoceño (Argentina, Bolívia, Paraguay, Brazil)**
- II: Guarayo, Sirionó, Horá (Bolívia)**
- III: Tupi Antigo, Tupinambá (Brazil), Kokáma, Omágua (Brazil, Colombia, Peru)**
- IV: Tapirapé, Avá, Asurini (Toc.), Suruí (Toc.), Parakanã, Guajajara, Tembé (Brazil)**
- V: Kayabí, Asuriní (Xingú), Araweté (Brazil)**
- VI: Apiaká, Parintintín, Tupi-Kawahíb (Brazil)**
- VII: Kamayurá (Brazil)**
- VIII: Guajá, Urubú, Turiwára, Anambé, Amanayé, Takunyapé (Brazil), Emérillon (French Guyana), Wayampí (French Guyana, Brazil)**

- When Brazil was conquered by the Portuguese in 1500, Tupinambá (first described by José de Anchieta (1595) and now extinct) was spoken in an extensive area of the coast of Brazil to the north of Rio. Old Guarani was spoken south of São Paulo (first described by Ruiz de Montoya (1639) and now extinct). Tupi, a version of Tupinambá lacking final consonants (like Guarani), was spoken in São Paulo (in the city of São Vicente and in the Upper Tietê River).

- Children of mixed marriages between Portuguese men and indigenous women spoke Tupinambá, and the language gradually changed under the influence of Portuguese, generating a *língua franca*, called *Língua Geral Paulista* or *Língua Brasileira*, that became the most common language spoken in that region in the XVIIth century. In the XVIIIth century this language was replaced by Portuguese:

“it is true that today the families of Portuguese and the Indians of São Paulo are so interconnected that ... the language spoken in these families is that of the Indians, and Portuguese is learned by the children in school”

(Vieira 1694, apud Rodrigues 1986)

In Amazônia, a similar situation occurred, with *Língua Geral Amazônica* or *Nheengatu* being the most common language spoken in the states of Maranhão and Pará until the XVIIIth century.

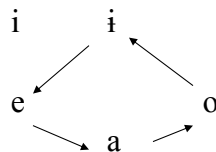
It is still spoken today by indigenous and non-indigenous people in the Upper Negro River, in the state of Amazonas.

- Even though Língua Geral Paulista is extinct, it had great influence on Brazilian Portuguese, being the source of lexical borrowings (animal and plant species, and place names) and perhaps grammatical changes.
- Paraguayan Guaraní developed from Old Guaraní with influence from Spanish and is today one of the 2 official languages spoken in Paraguay.

Vocalic correspondences in Tupi languages:

The Proto-Arikém Vowel Shift

A counter-clockwise vowel shift took place in the descent of Proto-Tupi to Proto-Arikém (suggested by Rodrigues 1986, corroborated by Storto & Baldi 1994, and the Tupi Comparative Project, 2006):



Sound Change 1: Proto-Tupi e > Proto-Arikém a

	Ka	Ga	Me	Mu	Xi	Ko	Pu	Aw	Ma	TG
to sleep	kat	két		ʃét		-ket	keta	tet	-ket	*ker
name	sat	-set	-tet	-pøtet		cet		-set	-set	*er
leaf	sap	sep	ep				tí(e)p			
wing	papi	pepó-	pebo	ɲeba	seba			pepo		*pepo
to say	ʔa			ʔe	ze	ʔe-t		ʔe	-ʔe	
pig	soita		taotse-	dadʒé						
pron 2sg	ãn	ẽ:t	ět	ẽn	ena	ʔět	ět	ʔen	en	*ende
husband	mãn	-met	-met		mena	mẽn		men		*men
skin	pa		-pe	peon					ai-pe	

Sound Change 2: Proto-Tupi a > Proto-Arikém o

	Ka	Ga	Me	Mu	Xi	Ko	Pu	Aw	Ma	TG
to fall	ʔot	-ala	-akara	ʔat	aza	ʔat		ʔat	-aʔat	*ʔar
hot	okip	adô:p	sakop	taʃip		jakôp		akup	-akup	*akuβ
fruit	ʔo	aá	ʔa	ʔa		ʔaʔ		ʔa	ʔa	*ʔa
day	o:t					át				*ʔar
moon	oti	gát ti		káʃi				tati		wati
sloth	oʔi				ai	aʔi	aʔi			

Sound Change 3: Proto-Tupi o/u > Proto-Arikém i

	Ka	Ga	Me	Mu	Xi	Ko	Pu	Aw	Ma	TG
wing	papi	pepó-	pebo					pepo		*pepo
pron 1sg	in	ō:t	ōt	ōn	una	ʔōn	ōt			
to eat	ʔi		ko	ʔo	ʃu	ʔo	ʔo	ʔu	-ʔu	*ʔu
father	sip	-zop	-top	top	-tupa			up		*tuβ
big	ti	atáo	aso			cu	hu	watu	wato	*watʃu
egg	sipi		opisa	topsa				-upiʔa	upiʔa	*upiʔa

Sound Change 4: Proto-Tupi i > Proto-Arikém e

	Ka	Ga	Me	Mu	Xi	Ko	Pu	Aw	Ma	TG
tree	ʔep	īip	kip	ʔip	ipa	maʔip	βaʔip~ ʔip	ʔip	arjaʔi p	*ʔiβ
louse	iita gep	git	kip	kíp	kipaʔ		tip ~tik	akip	ŋit	*kiβ
water	ese	ii	iki	idibí	ija	ici		ʔi	iʔi	*i
liquid	se	ci	ki	tí	tía	-ci~-ci	ʃere		hi	
deer	de	i:ti:	isií			iti	idi	ti-wapat	itií	
earth	eɲ		kina-kij	kɔj		iganā	ij		ii	*ij

PT i corresponds to i in Proto-Arikém:

	Ka	Ga	Me	Mu	Xi	Ko	Pu	Aw	Ma	TG
mother	ti	-ti~-di	-si	ʃí				ti	ti	*tʃi
moon	oti	ti		kaʃi				tati	waati	*jaci
foot	pi	-pi~bi	-piso	í	bidapa	pibe? ~pi	ʃibe	pi	-pi	*pi
egg	sipi		opisa	topsa	dʒia			upi?a	-upi?a	*upi?a
smoke	ʃiŋga			tiŋ	siã			tiŋ	hiŋ	*tiŋ
sloth	oʔi				ai	aʔi	aʔi			

Oral vowels in the 10 Tupi families:

Karitiana	Mekéns	Xipaya	Munduruku	Suruí
i i	i i	i i u	i	i i
e o	e o	e	e ə o	e o
a	a	a	a	a

Kamayurá	Aweti	Mawé
i i u	i i u	i i u
e o	e o	e o
a	a	a

Puruborá	Karo
i i u	i i u
e ə o	e ə o
a	a

Rodrigues (2005) proposes a six vowel system for Proto-Tupi, the same as that of the Aweti-Mawé-Tupi Guarani. He assumes the Proto-Arikém Vowel Shift, although he believes u and o to have been separate phonemes in Proto-Tupi. The sound changes on which he bases his analysis are given below, along with the data he presents to support it:

Sound Change 1: PT a > PMunduruku e (after PT kʲ)

	AR	MO	TP	MU	JU	RA	PU	AW	MA	TG
fruit **ʔa	ʔo	ʔa	ʔa	ʔa	-ʔa	ʔa		ʔa	ʔa	*ʔa
to fall **kʲat	ʔot	ʔar	kat	ʔat	ʔaz-a	ʔad-a (to be born)		ʔat	ʔat	*ʔar
pan **waʔč			waʔč- topʔa	waʔc (bowl)	waí	maʔč		taʔã	waʔã	jaʔč
wasp **ŋkap	ŋop	ŋab	Tp:kap Mp:ŋap Ay: ŋkap		kap-á	nāp (type of bee)	dab-ai	kap	ŋap	*kaβ
fat **kʲap		kam- nag	ʔap	ʃep	kah-á	kap		kap- put	kap	*kaβ

Sound Change 2: PT o > PJuruna, PMondé, PRamarama, PPuruborá a

Sound Change 3: PT o > PMunduruku ə (the same as PArikém)

	AR	MO	TP	MU	JU	RA	PU	AW	MA	TG
hand **po	pɨ	pa	po	bə	ba	pa	pa	po	po	*po
wing, feather **pepʔo	papi		pepʔo		pewa			pepo	pepo	*pepo
snake **mpoj		baj	boj	pəj		māj-ũ		mōj	moj	*moj
heavy **potʃij	piti	patii	poci	poʃi	i-pade- tu	piʔti		potij	potij	*pocij
garden **ŋko	ŋa	ŋa	go	kə	ko-a	na-cej		ko	ko/ŋo	*ko

Sound Change 4: PT e > PAweti-Mawé-TG o (before Proto-Tupi p^w and k^w)

In the Juruna and Munduruku families, according to rodrigues (2005) these changes occurred before Changes 2 and 3 above mentioned.

	AR	MO	TP	MU	JU	RA	PU	AW	MA	TG
path **ape/ **pe	pa	me/pe	ape	e	mbaha		mbe	pe~me		*ape/ *pe
name **et	sat	led	et	et		cet		et	et	*er
to sleep **k ^w et	kat	ker	?et	ʃet		ket	ket-a	ket	ket	*k ^w er
leaf **ep ^w	sap	sep	ep	ɔp	up-a			op	op	*oβ
house **ek ^w	sak, ako		ek	ək-ʔa	ak-a	ek	ek-a, ak-a, ok-a	ok	ok	*ok
to grind, to pound **tʃek ^w					pa- dak-u				tok	*tʃok
larvae **tʃek ^w	tak	ka-deg	tek		a-dak- a					*tʃok

Sound Change 5: PT i > PTupari, PRamarama, PPuruborá i (not a systematic change; in some contexts i > e in the last two families)

Sound Change 6: PT i > PJuruna, PMunduruku and PMondé i

	AR	MO	TP	MU	JU	RA	PU	AW	MA	TG
mother **tʃi	ti	ti	si	ʃi				ti	ti	*tʃi
foot **pi	pi	pi	si-to, mi	i		pi	ʃl-be	pi	pi	*pi
to hold **pi ik	pitik			itʃik	padik- u			pitik	pitik	*picik
heavy **pocij	piti	patii	poci	poj	i-pade- tu	piʔti		potij	potij	*pocij
sweet potato **wetʃik		watʃin- a, witiŋ-a		wefik		petik-a	witik-a	tezik		**jetik
sloth **aʔi	oʔi		ao-ko (?)	aj		aʔi	aʔi			*aʔi
tree, wood **kʔip	?ep	(?)iib	kip	?ip	?ip-a			?ip	?ip	*?iβ
lice **ŋkip	ŋep	ŋit	kip	kip	kip-a	nep	a-tɔp	kip	ŋip	*kiβ
honey **ewit	eet	iwit	ewit	eit	awila			ekit	ewir	*eir
deer **itʃi	ne	iib	kip	iʃi		p-ewit	iwit	ti- wapat	iti	*tʃi- watʃu

Sound Change 7: PT u was kept only in Proto-Aweti-Mawé-Tupi Guaraní. In the remaining families it changed to o (and in Arikém to i)

	AR	MO	TP	MU	JU	RA	P	AW	MA	TG
to eat **k'u	ʔi	ʔot (eater)	ko	ʔo	i-w-a (eater)	ʔot (eater)	ʔo	ʔu	ʔu	*ʔu
armadillo **t'ajt'u	sosi		Mk:tato Mp:tajto	dajdo	du-	jájo		tatu	sahu	*tatu
hot **akup	Kt:oki A:akub -a	adob	akop	Mu:afip Ku:akib	kuh-u	akōp		akup	akup	*aku β
father **-up	s-ip	Su:l-ob Cl:s-op	op	Mu:op Ku:ub	up-á			-up		*-uβ
foot worm **tun	A:njun-		Tp:jō-tap Mp:jon	Mu:nōŋ Ku:non				tun	jun	*tun

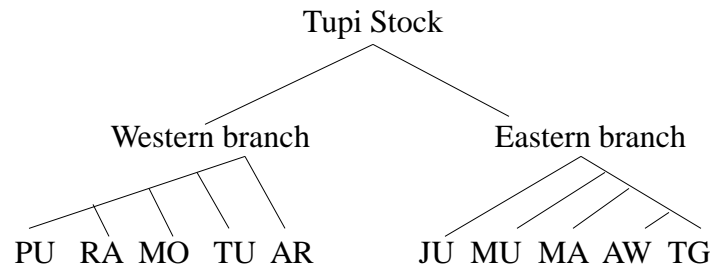
Consonant Correspondences in Proto-Tupi

•Rodrigues (2007) hypothesizes 28 consonants for Proto-Tupi:

Proto-Tupi Consonantal Chart (Rodrigues 2007)

p	p ^w	t	t ^j	c [ts]	č [tʃ]	k	k ^j	k ^w	
p ^ʔ	p ^{wʔ}	t ^ʔ		c ^ʔ	č ^ʔ	k ^ʔ		k ^{wʔ}	ʔ
^m p		ⁿ t				^ŋ k			
m		n				ŋ		ŋ ^w	
w		r	r ^j		j				

Rodrigues 2007 suggests the following chart for the Tupi family of languages (following Cabral & Rodrigues 2002):



Most languages have the following 11 consonants (range between 11 and 19 Cs):

p t k
m n ŋ
r
s h
w j

A series of voiceless stops **p t k** (languages may or may not have a phonemic glottal stop).

- A series of nasals **m** and **n** is present in all languages. Two languages fail to have a velar nasal: Xipaya, and, maybe, Puruborá. Languages may or may not have a palatal nasal.
- A series of approximants **w** and **j** that nasalize in nasal environments (in some languages the palatal glide **j** and the palatal nasal are allophones of the same phoneme, that can be phonemically oral or nasal).
- A series of voiceless fricatives **s** and **h**, that never occur in syllabic coda position. Gavião and Mekéns have no **h**, Puruborá and Aweti have no **s**; the former has a post-alveolar fricative and the latter has **z** and **ts**. Karitiana and Mekéns have **ts** as one of the realizations of **s**.
- An alveolar tap.

Karitiana (Arikém family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p	t		k	
<i>Nasals</i>	m	n	ɲ	ŋ	
<i>Tap</i>		ɾ			
<i>Fricatives</i>		s			h
<i>Approximants</i>	w				

There are 11 consonants in Karitiana. Besides **m** and **n** in the nasal series, the language also has **ɲ** and **ɲ̥** (where **j** is an allophone of the phoneme **ɲ̥** in oral environments). **tʃ** is rare, occurring in onomatopoeia or as a realization of **[j+t]**. The glottal stop **ʔ** exists in the language, but is considered epenthetic, that is, inserted through a phonological process as the onset of onsetless stressed syllables, with a few exceptions (Storto 1999).

Gavião (Mondé family):

	<i>Bilabial</i>	<i>Labio-dental</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>
<i>Stops</i>	p b		t d	c ɟ	k g
<i>Nasals</i>	m		n	ɲ	ŋ
<i>Tap</i>			ɾ		
<i>Fricatives</i>		v	s z		
<i>Lateral Approximant</i>			l		

In Gavião there are 17 consonants. The voiceless stop series includes a palatal **c**, and the nasal series includes a palatal **ɲ** and a velar **ŋ**. Glottal stops occur limited to word internal position but are not phonemic. Gavião, in addition, has a complete series of voiced stops: **b**, **d**, **ɟ** and **g**. There is no series of approximants in Gavião: it does not have a **w**, and **j** is not phonemic. The series of voiced fricatives includes **v** and **z**, and the voiceless series has **s** but no **h**. A tap **ɾ** and a liquid **l** are also present as phonemes in the language (Moore 1984).

Mekéns (Tupari family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Velar</i>	<i>Palatal</i>	<i>Labio-velar</i>
<i>Stops</i>	p b	t	k g		k^w
<i>Nasals</i>	m	n	ŋ		ŋ^w
<i>Tap</i>		ɾ			
<i>Fricatives</i>		s			
<i>Approximants</i>	(w)			j	

There are 13 consonants in Mekéns, that has a series of voiceless stops with the usual labial, alveolar and velar points of articulation plus a labio-velar **k^w**. The glottal stop is not phonemic, since it is optional in every place where it occurs. The nasal series has consonants in the same points of articulation as the voiceless stop series. The voiced stop series includes **b** and **g**. The only fricative is **s**. It is possible that **w** is not a phoneme, because it is rare (Galúcio 2001).

Munduruku (Munduruku family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Post-alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p b	t d			k	ʔ
<i>Nasals</i>	m	n			ŋ	
<i>Tap</i>		ɾ				
<i>Fricatives</i>		s ʃ				h
<i>Approximants</i>	w			j		
<i>Affricates</i>		tʃ dʒ				

Munduruku has 17 consonants: The usual series of voiceless stops plus a glottal stop **ʔ**, a series of voiced stops **b** and **d**, a series of nasals with **m**, **n** and **ŋ**, affricates **tʃ** and **dʒ**, fricatives **s**, **ʃ** and **h**, glides **w** and **j**, and a tap **ɾ** (Picanço 2005).

Xipaya (Juruna family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Post-alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p b	t d			k	
<i>Nasals</i>	m	n				
<i>Tap</i>		ɾ				
<i>Fricatives</i>		s z ʃ				h
<i>Approximants</i>	w			j		
<i>Affricates</i>		(tʃ) dʒ				

There are 15 consonants in Xipaya, that has a series of voiceless stops without a phonemic glottal stop, a series of voiced stops **b** and **d**, fricatives **s**, **z**, **ʃ** and **h**, and the affricate **dʒ**. **tʃ** is extremely rare and may not be phonemic (Rodrigues, C. 1990).

Karo (Ramarama family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p b	t	c	k g	ʔ
<i>Nasals</i>	m	n		ŋ	
<i>Taps</i>		ɾ			
<i>Approximants</i>	w		j		

There are 13 consonants in Karo: a series of voiceless stops with **c** and **ʔ**, a nasal series with **ŋ**, and a series of voiced stops with **b** and **g** (Gabas Jr. 1999).

Puruborá (Puruborá family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Pós-alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p b	t d			k	ʔ
<i>Nasals</i>	m	n		ɲ	(ŋ)	
<i>Tap</i>		ɾ				
<i>Fricatives</i>		ʃ (ʒ)				h
<i>Approximants</i>	w					
<i>Affricates</i>		(tʃ)				

It is difficult to define the number of consonantal phonemes in Puruborá, since the language that survives is known by two elderly speakers who have not been using the language for over 50 years, but it is between 13 and 16. The inventory given here is not properly phonemic. The language seems to have a phonemic glottal stop, a nasal series with **ɲ** (with **j** as one of its allophones) and perhaps **ŋ**, a voiced stop series with **b** and **d** (and maybe **g**), fricatives **ʃ** (instead of **s**) and **h** (**ʒ** and the affricate **tʃ** are marginal and probably not phonemic), and the glide **w**. (Galúcio, personal communication) .

Mawé (Mawé family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p	t		k	(ʔ)
<i>Nasals</i>	m	n		ŋ	
<i>Taps</i>		ɾ			
<i>Fricatives</i>		s			h
<i>Approximants</i>	w		j		

There are 12 consonants in Mawé. A glottal stop can be perceived by ear, but is never realized as a glottal stop in spectrograms, appearing as a voiced glottal approximant or as laryngealization in an adjacent vowel.

Aweti (Aweti family):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	p	t		k	ʔ
<i>Nasals</i>	m	n		ŋ	
<i>Tap</i>		r			
<i>Fricatives</i>		z			(h)
<i>Affricates</i>		ts			
<i>Approximants</i>	w	(l)	j		

There are between 12 and 14 consonants in Aweti. The fricative **h** may not be a phoneme, occurring in dissimilation processes. The lateral approximant **l** is marginal, and may not be phonemic, occurring in borrowings. Aweti has the same inventory as Mawé, except that it has a solid glottal stop **ʔ**, as well as **z**. The fricative **s** does not appear, but **ts** occurs instead (Drude, personal communication).

Proto Tupi-Guarani (Rodrigues & Dietrich 1997):

	<i>Bilabial</i>	<i>Alveolar</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
<i>Stops</i>	*p *pw *pj	*t *ts		*k *kw *kj	*ʔ
<i>Nasals</i>	*m *mw	*n		*ŋ *ŋw	
<i>Tap</i>		*r			
<i>Affricates</i>		*tʃ			
<i>Fricatives</i>	*β				
<i>Approximants</i>	*w		*j		

In Tupi Guarani languages we have, according to Rodrigues & Dietrich (1997), 19 consonants: the series ***p, *p^w, *p^j, *t, *ts, *tʃ, *k, *k^j, *k^w, *ʔ** (that has voiceless stops and affricates) a nasal series ***m, *m^w, *n, *ŋ, *ŋ^w** and the series ***β, *r, *j, *w** (that has approximants, a tap and a fricative).

Rodrigues (2007)

(1) **p: (Proto-Tupi bilabial voiceless stop) taken from pg. 173 of paper

PT **p > PTG *p (β in word-final position)

AW p

MA p

JU p

MU p (and zero before [+anterior] vowel)

AR p

TU p (and s before i in word-initial envs. and ps before i in word-medial envs.)

MO p (in Surui, or Paitér, it is b)

RA p

PU b (casca, tabaco, caminho, pé, mão, cabelo, pena, vespa, vermelho (b and p))

(2) **p^w

PT **p > PTG *p^w word-initially (β in other positions)

AW p (w in word-medial position)

MA p (w in word-medial position)

JU p and w in word-medial envs.

MU p and b in word-medial and p in word-final positions

AR p and zero word-medially and p word-finally

TU:

Tupari: p initially and medially and ps medially before i

Makuráp: p medially

Mekéns: p finally and b medially

MO p word-finally (in Surui, or Paitér, it is b)

RA not clear

PU p word-finally

(pg. 175)

PT	PTG	AW	MA	JU	MU	AR	TU	MO	RA	PU
**ep ^w a 'face'	*-oβa	-owa	-ewa	-	Mu:d-opa Ku:t-upa	s-ipo 'eye'	Tp:epa 'eye, light' epa-psi 'face' Me:eba-pi 'face' eba-opap 'eye'	-	-	-
**ip ^w i 'earth'	*iβi	iw-etc	-	Ju:ipi Xi:ipi-a 'sand'	ipi	Ka:(?)ej- epi 'earth, floor'		-	-	-
**kip ^w it 'brother of a woman'	*kiβir	kiwit	kiwit	-	kipit	keet	Tp, Me:kip 'irmão júnior de homem'	-	-	-
**ep ^w 'leaf'	*-oβ	-op	-op	Ju:rúp-á Xi:s-up-á	Mu:-əp Ku:l-ip / -ejp	A:s-ab-ɔ Ka:s-ap	Tp, Me:-ep Kepkiriwát op	Ga:s-ep CL:s-ép	-	-t-ap

Motivation of Rodrigues 2007 for reconstructing ****pw** as a different phoneme from ****p**:

- PTG*β
- AW w
- Rounding of preceding vowel in TG, AW, MA, JU and MU