

PROTO-MAYAN SYLLABLE NUCLEI¹

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Although many aspects of the historical phonology of Mayan languages have been worked out, development of the syllable nuclei of words has received insufficient attention. A tabulation of correspondence sets with subsequent identifications of conditioned reflexes reveals the necessity for reconstructing at least ten different Proto-Mayan syllable nuclei (including a sequence of a vowel followed by a velar fricative whose reflexes often pattern as syllable nuclei). Proto-Mayan distinguishes between a short and a long vowel, each of which may occur alone, in combination with a glottal fricative or a glottal stop, or with both of the latter. In addition, another nucleus type behaves as intermediate between a short and a long vowel, suggesting the reconstruction of a three-way distinction in vowel quantity. This new account of the historical development of Proto-Mayan is offered as an alternative to Terrence Kaufman's analysis, which operates with only five reconstructed nuclei.

[KEYWORDS: historical linguistics, comparative phonology, syllable nuclei, Mayan language family]

1. Introduction. The comparative study of Mayan languages of Mesoamerica has been attractive to scholars because of the historical importance of Classic Maya civilization (ca. A.D. 200–900) and more recently because of advances in the decipherment of Maya hieroglyphic writing. Despite considerable attention, some major details of the language family's phonological history have yet to be fully worked out. This paper addresses one of these deficiencies, the syllable nuclei of Mayan words.²

¹Pamela Brown, Michael Mazzola, Robert E. Callary, Lyle Campbell, Victoria Bricker, Paul Friedrich, Charles Andrew Hofling, Gene Anderson, John S. Robertson, and Brian Stross responded to various drafts of this paper, for which the authors are very grateful. We thank Terrence Kaufman for his comments on the paper when it was presented at the annual meeting of the Society for the Study of Indigenous Languages of the Americas, Atlanta, Georgia, January 2–5, 2003. We also acknowledge with thanks two anonymous reviewers, an associate editor of this *Journal*, and its editor for their helpful comments.

²Our investigation is limited to syllable nuclei of lexical morphemes. Mayan lexical morphemes generally consist of a consonantal onset, a nucleus, and a consonantal coda. The nucleus may be simple, consisting of just a vowel, or complex, consisting of a vowel plus a glottal fricative or a glottal stop. In addition to the latter, Proto-Mayan had CVjC syllables, where *j* symbolizes a velar fricative. Since in Mayan languages there are usually no consonant

The family parent language, Proto-Mayan (pM), is argued to have been spoken at the latest some four thousand years ago (Kaufman 1976). Its 31 recorded offspring languages, with one exception, are more or less contiguously distributed through southern Mexico and northern Central America. The exception is Huastec, an outlier located in northeastern Mexico in the states of San Luis Potosí and Veracruz.

While Mayan languages have been classified in various ways in contemporary treatments (e.g., Campbell 1997:163, England 1996:9, and Robertson 1992:3), all agree on seven major subgroups: Yucatecan, Huastecan, Cholan, Tzeltalan, Mamean, K'ichee'an, and Greater Q'anjob'alan.³ All concur as well that Cholan and Tzeltalan form a higher-level subgroup (Greater Tzeltalan) and that K'ichee'an and Mamean form another higher-level subgroup (Eastern Mayan). We observe here a version of Mayan language classification

clusters in codas, *Vj patterns phonotactically as a syllable nucleus, although the velar fricative together with the following consonant might be considered a special case of coda cluster. For our purposes as historical linguists, it is not necessary to dwell on the theoretical ramifications of treating what we call complex nuclei as nuclear units of the syllable, nor do we consider it necessary to argue for or against treating *Vj on a par with other syllable nuclei. What matters in the present context is that reflexes of *Vj in many Mayan languages fall together with those of the simple and complex nuclei. This makes the treatment of *Vj and its reflexes a necessary part of the historical study of Mayan syllable nuclei.

³Languages belonging to each of these seven subgroups are as follows, with abbreviations used for individual languages given in parentheses. **Yucatecan:** Yucatec (Yuc), Lacandón (Lac), Mopán (Mop), Itzaj (Itz); **Huastecan:** Huastec (Hua = Potosino dialect and Huav = Veracruzano dialect), Chicomuceltec (Chi); **Cholan:** Chol (Chl), Chontal (Chn), Ch'orti' (Ch'r), Cholti' (Chlt); **Tzeltalan:** Tzeltal (Tze = Bachajón dialect), Tzotzil (Tzo); **Greater Q'anjob'alan:** Q'anjob'al (Q'an), Akateko (Aka), Jakalteko (Jak), Mocho (Moch), Chuj (Chu), Tojolabal (Toj); **K'ichee'an:** Q'eqchi' (Q'eq = Carchá/Chamelco dialect), Uspanteko (Usp), Poqomchi' (Pqch), Poqomam (Pqm), K'iche' (K'ich = Santa Catarina Ixtahuacán dialect), Kaqchikel (Kaq), Tz'utujil (Tz'ut = Laguna dialect), Sakapulteko (Sak), Sipakapense (Sip); **Mamean:** Tektiteko/Teko (Tek), Mam (Mam = San Ildefonso Ixtahuacán dialect), Awakateko (Awa), Ixhil (Ihx).

Robertson (1977; 1992:2–3) proposes inclusion of Tojolabal in the Tzeltalan subgroup, while Campbell (1997:163), for example, follows the more traditional path, associating Tojolabal with Greater Q'anjob'alan languages. While the affiliation of Tojolabal, either with Tzeltalan or Greater Q'anjob'alan, has little bearing on major conclusions of this work, we follow here the traditional view that Tojolabal is Q'anjob'alan, while keeping an open mind to the possibility suggested by Robertson.

Our approach to spelling names of Mayan languages closely follows that suggested by Campbell (1997:163). The names of Mayan languages of Guatemala are spelled according to the conventions of the Second National Congress on the Alphabet, enacted into law in 1987 by Governmental Accord 1046–87. The names of Mayan languages of Mexico are spelled according to traditional academic conventions. As is common practice among Mayanists, language-name abbreviations are generally created from the first three letters of the spellings of language designations. When ambiguities arise, subsequent letters are used in abbreviations.

in which Eastern Mayan, Greater Tzeltalan, Yucatecan, and Huastecan are coordinate groupings. The exact affiliation of Greater Q'anjob'alan is left as an open question.

2. Background: Kaufman's analysis. The latest version of Terrence Kaufman's analysis of Mayan syllable nuclei is presented in his recent work, *A Preliminary Mayan Etymological Dictionary* (2003). There Kaufman reconstructs five major syllable nuclei for Proto-Mayan: *V, *VV, *Vh, *Vj, and *V' (where V = a, e, i, o, or u).⁴ For reasons explained below, we believe that Kaufman has under-reconstructed pM syllable nuclei.

Tables 1–4 present some words reconstructed for Proto-Mayan by Kaufman (2003) and their reflexes in offspring languages (the latter are extracted from Appendix A, to be consulted by readers for more details). Proto-Mayan words of tables 1 and 2 all have in common the reconstructed syllable nucleus *V (short vowel). Proto-Mayan words of tables 3 and 4 all have in common the reconstructed syllable nucleus *VV (long vowel).

Despite Kaufman's reconstruction of the same syllable nucleus for pM words of tables 1 and 2, i.e., *V, reflexes of these words in daughter languages actually attest to two distinct syllable-nucleus sound correspondences, one pertinent to table 1 and one pertinent to table 2. These are identified as correspondence series 1 and 2 in the last column of each of the two tables, hereafter denoted by CS 1 and CS 2. Similarly, CS 3 and CS 4, pertaining respectively to tables 3 and 4, are distinct correspondences.

In tables 1 and 2, reflexes of pM *a/*V are identical in all offspring languages of Proto-Mayan except in Itz, Mop, Hua, and Chl. (The short low-central vowel, *a, is given detailed attention because it behaves slightly differently from other Mayan short vowels.) Proto-Mayan words of table 1 reconstructed by Kaufman with *a as a syllable nucleus have reflexes in Itz, Mop, and Chl showing the vowel ä (mid-central) as a syllable nucleus. In contrast, in table 2, those reconstructed with *a have reflexes in Itz, Mop, and Chl showing the vowel a (low-central) as a syllable nucleus. Proto-Mayan words of table 1, all reconstructed with *V by Kaufman, have reflexes in Hua showing V (short vowel). In contrast, pM words of table 2, also reconstructed with *V, have reflexes in Hua showing VV (long vowel).

In tables 3 and 4, reflexes of *aa/*oo/*VV are identical in all offspring languages of Proto-Mayan except Hua, Chl, Chn, Ch'r, and Tzo. (The long low-central vowel, *aa, and the long mid-back vowel, *oo, are given detailed attention because they behave slightly differently from other Mayan

⁴The latest version of Kaufman's analysis shows some slight differences from that reported in preceding accounts (e.g., Kaufman 1969 and Kaufman and Norman 1984). We present his analysis as delineated in the most recent work (Kaufman 2003).

long vowels.) Proto-Mayan words of table 3 reconstructed by Kaufman with **aa* as a syllable nucleus have reflexes in Tzo showing the vowel *o* (short mid-back), while, in contrast, pM words of table 4 with **aa* have reflexes in Tzo showing the vowel *a* (short low-central). Words of table 3 reconstructed with **VV* show Hua V, while those of table 4 show Hua VV. Finally, words of table 3 reconstructed with **oo* show *u* in Hua and in Cholan languages (Chl, Chn, and Ch'r), while those of table 4 show respectively *oo* and *o* (high-back vowels) in Hua and in Cholan languages.

The data in tables 1 and 2 strongly suggest that Kaufman has under-reconstructed Proto-Mayan by merging two different correspondence series (CS 1 and CS 2) under one pM syllable nucleus (**a/*V*). Similarly, data in tables 3 and 4 strongly suggest the merging of two other series (CS 3 and CS 4) under one pM syllable nucleus (**aal/*oo/*VV*). In our analysis, we keep these four correspondence sets distinct by relating them to four different syllable-nucleus reconstructions for Proto-Mayan.⁵

Additional pM words reconstructed by Kaufman (2003) are presented in tables 5 and 6. The first three pM terms of table 5, **i'q'*, **o'q'*, and **tu'x*, and all pM words of table 6 show **V'* (short vowel followed by a glottal stop) as a reconstructed syllable nucleus. However, Mayan language syllable-nucleus reflexes of these terms are not the same in the two tables. In table 5, Yuc words show *VV^L* (a long vowel with low tone), while in table 6 Yuc words show *V^HV* (a vowel with a high tone followed by a glottal stop and then by an echoed vowel). In table 6, ten languages show reflexes having a syllable nucleus that entails a glottal stop (Yuc, Itz, Mop, Tek, Mam, Ixh, Awa, Moch, Toj, and Chu). In contrast, in table 5, only one language, Moch, shows the latter feature. Also, in table 5, Aka shows a short vowel, while a long vowel is in evidence for this language in table 6.

Clearly, the syllable nuclei of Mayan language words of tables 5 and 6 relate respectively to two different sound correspondences, CS 5 and CS 6.⁶ In his pM syllable-nucleus reconstructions, however, Kaufman fails to distinguish these distinct series.⁷ (It is unclear why Kaufman reconstructs **piim* rather than **pi'm* [see table 5], a reconstruction which would conform with his **i'q'*, **o'q'*, and **tu'x*, since reflexes of all four of these items show exactly the same syllable nuclei.)

Table 7 lists eight sets of cognate words, all of which, we believe, relate to the same syllable-nucleus sound correspondences (CS 7). Kaufman

⁵ In our analysis, CS 1 pertains to pM **a/*V*, CS 2 to pM **A/*V_s*, CS 3 to pM **aah/*ooh/*VV_h*, and CS 4 to **aa/*oo/*VV* (see 3 below for details).

⁶ CS 5 and CS 3 (see tables 5 and 3, respectively) are identical, except for Moch, which shows VV in CS 3 and V' in CS 5.

⁷ In our analysis, CS 5 pertains to pM **VV'h* and CS 6 to pM **VV'* (see 3 below for details).

TABLE I
A CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF pM *V

Proto-Mayan (Kaufman)	*b'at	*kar	*q'ab'	*q'an	*saq	*jotz'	*toj	*a/*V (pM nucleus)	Correspondence Series I
English Gloss	'hail'	'fish'	'hand'	'yellow'	'white'	'to extract'	'to pay'		
Yuc	b'at	kay	k'ab'	k'an	sak	hotz'	toh-	a/V	a/V
Itz	b'ät	käy	k'ä'	k'an	säk	hotz'	toh-	ä/V	ä/V
Mop	b'ät	käy	k'ä'	k'an	säk	hotz'-	toh-	ä/V	ä/V
Hua			k'ub-	k'an-	thak-	hot'-		a/V	a/V
Chl		chäy	k'äb'	k'an	säk	hotz'	toh-	ä/V	ä/V
Chn		chäy-	k'äb'	k'an	säk	hotz'	toh-	ä/V	ä/V
Ch'r	b'at	chay	k'ab'	k'an	sak	hotz'-	toh-	a/V	a/V
Tzo	b'ot	choy	k'ob'-	k'on	sak ¹	hotz'	toh-	o/V	o/V
Tze	b'at	chay	-k'ab'-	k'an	sak	jotz'-	toj-	a/V	a/V
Tek		kay	q'ab'-	q'an	saq	jotz'-	choj-	a/V	a/V
Mam		kyixh	q'ab'-	q'an	saq	jotz'	choj-	a/V	a/V
Ixh	-b'atz	txay	q'ab'	q'an	saq	choj	choj	a/V	a/V
Awa		kay	q'ab'	q'an	saq	choj	choj	a/V	a/V
Pqch		kar	q'ab'	q'an	saq			a/V	a/V
Kaq	-b'ach	kar	q'ab'-	q'an	saq		toj	a/V	a/V
Tz'ut	-b'ach	kar	q'ab'-	q'an	saq		toj	a/V	a/V
K'ich	-b'ach	kar	q'ab'-	q'an	saq		toj-	a/V	a/V
Q'eq	-b'ach	kar	q'ab'-	q'an	saq		toj-	a/V	a/V
Moch		kach	q'ab'	q'an	saq	hotz'		a/V	a/V
Q'an		txay	q'ab'-	q'an	saq	jotz'-	toj	a/V	a/V
Aka		txay ²	q'ab'-	q'an	saq	hotz'-	too-	a/V	a/V
Jak		kay	q'ab'-	q'an	saq	hotz'-	toh-	a/V	a/V
Toj	b'at	chay	k'ab'	k'an	sak	hotz'-	toj-	a/V	a/V
Chu		chay	k'ab'	k'an	sak		toj-	a/V	a/V

V = *e, i, o, ot, u*.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours.

¹Tzo *a* is the expected reflex of pM **a* when co-occurring in a stem with pM **q* (see 5.3.3 in text).

²Aka *e* is the expected reflex of pM **a* when immediately preceding pM **r* (see 5.6.2 in text).

TABLE 2
A SECOND CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF pM *V

Proto-Mayan (Kaufman)	*am	*b'aty	*jar-	*laq	*ngab'	*koj	*a/*V (pM nucleus)
English Gloss	'spider'	'corkwood'	'how many?'	'bowl'	'rain'	'puma'	Correspondence Series 2
Yuc	am		hay	lak		koh	a/V
Itz				lak		koh	a/V
Mop						koh	a/V
Hua	aam	baat	haay	laak	aab	tzoooh	aa/VV
Chl	am		hay-				a/V
Chn			háy-				a/V
Ch'r	am		hay-				a/V
Tzo	om	b'ot	hay-				o/V
Tze	am	b'at	jay-			choj	a/V
Tek	am		jat-	laq	jab'		a/V
Mam		b'atz	jat	laq			a/V
Ixh	am	b'atz	jat-	laq	jab'-	koj	a/V
Awa			jat	laq	ab'-		a/V
Pqch	am		jar-		jab'		a/V
Kaq	am				jab'-	koj	a/V
Tz'ut	am		jar-	laq	jab'	koj	a/V
K'ich	am		jaar-		jab'	koj	a/V
Q'eq	-am	b'ach	jar-		hab'	koj-	a/V
Moch	am	b'at	hach-		ngab'		a/V
Q'an		b'at	jay-		nab'	koj	a/V
Aka		b'at	hay- ¹		nab'		a/V
Jak		b'at	hay-		ngab'		a/V
Toj	am		hay-			choh	a/V
Chu		b'at	jay-		ngab'	choj	a/V

V = e, i, o, or u.

VV = ee, ii, oo, or uu.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours.

¹Aka *hey* is the nonobserved, expected reflex (see 5.6.2 in text).

TABLE 3
A CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF PM *VV

Proto-Mayan (Kaufman)	*aal 'heavy'	*aal 'offspring'	*aaq' 'tongue'	*kaan 'snake'	*oong 'avocado'	*sootz' 'bat'	*q'ing 'sun'	Correspondence Series 1
Yuc	al	àal ¹	àak'	kàan	òon	sòotz'	k'ìin	àa/òo/VV ¹
Itz	al	al	ak'	kan	om	sootz'	k'in	a/oN
Mop		al	ak'	kan	on	sootz'	k'in	a/oN
Hua	al-			tzan	uh	thut'	k'ih	a/uN
Chl	al	al	ak'			sutz'	k'in	a/uN
Chn	al	al	ak'	chan	un	sutz'	k'in	a/uN
Ch'r		ar	ak'		un	sutz'	k'in	a/uN
Tzo	ol	ol-	ok'	chon	on	sootz'	k'in	o/oN
Tze	al	al-	-ak'	chan	on	sootz'	k'in	a/oN
Tek	aal	aal	aaq'	kaan	ooj	sootz'	q'ij	aa/oo/VV
Mam	aal	aal-	aaq'-		ooj	sootz'	q'ij	aa/oo/VV
Ixh	al	al	aq'	kan	oj	sootz'	q'ij	a/oN
Awa	aal	aal-	aaq'-		ooj	sootz'	q'eej	aa/oo/VV
Pqch	ahl		aaq'		ooj	sootz'	q'ij	aa/oo/VV
Kaq	aal	al ²	aaq'	kaan	ooj	sootz'	q'ij	aa/oo/VV
Tz'ut	ahl	-aal	aaq'	kaan	ooj	sootz'	q'ij	aa/oo/VV
K'ich	aal	aal	aaq'	kaan	ooj	sootz'	q'ij	aa/oo/VV
Q'eq		al				sootz'		a/oN
Moch	a'l	aal	aaq'	kaan	oong	sootz'	q'ing	aa/oo/VV
Q'an	al		aq'-		on		q'in	a/oN
Aka	al	al-	aq'-		on	sootz'	q'in	a/oN
Jak	al	al-	aq'-		ong	sootz'	q'ing	a/oN
Toj		al	ak'	chan	on	sootz'	k'in	a/oN
Chu	al	al-	ak'	chan	ong	sootz'	k'ing	a/oN

V = e, i, or u. VV = ee, ii, or uu. VV¹ = èe, ii, or ùù.

Boldface forms indicate syllabic nuclei unexpected in both Kaufman's analysis and ours.

¹Yuc shows low tone indicated by à, è, i, ò, and ù.

²Kaq neutralizes the distinction between V and VV in initial syllables of polysyllabic words. For more details, see Appendix A.

TABLE 4
A SECOND CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF PM *VV

Proto-Mayan (Kaufman)	* <i>b'aal</i>	* <i>laab'</i>	* <i>saal</i>	* <i>qeeb'</i>	* <i>jooj</i>	* <i>poom</i>	* <i>juun</i>	* <i>ad'oo'</i> *VV	Correspondence Series 4
English Gloss	'brother-in-law'	'evil spirit'	'mange'	'belch'	'crow/heron'	'incense'	'one'		
Yuc	<i>b'aa1'</i>		<i>saa1</i>	<i>kaa1'</i>		<i>poom</i>	<i>hu un</i>		<i>aa'oo'VV^L</i>
Itz	<i>b'al</i>			<i>keeb'</i>		<i>poom</i>	<i>hun-</i>		<i>aloN</i>
Mop	<i>b'al</i>		<i>sal</i>	<i>keeb'</i>		<i>poom</i>	<i>hun</i>		<i>aloN</i>
Hua	<i>baay</i>	<i>laab</i>	<i>thaa1</i>	<i>kee'-</i>	<i>hoo1</i>		<i>huun</i>		<i>aa'oo'VV</i>
Chl			<i>sal</i>	<i>keb'</i>	<i>hoh-</i>		<i>hum-</i>		<i>aloN</i>
Chn				<i>keb'</i>			<i>hun-</i>		<i>aloN</i>
Ch'r			<i>sar</i>	<i>keb'</i>					<i>aloN</i>
Tzo	<i>b'al</i>	<i>lab'-</i>	<i>sal</i>	<i>keb'-</i>	<i>hoh</i>		<i>hun</i>		<i>aloN</i>
Tze	<i>-b'al</i>	<i>lab'-</i>	<i>sal</i>	<i>keb'</i>	<i>joj</i>		<i>jun</i>		<i>aloN</i>
Tek					<i>jooj</i>		<i>juun</i>		<i>aa'oo'VV</i>
Mam	<i>b'aal</i>	<i>laab'</i>	<i>saal</i>		<i>jooj</i>		<i>juun</i>		<i>aa'oo'VV</i>
Ixh	<i>b'aa1</i>		<i>sal</i>		<i>joj</i>		<i>jun-</i>		<i>aloN</i>
Awa	<i>b'aa1-</i>	<i>laab'</i>	<i>saal</i>	<i>qeeb'</i>	<i>jooj</i>		<i>juun</i>		<i>aa'oo'VV</i>
Pqch	<i>b'al-</i>		<i>saal</i>				<i>-jun</i>		<i>aa'oo'VV</i>
Kaq	<i>b'al-</i> ²	<i>lab'-</i>	<i>sal-</i>				<i>juun</i>		<i>aa'oo'VV</i>
Tz'ut	<i>-b'aal</i>		<i>saal</i>				<i>juun</i>		<i>aa'oo'VV</i>
K'ich	<i>b'al-</i> ³		<i>saal</i>		<i>jooj</i>		<i>juun</i>		<i>aa'oo'VV</i>
Q'eq	<i>b'al</i>	<i>lab'</i>	<i>sal</i>				<i>jun</i>		<i>aloN</i>
Moch	<i>ba'l-</i>	<i>lab'</i>	<i>saal</i>	<i>qeeb'</i>	<i>hoo1</i>		<i>huun</i>		<i>aa'oo'VV</i>
Q'an		<i>lab'</i>	<i>sal</i>		<i>joj</i>		<i>jun</i>		<i>aloN</i>
Aka		<i>lab'</i>	<i>sal</i>	<i>qe'-</i>	<i>hoo</i>		<i>hun</i>		<i>aloN</i>
Jak		<i>lab'</i>	<i>sal</i>	<i>je'</i>	<i>hoh</i>		<i>hun-</i>		<i>aloN</i>
Toj	<i>b'al-</i>			<i>keb'</i>	<i>hoh</i>		<i>hun-</i>		<i>aloN</i>
Chu		<i>lab'</i>	<i>sal</i>	<i>keb'</i>	<i>joj</i>		<i>jun</i>		<i>aloN</i>

The values of V, VV, and VV^L are the same as in table 3.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours.

¹Yuc shows low tone indicated by *á, è, í, ó, and ù*.

²Kaq neutralizes the distinction between V and VV in initial syllables of polysyllabic words. For more details, see Appendix A.

³In nonfinal syllables, K'ich generally neutralizes vowel length. For more details, see Appendix A.

TABLE 5
A CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF A
pM SYLLABLE NUCLEUS ENTAILING A GLOTTAL STOP

Proto-Mayan (Kaufman)	*i'q'	*o'q	*tu'x	*piim	*V' and *VV (pM nuclei)
English Gloss	'wind'	'coyote'	'vagina/female'	'thick'	Correspondence Series 5
Yuc	<i>iik'</i>		<i>tùux</i>	<i>piim</i>	VV ^L
Itz	<i>ik'</i>		<i>tux</i>	<i>pim</i>	V
Mop	<i>ik'</i>			<i>pim</i>	V
Hua	<i>ik'</i>	<i>ok</i>			V
Chl	<i>ik'</i>			<i>pim</i>	V
Chn	<i>ik'</i>			<i>pim</i>	V
Ch'r	<i>ik'-</i>		<i>tux</i>	<i>pim</i>	V
Tzo	<i>ik'</i>			<i>pim</i>	V
Tze	<i>ik'</i>			<i>pim</i>	V
Tek	<i>-iiq'</i>			<i>piim</i>	VV
Mam	<i>-iiq'</i>			<i>piim</i>	VV
Ixh	<i>iq'</i>		<i>tux</i> ¹	<i>pim</i>	V
Awa	<i>iiq'</i>		<i>tuux</i> ¹	<i>piim</i>	VV
Pqch				<i>pim</i>	VV
Kaq	<i>-iq'</i>		<i>-tux</i>	<i>piim</i>	VV
Tz'ut	<i>-iiq'</i>		<i>tuux-</i>	<i>piim</i>	VV
K'ich	<i>iiq'</i>		<i>-tu'x</i>	<i>piim</i>	VV
Q'eq	<i>iq'</i>		<i>tux</i>	<i>pim</i>	V
Moch	<i>-i'q'</i>	<i>o'q</i>	<i>tu'x</i>	<i>pi'm</i>	V'
Q'an	<i>iq'</i>	<i>oq</i>		<i>pim</i>	V
Aka	<i>iq'</i>	<i>ooj</i>		<i>pim</i>	V
Jak	<i>-e'</i>	<i>oj</i>		<i>pim</i>	V
Toj	<i>ik'</i>		<i>tux</i>	<i>pim</i>	V
Chu	<i>ik'</i>	<i>ok-</i>		<i>pim</i>	V

V = a, e, i, o, or u. VV = aa, ee, ii, oo, or uu. VV^L = aa, èe, ii, òò, or ùù.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours.

¹This form, found in a Mamean language, is probably a loan because its stem-initial consonant, *t-*, is unexpected. It should be *ch-*.

(2003) reconstructs pM forms for only two of these sets, i.e., **riij* and **ra'x*. The other six sets are, in our opinion, traced to pM words as well.⁸

⁸In his etymological dictionary, Kaufman (2003) does list some of the Mayan language forms presented in cognate sets of table 7, in addition to those related to his pM **riij* and **ra'x*. However, in his analysis, these attest only to words that pertained to languages ancestral to Mayan subgroups such as Proto-Eastern-Mayan. In some cases, we have found additional forms in other Mayan languages that pertain to these sets that Kaufman does not list. These additional forms give broader distributions for some sets and make inheritance from Proto-Mayan more likely (for a discussion of our distributional criteria for attestation of pM words, see Appendix A).

TABLE 6
A SECOND CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF
A pM SYLLABLE NUCLEUS ENTAILING A GLOTTAL STOP

Proto-Mayan (Kaufman)	<i>*ha'b'</i>	<i>*hu'ng</i>	<i>*k'e'n</i>	<i>*k'i'x</i>	<i>*so'ty</i>	<i>*tya'ng</i>	<i>*a'/*V'</i> (pM nuclei)
English Gloss	'year'	'bark paper'	'cave, stone'	'thorn'	'rattle, rattlesnake'	'lime, ash'	Correspondence Series 6
Yuc	<i>há'ab'</i> ¹	<i>hú'un</i>	<i>ch'é'en</i>	<i>k'i'ix</i>		<i>tá'an</i>	<i>á'a/V^HV</i>
Itz	<i>haab'</i>	<i>hu'um</i>		<i>k'i'ix</i>		<i>ta'an</i>	<i>a'a/V'V</i>
Mop	<i>haab'</i>	<i>hu'um</i>	<i>ch'e'en</i>	<i>k'i'ix</i>		<i>ta'an</i>	<i>a'a/V'V</i>
Hua		<i>uu</i>	<i>tz'een</i>	<i>k'iith</i> ²	<i>thoot</i>	<i>tay'</i>	<i>aa/VV</i>
Chl	<i>hab'</i>	<i>hun</i>	<i>ch'en</i>	<i>ch'ix</i>		<i>tan</i>	<i>a/V</i>
Chn	<i>hab'-</i>	<i>hun</i>	<i>ch'en</i>	<i>ch'ix</i>		<i>tan</i>	<i>a/N</i>
Ch'r	<i>hab'</i>	<i>hun</i>	<i>ch'en</i>	<i>t'ix</i> ³		<i>tan</i>	<i>a/N</i>
Tzo	<i>hab'-</i>	<i>hun</i>	<i>ch'en</i>	<i>ch'ix</i>	<i>sot</i>	<i>tan</i>	<i>a/V</i>
Tze	<i>hab'-</i>	<i>hun</i>	<i>ch'en</i>	<i>ch'ix</i>	<i>sot</i>	<i>tan</i>	<i>a/N</i>
Tek	<i>aab'</i> ⁴	<i>u'j</i>		<i>ky'ixh</i>		<i>tza'j</i>	<i>a'N'</i>
Mam	<i>ab'.</i> ⁴	<i>u'j</i>		<i>ch'i'ix</i>		<i>tza'j</i>	<i>a'N'</i>
Ixh	<i>ya'b'</i>	<i>u'</i>		<i>ch'i'ix</i>		<i>tza'</i>	<i>a'N'</i>
Awa	<i>yob'</i>	<i>u'j</i>		<i>tx'i'x</i>	<i>so'tz</i>	<i>tz'aj</i>	<i>a'N'</i>
Pqch	<i>haab'</i>	<i>huuj</i>		<i>k'iix</i>		<i>chaj-</i>	<i>aa/VV</i>
Kaq	<i>-ab'</i> ⁵	<i>wuuj</i>		<i>k'iix</i>	<i>soch</i> ⁵	<i>chaj</i>	<i>aa/VV</i>
Tz'ut	<i>-aa'</i>	<i>wuuj</i>		<i>k'iix</i>	<i>sooch</i>	<i>chaj</i>	<i>aa/VV</i>
K'ich	<i>-aab'</i>	<i>wuuj</i>		<i>k'iix</i>	<i>soch</i> ⁶	<i>chaj</i>	<i>aa/VV</i>
Q'eq	<i>-ab'-</i>	<i>hu</i>		<i>k'ix</i>		<i>cha</i>	<i>a/N</i>
Moch	<i>ha'b'</i>	<i>hu'm</i>	<i>k'e'n</i>	<i>k'i'x</i>	<i>so't</i>	<i>ta'ng</i>	<i>a'N'</i>
Q'an	<i>ab'-</i>	<i>un</i>	<i>ch'en-</i>	<i>k'ix</i>		<i>tan</i>	<i>a/V</i>
Aka	<i>aab'-</i>	<i>huun</i>	<i>ch'een</i>	<i>k'iix</i>	<i>sot</i>	<i>taan</i>	<i>aa/VV</i>
Jak	<i>hab'-</i>	<i>hum</i>	<i>ch'en</i>	<i>tx'ix</i>	<i>sot</i>	<i>tang</i>	<i>a/N</i>
Toj	<i>hab'</i> ⁷	<i>hu'un</i>	<i>k'e'en</i>	<i>k'i'ix</i>	<i>so'ot</i>	<i>ta'an</i>	<i>a'a/V'V</i>
Chu	<i>hab'-</i>	<i>hu'ung</i>	<i>k'e'en</i>	<i>k'i'ix</i>		<i>tang</i>	<i>a'a/V'V</i>

V = e, i, o, or u. VV = ee, ii, oo, or uu. VV^HV = é'e, í'i, ó'o, or ú'u.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours.

¹Yuc shows high tone indicated by á, é, í, ó, and ú.

²While the syllable nucleus of this Hua word is expected, consonantal elements are not, suggesting that the item is a loan. The anticipated word is *tz'iix*.

³While the syllable nucleus of this Ch'r word is expected, the stem-initial consonant is not, suggesting that the item is a loan. The anticipated word is *ch'ix*.

⁴There are conditioning factors that make this form expected (see 5.11 in text).

⁵Kaq neutralizes the distinction between V and VV in initial syllables of polysyllabic words. For more details, see Appendix A.

⁶In nonfinal syllables, K'ich generally neutralizes vowel length. For more details, see Appendix A.

⁷There are conditioning factors that render this form expected (see 5.7 in text).

One of the two pM forms reconstructed by Kaufman given in table 7, **ra'x* 'green, blue', shows a syllable nucleus identical to that reconstructed by Kaufman and presented in table 6, i.e., **V'*. However, Kaufman's **ra'x* relates to a different sound correspondence (CS 7), from the one (CS 6) to which reconstructions of table 6 pertain and, therefore, requires a reconstructed

TABLE 7
A THIRD CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION OF A PM SYLLABLE NUCLEUS ENTAILING A GLOTTAL STOP

Proto-Mayan (Kaufman)	(none) 'wart, pimple'	(none) 'angered, surly, crazy'	(none) 'hard palate'	(none) 'brave, strong, violent'	(none) 'sunflower'	(none) ¹ 'facial hair, blond hair'	*ri:ij 'old, mature, respect'	*ra'x 'green, blue'	Correspondence Series 7
Yuc				<i>k'a'an</i> ²	<i>su'm</i>	<i>me'ex</i>	<i>yi'ih</i>	<i>ya'ax</i>	<i>a'aN'hV</i>
Itz				<i>k'a'am</i>		<i>me'ex</i>	<i>yi'ih</i>	<i>ya'ax</i>	<i>a'aN'hV</i>
Mop				<i>k'a'am</i>		<i>me'ex</i>	yeh-	<i>ya'ax</i>	<i>a'aN'hV</i>
Hua		<i>tz'u'h-</i>			<i>sun</i>			<i>yaax-</i>	<i>aN</i>
Chl								<i>yaax-</i>	<i>aN</i>
Ch'r								<i>yaax-</i>	<i>aN</i>
Tzo	<i>ch'ok</i>				<i>sun</i>	<i>nex</i>	<i>yih</i>	<i>yox</i>	<i>oN</i>
Tze	<i>tx'a'k</i>	<i>-aj</i>			<i>-sun</i>		<i>yij</i>	<i>yax</i>	<i>aN</i>
Tek							ti:ij	<i>txa'xh</i>	<i>a'N'</i>
Mam		<i>tx'u'j</i>			<i>su'n</i>	<i>me'xh</i>	ti:ij	<i>cha'x³</i>	<i>a'N'</i>
Ixh	<i>ch'a'k</i>	<i>ch'u'j</i>	<i>ja'a</i>	<i>k'a'n</i>	<i>su'n</i>	<i>me'x</i>	ti:ij	<i>cha'x³</i>	<i>a'N'</i>
Awa	<i>tx'a'k</i>	<i>tx'u'j</i>		<i>k'a'n</i>	<i>su'n</i>		ti:ij	<i>txa'x³</i>	<i>a'N'</i>
Pqch								rax	<i>a'N'</i>
Kaq	<i>ch'a'k</i>	<i>ch'u'j</i>	<i>ja'j</i>		<i>su'n</i>	<i>me'x</i>	<i>ri'j</i>	rax	<i>a'N'</i>
Tz'ut	<i>ch'a'k</i>	<i>ch'u'j</i>		<i>k'a'n</i>	<i>su'm</i>	<i>me'x</i>	<i>ri'j</i>	rax	<i>a'N'</i>
K'ich	<i>ch'a'k</i>	<i>ch'u'j</i>	<i>ja'j</i>	<i>k'a'n</i>	<i>su'h</i>		<i>ri'j</i>	rax	<i>a'N'</i>
Q'eq			<i>ha'h</i>		<i>sun</i>	<i>me'x</i>	<i>chi'h</i>	chex	<i>aN</i>
Moch								chex	<i>a'N'</i>
Q'an								<i>yax</i>	<i>aN</i>
Aka	<i>tx'ak</i>			ch'aan				yaax	<i>aN</i>
Jak	<i>tx'ak</i>				<i>sun</i>		<i>yij-</i>	<i>yax</i>	<i>aN</i>
Toj							yih	<i>ya'ax</i>	<i>a'aN'hV</i>
Chu					<i>su'un</i>			<i>ya'ax</i>	<i>a'aN'hV</i>

The values of V, VV, and V^hV are the same as in table 6.

Boldface forms indicate syllable nuclei unexpected in both Kaufman's analysis and ours; Tek, Mam, Ixh, and Awa reflexes of *ri:ij are boldface; however, their syllable nuclei are unexpected in our analysis but not in Kaufman's.

¹Our pM reconstructions for these six sets (each associated with "none" in Kaufman's analysis) are as follows: **ch'a'k* 'wart, pimple', **ch'u'j* 'angered, surly, crazy', **ja'j* 'hard palate', **k'a'n* 'brave, strong, violent', **su'n* 'sunflower', and **me'x* 'facial hair, blond hair'.

²Yuc shows high tone indicated by *á, é, í, ó, and ú*.

³This Mam language word is possibly a loan since its stem-initial consonant should be *t-* rather than the observed consonant.

syllable nucleus that is different from that of pM forms of table 6. In our analysis, all eight cognate sets of table 7 relate to CS 7 and should be reconstructed for Proto-Mayan with words showing the same syllable nucleus. Also, the latter syllable nucleus must differ from the pM syllable nucleus motivated by CS 6 (table 6).⁹ (Kaufman's reconstruction of **riij*, as opposed to **ri'j*, is probably motivated by the Mamean [Tek, Mam, Ixh, and Awa] forms, all of which lack syllable nuclei showing a glottal stop. In our analysis, these Mamean forms are regarded as unexpected reflexes.)

Table 8 lists three cognate sets which we believe attest to three pM forms. However, Kaufman does not reconstruct pM words from which these sets could be derived.¹⁰ Nevertheless, we believe these data indicate the pertinence of a correspondence set (CS 8) derived from a distinct pM syllable nucleus.¹¹ This correspondence series is identical to CS 1 (see table 1), except that Moch shows V' rather than V.

In addition to correspondence series 1–8 (in tables 1–8), we identify two other correspondence series pertaining to pM syllable nuclei, both of which are also recognized in Kaufman's analysis. These are series for which Kaufman (2003) reconstructs **Vh* and **Vj*.¹²

3. The proposed system. In our analysis, Proto-Mayan has two vowel types, a plain vowel (**V*) and a special vowel (**V_s*).¹³ The plain vowel shows the vowel qualities *a*, *e*, *i*, *o*, and *u*. The special vowel shows the same five vowel qualities, represented here by capital letters, *A*, *E*, *I*, *O*, and *U*. There are short and long versions of the plain vowel (respectively, **V* and **VV*), but not of the special vowel. The two versions of the plain vowel occur in syllable nuclei with a postpositioned glottal fricative (*-h*) and/or a postpositioned glottal stop (*-'*). In addition, the short plain vowel (**V*) occurs with a postpositioned velar fricative (**-j*). There are at least ten different pM syllable nuclei: **V*, **V_s*, **VV*, **Vh*, **VVh*, **V'*, **VV'*, **V'h*, **VV'h*, and **Vj*.

⁹ In our analysis, CS 7 pertains to pM **V'* (contrasting with our pM **VV'* relating to CS 6; see 3 below for details).

¹⁰ In his etymological dictionary, Kaufman (2003) does list some of the forms related to the glosses 'to grind, scratch, scrape' and 'sour' in table 8. However, in his analysis, these attest only to words that pertained to languages ancestral to Mayan subgroups. We believe that the three cognate sets of table 8 constitute data sufficient for reconstructing their respective ancestral forms to Proto-Mayan (for a discussion of our distributional criteria for attestation of Proto-Mayan words, see Appendix A).

¹¹ In our analysis, CS 8 pertains to pM **V'h*; see 3 below for details.

¹² For these two sets, we also reconstruct **Vh* and **Vj*; see table 9 for reflexes.

¹³ The data on which our analysis is based are given in Appendix A, which consists of 281 cognate sets relating to the same number of monosyllabic lexical morphemes pertinent to Proto-Mayan.

TABLE 8
 A FOURTH CORRESPONDENCE SERIES PERTINENT TO KAUFMAN'S RECONSTRUCTION
 OF A PM SYLLABLE NUCLEUS ENTAILING A GLOTTAL STOP

Proto-Mayan (Kaufman)	(none)	(none)	(none) ¹	
English Gloss	'to grind, scratch, scrape'	'sour'	'to sound, shout, speak, ask for'	Correspondence Series 8
Yuc	<i>huch</i> '-	<i>pah</i>		<i>a</i> /N
Itz	<i>huch</i> '	<i>päh</i>		<i>ä</i> /N
Mop	<i>huch</i> '-	<i>päh</i>		<i>ä</i> /N
Hua				<i>a</i> /N
Chl	<i>huch</i> '	<i>pah</i> ²		<i>ä</i> /N
Chn	<i>huch</i> '	<i>pah</i> ²	<i>k'än</i> -	<i>ä</i> /N
Ch'r	<i>huch</i> '	<i>pah</i> -		<i>a</i> /N
Tzo	<i>huch</i> '-	<i>poh</i>		<i>o</i> /N
Tze	<i>juch</i> '	<i>paj</i>		<i>a</i> /N
Tek				<i>a</i> /N
Mam			<i>q'aj</i>	<i>a</i> /N
Ixh	<i>jutx</i> '		<i>q'aj</i> -	<i>a</i> /N
Awa			<i>q'aj</i> -	<i>a</i> /N
Pqch			<i>q'aj</i> -	<i>a</i> /N
Kaq	<i>juch</i> '-		<i>q'aj</i> -	<i>a</i> /N
Tz'ut			<i>q'aj</i> -	<i>a</i> /N
K'ich	<i>juch</i> '-		<i>q'aj</i> -	<i>a</i> /N
Q'eq	<i>juch</i> '-			<i>a</i> /N
Moch	<i>hu'ch</i> '	<i>pa'h</i>	<i>q'a'ng</i>	<i>a</i> '/N'
Q'an	<i>jutx</i> '-	<i>paj</i>	<i>q'an</i> -	<i>a</i> /N
Aka	<i>hutx</i> '-	<i>paa</i> ³	<i>q'an</i> -	<i>a</i> /N
Jak	<i>hutx</i> '-	<i>pah</i>	<i>q'ang</i>	<i>a</i> /N
Toj	<i>huch</i> '-	<i>pah</i>	<i>k'an</i> -	<i>a</i> /N
Chu	<i>juch</i> '-	<i>paj</i>	<i>k'ang</i>	<i>a</i> /N

V = *e, i, o, or u.*

¹Our pM reconstructions for these three sets (each associated with "none" in Kaufman's analysis) are as follows: **ju'hch* 'to grind, scratch, scrape', **pa'hj* 'sour', and **q'a'ng* 'to sound, shout, speak, ask for'.

²There are conditioning factors that render this Cholan language word expected (see 5.4.1 in text).

³There are conditioning factors that render this Aka word expected (see 5.6.3.1 in text).

The phonetic nature of the special vowel (*V_s) cannot at present be unambiguously determined from contemporary Mayan language reflexes. However, a systematic association exists among the reflexes of the short plain vowel (*V), the special vowel (*V_s), and the long plain vowel (*VV) that provides some clue to the nature of the special vowel. In all sets of correspondences, there is a relationship among the reflexes of the short plain vowel, the special vowel, and the long plain vowel such that they are either all distinct or else the short plain vowel and the special vowel or the special vowel and the long plain vowel have merged. In no cases do the short and

the long plain vowel fall together in a reflex distinct from that of the special vowel. This suggests a relationship of phonetic distance among the three vowels, *V, *V_s, and *VV, where *V and *VV are more distinct from each other than either is from *V_s. Because of this systematic relationship, we speculate that the special vowel may have been a plain vowel that showed a vocalic length intermediate between that of the short plain vowel (*V) and that of the long plain vowel (*VV). Other possibilities are that it was a laryngealized vowel, or a breathy vowel, or even a voiceless vowel. These possibilities are weaker, however, because if the special vowel carried some particular feature that opposed it to both *V and *VV, we would expect to see some instances where reflexes of *V and *VV merge in a nucleus type distinct from that of reflexes of *V_s.

Table 9 presents correspondence sets relating to unconditioned changes involving each of the ten pM syllable nuclei as manifested in selected Mayan languages. (Languages used include members of each of the seven major subgroups [see 1 above] for which there are phonologically adequate lexical sources [see 9 below].) In addition, syllable nuclei are reconstructed and presented for noncontemporary offspring languages of Proto-Mayan including Proto-Yucatecan (pYc), Proto-Huastecan (pHs), Proto-Greater Tzeltalan (pGrTz), Proto-Cholan (pCh), Proto-Tzeltalan (pTz), Proto-Eastern-Mayan (pEsMy), Proto-Mamean (pMm), Proto-K'ichee'an (pK'ch), and Proto-Greater Qanjob'alán (pGrQ'n). Since the correspondences presented in table 9 all entail syllable nuclei, none occurs stem-finally.¹⁴

Presented below are sets of pM words relating to each of the ten correspondence series of table 9. These words are found in Appendix A, where they are listed in alphabetical order, given with their proposed meanings and with associated reflexes from Mayan languages.

pM *a/*V

*ar 'there is/are', *b'aj 'to nail', *b'aj- 'interrogative morpheme', *b'al 'to fill an object, insert', *b'aq' 'seed, meat', *b'aty 'hail', *b'oq 'to uproot', *ety 'to accompany, with', *jal 'to weave, braid, to cross things', *jap 'to open (mouth)', *jaq 'to open, unstop', *jaq' 'to inhale, pant, hiccup, choke, drown', *jaty 'to tear, slice, split', *jeb' 'to open, pour out', *jotz' 'to extract, to scrape, to scratch', *joy 'to detour, circle, encircle', *jur 'to stir', *kab' 'earth, land, world', *kam 'to die', *kaq 'red', *kol 'loose', *kyar

¹⁴ Both short (*a/V*) and long (*aa/VV*) vowels are given for Kaq in table 9. These should be interpreted as being lax and tense vowels, respectively. In using *a/V* and *aa/VV* to represent lax and tense vowels, we are implying that pre-Kaq short vowels developed as lax vowels and pre-Kaq long vowels developed as tense vowels.

TABLE 9
 PROTO-MAYAN SYLLABLE NUCLEI AND ASSOCIATED UNCONDITIONED REFLEXES

pM	*a/ʔV	*A/ʔV _s	*aa/ʔVV	*ah/ʔVh	*aah/ʔVVh	*a/ʔV*	*aa/ʔVV*	*a/ʔVʔ	*aa/ʔVVʔ	*ad/ʔVʔh	*aa/ʔVVʔh	*aj/ʔVj
pYc	*a/ʔV	*aa/ʔVV	*aah/ʔVVh	*ah/ʔVh	*aah/ʔVVh	*a/ʔV*	*aa/ʔVV*	*a/ʔVʔ	*aa/ʔVVʔ	*ad/ʔVʔh	*aah/ʔVVʔh	*ah/ʔVh
Yuc	a/V	a/V	âa/VʔV	âa/VʔVh	âa/VʔV	â/ʔVʔV	â/ʔVʔV	â/ʔVʔV	â/ʔVʔV	a/V	âa/VʔV	âa/VʔVh
Itz	â/V	a/V	a/V	a/V	a/V	a/ʔVʔV	a/ʔVʔV	a/ʔVʔV	a/ʔVʔV	â/V	a/V	a/V
Mop	â/V	a/V	a/V	a/V	a/V	a/ʔVʔV	a/ʔVʔV	a/ʔVʔV	a/ʔVʔV	â/V	a/V	a/V
pHs	*a/ʔV	*aa/ʔVV	*aa/ʔVV	*a/ʔV	*aah/ʔVVh ¹	*a/ʔV	*aa/ʔVV	*aa/ʔVV	*aa/ʔVV	*ad/ʔVʔ	*aa/ʔVV	*ahal/ʔVhV
Hua	a/V	aa/VV	aa/VV	a/V	a/V ¹	a/V	aa/VV	aa/VV	aa/VV	a/V	a/V	aha/VhV
pGrTz	*a/ʔV	*A/ʔV _s	*aa/ʔVV	*ah/ʔVh	*aah/ʔVVh ²	*a/ʔVʔ ³	*aa/ʔVVʔ ^{3,4}	*aa/ʔVVʔ ^{3,4}	*aa/ʔVVʔ ^{3,4}	*a/ʔVʔ ³	*aa/ʔVVʔ ^{3,4}	*ah/ʔVh
pCh	*a/ʔV	*aa/ʔVV	*aa/ʔVV	*aah/ʔVh	*aa/ʔVV ²	*a/ʔVʔ ³	*aa/ʔVVʔ ^{3,4}	*aa/ʔVVʔ ^{3,4}	*aa/ʔVVʔ ^{3,4}	*a/ʔVʔ ³	*aa/ʔVVʔ ^{3,4}	*ah/ʔVh
Chl	â/V	a/V	a/V	ah/Vh	a/V ²	â/V	a/V ⁴	a/V ⁴	a/V ⁴	â/V	a/V ⁴	ah/Vh
Chn	â/V	a/V	a/V	a/V	a/V ²	â/V	a/V ⁴	a/V ⁴	a/V ⁴	â/V	a/V ⁴	a/V
Ch'r	a/V	a/V	a/V	ah/Vh	a/V ²	a/V	a/V ⁴	a/V ⁴	a/V ⁴	a/V	a/V ⁴	ah/Vh
pTz	*a/V	*a/ʔV	*aa/ʔVV	*ah/ʔVh	*a/ʔV	*a/ʔV	*aa/ʔVV	*aa/ʔVV	*aa/ʔVV	*a/ʔV	*a/ʔV	*ah/ʔVh
Tzo	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V
Tze	a/V	a/V	a/V	ah/Vh	a/V	a/V	a/V	a/V	a/V	a/V	a/V	ah/Vh
pEsMy	*a/ʔV	*a/ʔV	*aa/ʔVV	*ah/ʔVh	*aa/ʔVV	*a/ʔVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*ad/ʔVʔ	*aa/ʔVV	*ajal/ʔVjV
pMm	*a/ʔV	*a/ʔV	*aa/ʔVV	*aa/ʔVV	*aa/ʔVV	*a/ʔVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*ad/ʔVʔ	*aa/ʔVV	*ajal/ʔVjV
Tek	a/V	a/V	aa/VV	aa/VV	aa/VV	a/V	a/V	a/V	a/V	a/V	aa/VV	ajal/VjV
Mam	a/V	a/V	aa/VV	aa/VV	aa/VV	a/V	a/V	a/V	a/V	a/V	aa/VV	ajal/VjV
Ixh	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	a/V	aa/VV
Awa	a/V	a/V	aa/VV	aa/VV	aa/VV	a/V	a/V	a/V	a/V	a/V	aa/VV	?
pK'ch	*a/ʔV	*a/ʔV	*aa/ʔVV	*ah/ʔVh	*aa/ʔVV	*a/ʔVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*aa/ʔVVʔ	*ad/ʔVʔ	*aa/ʔVV	*ajal/ʔVjV
Pqch	a/V	a/V	aa/VV	ah/Vh	aa/VV	a/V	aa/VV	aa/VV	aa/VV	a/V	aa/VV	aj/Vj

TABLE 9—continued

Kaq	aN	aN	aaNVV	aaNVV	a' /N'	aaVVV	aN	aaVV	ahaNVhV
Tz'ut	aN	aN	aaNVV	aaNVV	a' /N'	aaVVV	aN	aaVV	ahNVh
K'ich	aN	aN	aaNVV	aaNVV	a' /N'	aaVVV	aN	aaVV	ajalVjV
Q'eq	aN	aN	aaNV	aaNV	aN	aaN	aN	aN	aj /Nj
pGrQ'n	*a ^h V	*a ^h V	*aa ^h VV	*aa ^h VV	*a' / *V'	*aa' / *VV'	*a' h ^h *V' h	*a' h ^h *V' h	*ajal ^h VjV
Moch	aN	aN	aaNVV	aaNVV	a' /N'	a' /N'	a' /N'	a' /N'	ahaNVhV
Q'an	aN	aN	aN	aN	aN	aN	aN	aN	ajalVjV
Aka	aN	aN	aN	aN	aN	aaNVV	aN	aN	aaVV
Jak	aN	aN	aN	aN	aN	aN	aN	aN	ahaNVhV
Toj	aN	aN	aN	aN	a' aN' V	a' aN' V	aN	aN	ahaNVhV
Chu	aN	aN	aN	aN	a' aN' V	a' aN' V	aN	aN	ajalVjV

¹pHs. *ooh yields Hua u.

²pGrTz *ooh yields pCh *uu, which yields u in Chl, Chn, and Ch'r.

³These syllable nuclei for both pGrTz and pCh can be reconstructed with or without an incorporated glottal stop without affecting the logical integrity of the reconstructed system. Our choice of reconstructing glottal stops at stages intermediate between Proto-Mayan and individual Cholán languages is based on evidence from hieroglyphic data (Lacadena and Wichmann [forthcoming]). Hieroglyphic data, however, do not feed into our reconstructions at the pM level.

⁴pGrTz *oo' and *oo'h both yield pCh *uu', which yields u in Chl, Chn, and Ch'r.

'fish', **k'aj* 'corn flour', **k'al* 'to tie, entangle, lock', **k'am* 'to take', **k'aq* 'flea', **k'ex* 'to exchange', **laj* 'to finish, end', **lem* 'to shine, sparkle', **loq* 'to boil', **maq* 'to stop up, close, cover', **mutz* 'to close eyes', **paq* 'to fold', **q'ab* 'hand', **q'an* 'yellow, ripe', **saq* 'white', **sat* 'to lose', *-*tiq* 'plural suffix', **toj* 'to pay', **tyaj* 'pine', **tyaq* 'to answer', **tyaty* 'thick', **ty'il* 'to toast, singe', **tzuy* 'to sew, join together, tie together', **tz'aq* 'complete (adjective)', **tz'is* 'to sew', **tz'ut* 'corn tassel', **uk* 'louse', **uk* 'to drink', **ut* 'to be able, to do, to happen', **uty* 'to mutter, say', **waj* 'to sprinkle, scatter, sow', **war* 'to sleep', **wul* 'to make noise, mutter, say', **xap* 'to put into', **yaq* 'to thrust (as in intercourse), to massage', **yol* 'smooth, slippery'.

pM *A/*V_s

**Am* 'spider', **b'Aty* 'corkwood tree', **jAr* 'how many?', **kOj* 'puma', **lAq* 'bowl', **mAp* 'coyal palm', **ngAb* 'rain', **wAy* 'sapote seed, pimple', **xAt* 'forked pole, forked legs'.

pM *aa/*VV

**aaj* 'reed', **aak* 'wet, new', **aaq* 'vine, snake', **aaty* 'penis', **b'aal* 'brother-in-law', **b'aaq* 'bone', **hool* 'hole', **iik* 'moon, month', **jooj* 'crow, heron', **juun* 'one', **kaab* 'bee, honey', **k'aaq* 'lazy', **laab* 'bewitching or evil spirit, person, animal, thing', **lool* 'caterpillar, grasshopper', **maal* 'to swell', **maam* 'grandfather, grandchild', **maatz* 'corn gruel', **nooq* 'cotton', **nuuq* 'neck', **ook* 'to enter', **oong* 'far', **ooq* 'foot', **paat* 'back, shell, house', **poom* 'incense', **qeeb* 'belch', **q'aab* 'liquid, juice, urine', **saal* 'mange', **t'iiw* 'eagle', **tyaal* 'to come', **waaj* 'tortilla', **waak* 'twigs', **waan* 'certainly, perhaps', **yaan* 'more, other, another', **yool* 'word, to speak'.

pM *ah/*Vh

**ahn* 'to run, flee', **ahq* 'turtle, pig', **aht* 'to count', **b'ehj* 'to break', **b'ehl* 'to carry', **ehtz* 'to imitate, make fun of, play', **ehm* 'to lower, incline, tilt', **ihq* 'to carry', **k'uhm* 'squash', **k'uhzt* 'wild tobacco', **lahq* 'army ant', **luhb* 'to fall, to be tired', **nehn* 'mirror', **nehty* 'to nibble', **nihk* 'to shake, move', **pohp* 'mat', **pohq* 'blister', **q'ahq* 'fire', **q'ahr* 'to get used to, patient', **q'ohl* 'sap, thick liquid', **q'ohr* 'dough, corn gruel', **sahk* 'grasshopper', **sahm* 'evening, morning', **sehb* 'rapid', **sihm* 'mucus', **sohl* 'to skin, peel', **tuhtz* 'frog', **tyuhb* 'to spit', **tzuhb* 'to obstruct', **tz'ahq* 'stone pile', **tz'ihb* 'to draw', **tz'ihn* 'yucca', **uhzt* 'to kiss, to sniff', **xehl* 'leftover', **yuhk* 'to shake, to move', **yuhl* 'to anoint, to rub, to plane'.

pM *aah/*VVh

*aahl ‘woman’s offspring’, *aahl ‘heavy’, *aahq ‘tongue’, *aahw ‘a shout, shouting’, *b’iihx ‘to sing, dance’, *iihk ‘chile’, iihm ‘breast’, *iihs ‘sweet potato’, *jaahy ‘thin’, *kaahn ‘snake’, *koohng- ‘four’, *looh’t ‘pressed, tightened, cramped’, *moohch ‘toad’, *oohj ‘to know’, *oohng ‘avocado’, *oohq ‘to cry’, *oohx ‘three’, *peehty ‘circular, to make round’, *poohl ‘to fry, to burn’, *poohs ‘bubbling, steam, steam bath’, *q’iihng ‘sun, day’, *q’uuht ‘to shell, scrub, crush’, *soohtz’ ‘bat’, *teehm ‘bench’, *tiihs ‘fart’, *toohng ‘stone’, *tzuuhq ‘belly’, *tz’oohl ‘to peel, to skin’, *waahq ‘to break’, *xaahq ‘leaf’, *xiihb’ ‘male’, *yaahj ‘pain, frail’.

pM *a’/*V’

*ch’a’k ‘wart, pimple’, *ch’i’p ‘youngest child’, *ch’u’j ‘angered, surly, crazy’, *ch’u’k ‘corner, elbow’, *ja’j ‘hard palate’, *jo’l ‘hair, head’, *k’a’n ‘brave, strong, fierce, violent’, *me’x ‘facial hair, blond hair’, *ni’ng ‘fine (like flour), mealy bug’, *ra’x ‘green, unripe’, *ri’j ‘old, mature’, *su’n ‘sunflower’.

pM *aa’/*VV’

*b’aa’tz’ ‘howler monkey’, *chaa’m ‘nose’, *haa’b’ ‘year’, *huu’ng ‘amate bark (paper)’, *huu’x ‘whetstone’, *ii’m ‘maize’, *ii’ng ‘back, bark, skin’, *kaa’b’ ‘two, second’, *kaa’ng ‘sky’, *kuu’k ‘squirrel’, *k’ee’n ‘stone’, *k’ii’x ‘thorn’, *maa’x ‘spider monkey’, *maa’y ‘tobacco’, *q’aa’ng ‘seat, pillow, wedge’, *sii’k ‘cold, chilled, numb’, *soo’ty ‘rattle’, *tyaa’ng ‘lime, ash’, *tyuu’h stinking’, *tzoo’n ‘moss, hair’, *tzoo’tz ‘hair, fur’, *xaa’ng ‘palm’, *xee’p ‘tamal with bean filling’, *yaa’w ‘sick, illness, pain’.

pM *a’h/*V’h

*ju’hch’ ‘to grind, scratch, scrape’, *pa’hj ‘sour’, *q’a’hng ‘to sound, shout, speak, ask for’.

pM *aa’h/*VV’h

*ii’hq’ ‘wind’, *oo’hch ‘opossum, fox’, *oo’hq ‘coyote, fox’, *pii’hm ‘thick’, *tuu’hx ‘vagina, female’.

pM *aj/*Vj

*k’ajb’ ‘fast (noun)’, *lojb’ ‘digging stick’, *najb’ ‘lagoon’, *najt ‘far’, *ojb’ ‘cough’, *ojl ‘heart, center, interior, within, inside’, *pajk’ ‘pineapple’, *pojs ‘dust, powder’, *wajb’ ‘drum’.

There are no examples of verbs in Proto-Mayan showing $*A/*V_s$, indicating a tendency for pM verb roots not to occur with $*A/*V_s$. The vast

majority of pM verbs show pM $*a/*V$ and $*ah/*Vh$. Several pM verbal forms reconstruct ambiguously with either $*a/*V$ or $*A/*V$, due to missing reflexes from Hua. Given that pM verb roots with $*A/*V_s$ are rare or do not occur at all, we reconstruct these ambiguous forms with $*a/*V$.¹⁵

4. Vowel quality shifts. Proto-Mayan vowel quality typically does not change with the development of offspring language reflexes from pM words. For example, if pM $*V$ is an unrounded high-front vowel ($*i$), then reflexes tend strongly to be unrounded high-front vowels (i). Deviations from this pattern are charted in table 9. For example, with the exception of pM $*aa$ and $*aa'$, all pM nuclei entailing a low-central vowel show a shift of the vowel to o in Tzo.

Other vowel quality shifts described in table 9 entail vowel raising. These include: (1) the shift of the pM plain low-central vowel in the nuclei $*a$ and $*a'h$ to the mid-central vowel (\ddot{a}) in Itz, Mop, Chl, and Chn; (2) the shift of the pM plain low-central vowel in the nucleus $*a'$ to the mid-central vowel (\ddot{a}) in Chl and Chn; (3) the shift of the pM unrounded mid-back vowel in the nucleus $*ooh$ to u in Hua, Chl, Chn, and Ch'r; and (4) the shift of the pM unrounded mid-back vowel in the nuclei $*oo'$ and $*oo'h$ to u in Chl, Chn, and Ch'r.

Proto-Mayan words showing the developments of (3) include $*joohy$ or $*hoohy$ (yielding Hua *huy*), $*koohng-$ (Ch'r *chun-*), $*looht'$ (Chl *lut'-*), $*moohch$ (Chn *-much*), $*oojh$ (Chl *uh-*), $*oohng$ (Hua *uh*, Chn *un*), $*oohq'$ (Hua *uk'-*, Chl *uk'-*), $*poohl$ ('to fry, burn') (Chn *pul*), $*poohl$ ('head, forehead') (Chn *pul*), $*poohs$ (Hua *puh-*, Chl *pus*), $*soohtz'$ (Hua *thut'* and Chn *sutz'*), $*toohng$ (Chn *-tun*), and $*tz'oohl$ (Chl *tz'ul*). Proto-Mayan words showing the developments of (4) include pM $*tzo'o'n$, $*tzo'o'tz$, and $*oo'hch$ that respectively yield Chl *tzun-*, *tzutz*, and *uch*. It is not known whether or not developments of (4) extend to Hua as well since there are no known Hua reflexes of $*tzo'o'n$, $*tzo'o'tz$, and $*oo'hch$.

5. Context-conditioned changes. The following are descriptions of most context-conditioned changes pertaining to pM syllable nuclei that yield nuclei in contemporary Mayan languages different from those reported in table 9.¹⁶

¹⁵ These reconstructed items are $*ety$ 'to accompany, with', $*jur$ 'to stir', $*k'ex$ 'to exchange', $*k'ux$ 'to bite, gnaw, eat', $*laj$ 'to finish, to end', $*lem$ 'to shine, sparkle', $*loq$ 'to boil', $*ut$ 'to be able, to do, to happen', and $*yaq'$ 'to thrust'. Given their high frequency and the relatively little new information they provide on pM phonology, such items are included here on a selective basis only.

¹⁶ In a number of Mayan languages, the syllable nuclei of polysyllabic words inherited from Proto-Mayan show special developments conditioned by syllable adjacency. Since the present study treats only monosyllabic pM words, conditioned changes involving syllable adjacency are not discussed. However, we plan to deal thoroughly with the latter in a future study. Disyllabic

5.1. Final laryngeals. Reflexes of the pM short and long plain vowels (**a/*V* and **aa/*VV*) and of the special vowel (**A/*V_s*) behave differently from those charted in table 9 when the three pM vowel types are immediately followed by a stem-final laryngeal, either **-’#* or **-h#*. Table 10 presents reflexes of pM **a’#/*V’#*, **A’#/*V_s’#*, **aa’#/*VV’#*, **ah#/*Vh#*, **Ah#/*V_sh#*, and **aah#/*VVh#*.

Presented below are sets of pM words relating to each of the six correspondence series in table 10 (see Appendix A for reflexes).

pM **a’#/*V’#*

**chu* ‘breast, to suckle’, **ha* ‘water’, **ho* ‘five’, **ki* ‘sweet’, **lo* ‘to eat fruit’, **na* ‘to know’, **ti* ‘to eat meat, to bite’, **tze* ‘to laugh’, **tz’i* ‘dog, small deer’, **tz’u* ‘to suck’, **wa* ‘to stand upright’, **wa* ‘proximate deictic root’, **xi* ‘hair, to comb’.

pM **A’#/*V_s’#*

**A* ‘thigh, leg’, **kA* ‘grindstone’, **q’U* ‘bird nest, clothes’, **sI* ‘firewood’, **tyE* ‘tree, wood’, **tzA* ‘shit’.

pM **aa’#/*VV’#*

**haa* ‘he, she, this, that’, **jee* ‘reinforcing or affirmative element’, **woo* ‘frog’, **yaa* ‘soft spot on head’.

pM **ah#/*Vh#*

**k’ah* ‘bitter’, **k’ih* ‘to grow’, **lah* ‘nettle’, **tzu_h* ‘bottlegourd’.

pM **Ah#/*V_sh#*

**b’Ah* ‘first’, **b’Eh* ‘road’, **kIh* ‘maguey’, **ngAh* ‘house, birthplace’.

pM **aah#/*VVh#*

**eeh* ‘tooth’, **kooh* ‘molar, cheek’, **ngeeh* ‘tail’, **uuh* ‘moon, bead, necklace’.

Like reflexes of pM **a/*V*, **aa/*VV*, and **A/*V_s*, reflexes of pM **a’/*V’* behave differently from those charted in table 9 when the pM syllable nucleus is immediately followed by a stem-final glottal fricative (**-h#*). As shown in table 11, contemporary language reflexes of **a’h#/*V’h#* are the same as those of **Ah#/*V_sh#* (see table 10) except for Moch’s which is *a’h#/*V’h#*.

Reflexes of two pM words, **b’a’h* ‘gopher’ and **ra’h* ‘spicy, painful, sick, wounded’, illustrate the syllable nuclei charted in the first column of table 11 (see Appendix A).

pM forms are excluded from the present treatment because they would not be expected to introduce any pM syllable nuclei beyond those isolated here.

TABLE 11
TWO pM SYLLABLE NUCLEI BEFORE STEM-FINAL
GLOTTAL FRICATIVES AND ASSOCIATED REFLEXES

pM	*a'h#/*V'h#	*Ah#/*V _s h#
pYc	*aah#/*VVh#	*aah#/*VVh#
Yuc	ah#/Vh#	ah#/Vh#
Itz	ah#/Vh#	ah#/Vh#
Mop	ah#/Vh#	ah#/Vh#
pHs	*a'#//*V'#	*a'#//*V'#
Hua	a'#/V'#	a'#/V'#
pGrTz	*ah#/*Vh#	*ah#/*Vh#
pCh	*ah#/*Vh#	*ah#/*Vh#
ChI	ah#/Vh#	ah#/Vh#
Chn	ah#/Vh#	ah#/Vh#
Ch'r	ah#/Vh#	ah#/Vh#
pTz	*aa#/*VV#	*aa#/*VV#
Tzo	a#/V#	a#/V#
Tze	a#/V#	a#/V#
pEsMy	*Ah#/*V _s h#	*Ah#/*V _s h#
pMm	*aay#/*VVy#	*aay#/*VVy#
Tek	aay#/VVy#	aay#/VVy#
Mam	aa#/VV#	aa#/VV#
Ixh	ay#/Vy#	ay#/Vy#
Awa	aa'#/VV'#	aa'#/VV'#
pK'ch	*aah#/*VVh#	*aah#/*VVh#
Pqch	aah#/VVh#	?
Kaq	aay#/VVy#	aay#/VVy#
Tz'ut	aay#/VVy#	aay#/VVy#
K'ich	ah#/Vh#	ah#/Vh#
Q'eq	a#/V#	a#/V#
pGrQ'n	*aa'h#/*VV'h#	*aah#/*VVh#
Moch	a'h#/V'h#	aah#/VVh#
Q'an	a#/V#	a#/V#
Aka	aa#/VV#	aa#/VV#
Jak	ah#/Vh#	ah#/Vh#
Toj	ah#/Vh#	ah#/Vh#
Chu	a#/V#	A#/V#

5.2. *Vh immediately followed by a stem-final fricative. Reflexes of pM *Vh behave differently in some Mayan languages than those reported in table 9 when *Vh is immediately followed by a stem-final fricative (*-F#, where F = fricative). Table 12 charts reflexes of pM *VhF#, comparing them with reflexes of *Vh not followed by *-F# (as presented under *ah/*Vh in table 9).

TABLE 12
 PROTO-MAYAN *Vh BEFORE STEM-FINAL FRICATIVES
 AND ELSEWHERE AND ASSOCIATED REFLEXES

pM	*VhF#	*ah/*Vh
pYc	*VhF#	*ah/*Vh
Yuc	V ^H VF#	áa/V ^H V
Itz	VVF#	aa/VV
Mop	VVF#	aa/VV
pHs	?	*a/*V
Hua	?	*a/*V
pGrTz	*VF#	*ah/*Vh
pCh	*VF#	*ah/*Vh
Chl	VF#	ah/Vh
Chn	VF#	a/V
Ch'r	VF#	ah/Vh
pTz	*VF#	*ah/Vh
Tzo	VF#	o/V
Tze	VF#	ah/Vh
pEsMy	*VVF#	ah/*Vh
pMm	*VVF#	*aa/*VV
Tek	VVF#	aa/VV
Mam	VVF#	aa/VV
Ixh	VF#	a/V
Awa	VVF#	aa/VV
pK'ch	*VVF#	*ah/*Vh
Pqch	VVF#	ah/Vh
Kaq	VVF#	aa/VV
Tz'ut	VVF#	ah/Vh
K'ich	VVF#	aa/VV
Q'eq	VF#	aa/VV
pGrQ'n	*VVF#	*ah/*Vh
Moch	VVF#	aa/VV
Q'an	VF#	a/V
Aka	VF# ¹	a/V
Jak	VF#	a/V
Toj	VF#	ah/Vh
Chu	VF#	a/V

¹When F is a velar fricative (*j*), pM *VhF# yields Aka VV#.

Reflexes of four pM words, *kehj 'deer', *k'ohj 'mask', *mehs 'broom', and *nohj 'to be filled', illustrate the syllable nuclei charted in the first column of table 12 (see Appendix A).¹⁷

¹⁷ There are no examples of reflexes of pM words showing either *ahF# or *uhF#. In addition, there are no examples of reflexes of pM words showing *VhF#, where F is a fricative other than *j* or *s*.

5.3. Tzotzil. Several conditioned changes pertain to syllable nuclei of Tzo (Tzeltalan), as explained below.

5.3.1. Proto-Mayan **aj* unconditionally yields Tzo *o* (see table 9). However, when the pM syllable nucleus is immediately preceded by stem-initial **n-*, Tzo shows *a*. Proto-Mayan words demonstrating this conditioned result include **najb'* and **najt*. Tzo reflexes of the latter are *nab'* and *nat*, respectively.

5.3.2. Certain pM variants of the low-central vowel that are unconditionally realized as *o* in Tzo (i.e., **a* and **ah*; see table 9) show Tzo *a* when they occur in a verbal stem:

pM	Tzo
<i>*ahn</i> 'to run, flee'	<i>an-</i>
<i>*aht</i> 'to count'	<i>at</i>
<i>*b'aj</i> 'to nail'	<i>b'ah</i>
<i>*jal</i> 'to weave'	<i>hal-</i>
<i>*jaty</i> 'to tear, slice, split'	<i>hat-</i>
<i>*kam</i> 'to die'	<i>cham</i>
<i>*k'al</i> 'to tie'	<i>ch'al</i>
<i>*k'am</i> 'to take'	<i>ch'am</i>
<i>*maq</i> 'to stop up'	<i>mak-</i>
<i>*na</i> 'to know'	<i>na'</i>
<i>*paq</i> 'to fold'	<i>pak</i>
<i>*tyaq</i> 'to answer'	<i>tak'</i>
<i>*waj</i> 'to sprinkle'	<i>wah</i>
<i>*war</i> 'to sleep'	<i>way-</i>
<i>*wa</i> 'to stand upright'	<i>wa'-</i>
<i>*yaq</i> 'to thrust'	<i>yak'</i>

This conditioned change was first recognized by Fox (1977). Since most verbs from Proto-Mayan in Mayan languages have syllable nuclei reflecting either pM **a/*V* or **ah/*Vh*, we do not know if the conditioned change extends as well to Tzo reflexes of pM **aj*, **aah*, **a'*, **a'h*, **aa'h*, all of which unconditionally yield *o* in the language (see table 9).¹⁸

5.3.3. Certain pM variants of the low-central vowel that are unconditionally realized in Tzo as *o* (i.e., **a*, **ah*, and **aah*; see table 9) yield *a* in Tzo when co-occurring in a pM stem with **q*. Proto-Mayan words showing this development include **kaq*, **k'aq*, **maq*, **paq*, **saq*, **tz'ahq*, **tz'aq*, and **xaahq*. Tzo reflexes of the latter are, respectively, *chak*, *ch'ak*, *mak-*, *pak*, *sak*, *tz'ak*, *tz'ak-*, and *xak-*. This conditioned change was first recognized by

¹⁸ However, the observed shift of pM **waaq'* 'to break' to Tzo *wok'* 'to break' suggests that the nucleus **aah* in verbs does change to *o* in Tzo.

Fox (1977). Because of data limitations, we do not know if it extends as well to Tzo reflexes of pM **aj*, **A*, **a'*, **a'h*, and **aa'h*, all of which unconditionally yield *o* in the language (see table 9).

5.4. Cholan languages.

5.4.1. Chol and Chontal. Proto-Mayan **a* is realized in both Chl and Chn (Cholan) by *ä* (see table 9), except when immediately followed by a stem-final glottal stop (**-'#*) or glottal fricative (**-h#*), in which case it is realized by *a* (see table 10 and Campbell 1977:898). When it co-occurs with **j* in a pM stem, it is also realized in Chl by *a*. This conditioned change was first recognized by Kaufman and Norman (1984:85). Proto-Mayan words demonstrating it include **b'aj* ('to nail'), **b'aj-* ('interrogative morpheme'), **jal*, **jap*, **jaq*, **jaq'*, **jaty*, **k'aj*, **pa'hj*, and **tyaj*. Chl reflexes of the latter are, respectively, *b'ah*, *b'ah-*, *hal*, *hap-*, *hak-*, *hak'-*, *hat*, *ch'ah*, *pah*, and *tah*. Chn shows a less-developed version of this conditioned change. The Chn reflex of **a* is *a* when **a* is followed in a stem by **j* and *ä* when **a* is preceded in a stem by **j*. Proto-Mayan words showing this include **b'aj* ('to nail'), **b'aj-* ('interrogative morpheme'), **pa'hj*, **jal*, **jap*, **jaq*, and **jaq'*. Chn reflexes of the latter are, respectively, *b'ah-*, *b'ah-*, *pah*, *häl-*, *hüp-*, *häk-*, and **häk'-*.

5.4.2. Conditioned vowel raising in Cholan languages. In addition to the examples of unconditioned vowel raising discussed in 4 above, some instances of vowel raising occur only in restricted environments. Proto-Mayan **e*, **E*, and **eh* are realized as *i* in Cholan languages (Chl, Chn, Ch'r) when immediately followed by a stem-final fricative. Proto-Mayan words showing this development include **b'Eh* (yielding Chl *b'ih*), **b'ehj* (Chl *p'ih-*), **kehj* (Chl *chih-*), **mehs* (Chn *mis-*), and **tzeh* (Chl *tzih*).¹⁹ There is one exception to this rule. Proto-Mayan **k'ex* does not show reflexes with the expected vowel, i.e., *i*, in Cholan languages (Chl *k'ex*, Chn *k'ex-*, Chlt <*quex-*>).

¹⁹ Kaufman and Norman (1984:87) propose that the *i* of these Cholan language reflexes comes from an underlying long mid-front vowel (**ee*). They make this argument despite their reconstruction of **kehj* 'deer' (1984:118) as the pM form from which pCh **chij* develops. Proto-Mayan **kehj*, of course, demonstrates a short vowel (*e*) rather than a long one. Our analysis clearly shows that an underlying non-long vowel (**e* or **E*) rather than a long vowel (**ee*) is involved in these examples of vowel raising.

Mayan languages show cognate time suffixes that may be reflexes of pM **-ehj*: Mop *-eh*, Ch'r *-ih*, Tzo *-eh*, Tek *-ej*, Tz'ut *-eej*, K'ich *-eej*, Moch *-eh-*, Aka *-e*, Jak *-e*, Toj *-eh-*, Chu *-j-*. **-ehj* is a possible example of the shift of pM **eh* to Cholan *i* when followed by a stem-final fricative since the Ch'r reflex is *-ih*. We introduce this additional evidence with caution because we have yet to work out the possible influence of stress factors on the development of syllable nuclei. The Tek, Moch, and Aka reflexes of **-ehj* show unexpected syllable nuclei.

5.5. Mochó. Proto-Mayan $*ah/*Vh$ regularly yields aa/VV in Moch (Greater Q'anjob'alan) (see table 9). However, when $V = o$ and when the stem-initial and stem-final consonants in a syllable are identical ($*C_1ohC_1$), the Moch reflex is *oho*. Words showing this are pM $*pohp$ and Proto-Greater Q'anjob'alan $*q'ohq'$. Moch reflexes of the latter are *pohop* and *q'ohoq'*, respectively.

5.6. Akateko. Several conditioned changes pertain to syllable nuclei in Aka (Greater Q'anjob'alan):

5.6.1. Proto-Mayan $*aa'/*VV'$ unconditionally yields aa/VV in Aka (see table 9). However, when the pM word shows stem-final $*k$, a short vowel is found in Aka. Proto-Mayan words showing this development include $*kuu'k$ and $*sii'k$. Aka reflexes of the latter are *kuk* and *sik*, respectively.

5.6.2. Aka unconditionally reflects pM $*a$, $*ah$, and $*A$ with *a* (see table 9). However, when a pM low-central vowel is followed by stem-final r ($*-r\#$) or y ($*-y\#$), both of which are realized by *-y* in Aka, the language generally shows *e*. Proto-Mayan forms demonstrating this are $*war$, $*q'ahr$, $*ar$, and $*wAy$. Respective Aka reflexes of the latter are *wey-*, *q'ey-*, *ey*, and *wey*. More examples could be adduced from sets not included in Appendix A. Also, synchronic variants that all descend from forms in final $*r$ show the change still to be ongoing, e.g., *b'ay/b'ey* 'to twist (strands of rope)', *pay* 'skunk'/peyte' 'a certain tree' (Sp. *huele de noche*), literally 'skunk tree'.

5.6.3. Aka unconditionally reflects most pM syllable nuclei ($*a/*V$, $*ah/*Vh$, $*aa/*VV$, $*aah/*VVh$, $*A/*V_s$, and $*a'/*V'$) with a short vowel (a/V) (see table 9). There are, however, conditions under which Aka reflexes of the latter are long vowels (aa/VV). These all entail pM stems in which the syllable nucleus is followed by a velar fricative ($*-j$) or by a glottal fricative ($*-h$). In all such cases, Aka loses the fricative and develops compensatory vowel lengthening. For example, as depicted in table 9, Aka develops aa/VV from pM $*aj/*Vj$; as depicted in table 10, Aka develops $aa\#/VV\#$ from pM $*ah\/*Vh\#$, $*Ah\/*V_s h\#$, and $*aah/*VVh\#$; as depicted in table 11, Aka develops $aa\#/VV\#$ from pM $*a'h\/*V'h\#$, and as depicted in table 12, Aka develops $VV\#$ from pM $*VF\#$. Sections 5.6.3.1 and 5.6.3.2 below present other examples.

5.6.3.1. When pM $*a/*V$, $*ah/*Vh$, $*a'h/*V'h$, $*aah/*VVh$, or $*aa/*VV$ is followed by a stem-final velar fricative ($*-j\#$), Aka shows aa/VV . Proto-Mayan words demonstrating this are $*k'aj$, $*laj$, $*nohj$, $*pa'hj$, $*toj$, $*tyaj$, $*kehj$, $*k'ohj$, $*oohj$, $*aaj$, and $*jooj$. Aka reflexes of the latter are *k'aa*, *laa-*, *noo-*, *pa*, *too-*, *taa*, *chee*, *k'oo*, *oo-*, *aa*, and *hoo*, respectively.

5.6.3.2. When a pM syllable nucleus entailing a long plain vowel ($*VV$) is immediately followed by a stem-final glottal fricative ($*-h\#$), Aka shows VV .

Proto-Mayan words demonstrating this development include **eeh* and **ngeeh*. Aka reflexes of the latter are, respectively, *ee* and *nee*.

5.7. Tojolabal. Proto-Mayan **aa'/*VV'* unconditionally yields *a'a/V'V'* in Toj (Greater Q'anjob'alán) (see table 9). However, when there is a bilabial (**b'* or **m*) in the pM stem, a short, non-echoed vowel is found in Toj reflexes. Proto-Mayan words demonstrating this development include **b'aa'tz'*, **ii'm*, **haa'b'*, **kaa'b'*, and **maa'y*. Toj reflexes of the latter are *b'atz'*, *-im*, *hab'-*, *chab'-*, and *may*, respectively.

5.8. Q'eqchii'. Proto-Mayan **ah/*Vh* unconditionally yields *aa/VV* in Q'eq (Carchá/Chamelco dialect) (see table 9).²⁰ However, when pM **Vh* entails a rounded vowel, i.e., **uh* or **oh*, Q'eq reflexes show a short vowel (V). Proto-Mayan words demonstrating this development include **k'uhm*, **luhb'*, *uhtz'*, **yuhl*, **q'ohl*, **k'ohj*, and **sohl*. The Q'eq reflexes of these are, respectively, *k'um*, *lub'-*, *utz'-*, *yul*, *q'ol*, *k'oj*, and *sol*. This conditioned change is blocked when the stem-initial and stem-final consonants of the root are identical; cf. pM **pohp* > Q'eq *poop* and Proto-Eastern-Mayan **q'ohq'* > Q'eq *q'ooq'*.

5.9. Tz'utujiil. Proto-Mayan **ah/*Vh* unconditionally yields *ah/Vh* in Tz'ut (K'ichee'an) (see table 9). However, when there is a uvular stop (**q*, **q'*) or a glottalized velar stop (**k'*) occurring in the stem, pM **ah/*Vh* is reflected in Tz'ut by a long vowel (*aa/VV*). Proto-Mayan words showing this development include **k'ohj*, **k'uhm*, **pohq'*, **qohl*, **q'ahq'*, **q'ohr*, **sahk'*, and **tz'ahq*. Tz'ut reflexes of the latter are **k'ooj*, *k'uum*, *poq'*, *q'ool*, *q'aaq'*, *q'oor*, *saak'*, and *tz'aaq*, respectively.

5.10. Poqomchii'. Proto-Mayan **ah/*Vh* unconditionally yields *ah/Vh* in Poqomchii' (K'ichee'an) (see table 9). However, when there is a glottalized uvular stop (**q'*) or a glottalized velar stop (**k'*) or a nasal consonant (**m*, **n*) occurring in the stem, pM **ah/*Vh* is reflected in Pqch by a long vowel (*aa/VV*). Proto-Mayan words showing this development include **k'uhm*, **mehs*, **q'ahq'*, **q'ohl*, **q'ohr*, and **tz'ihn*. Pqch reflexes of the latter are *k'uum*, *mees*, *q'aaq'*, *q'ool*, *q'oor*, and *tz'iin*, respectively.

5.11. Teko and Mam. Proto-Mayan **aa'* is unconditionally realized in both Tek and Mam (Mamean) by *a'*. However, when pM **aa'* is immediately followed by stem-final **b'*, it is realized in Tek by *aa* and in Mam by *a*. Proto-Mayan words showing this conditioned change include **haa'b'*

²⁰ Some dialects of Q'eq (Cahabón and Senahú) preserve pM **ah/*Vh* as *ah/Vh* (Campbell 1977:25). Unfortunately, thorough lexical sources for these dialects are not available at present.

and **kaa'b'*. Reflexes of the latter in Tek are, respectively, *aab'*- and *kaab'*-. Reflexes in Mam are, respectively, *ab'*- and *kab'*.

5.12. Huastec. Proto-Mayan **ah* normally yields *a* in Hua (Huastecan) (see table 9). However, when pM **ah* is immediately followed by a stem-final glottalized uvular stop (**-q'*), Hua shows *aa*. Proto-Mayan forms illustrating this include **q'ahq'* and **lahq'*. Hua reflexes of the latter are *k'aak'* and *laak'*, respectively.

6. Problematic syllable nuclei. Listed in alphabetical order in Appendix A are 281 monosyllabic words reconstructed for pM. Presented with the latter are 3,799 words from contemporary Mayan languages that are reflexes of the pM reconstructions.²¹ Of these 3,799 words, 3,535 show expected syllable nuclei (there are 264 words, given in boldface type in Appendix A, having unexpected syllable nuclei). This means that the proposed system of pM syllable nuclei (see table 9), together with recognized conditioned changes (see 5 above), accounts for 93% of the reflexes listed in Appendix A.

On the other hand, 7% of the reflexes are not accounted for by the proposed system. Most words with unexpected syllable nuclei are probably explained by borrowing. In a few individual cases there is supporting evidence that borrowing has taken place,²² but the general phonological closeness of Mayan languages often makes it difficult to verify such a hypothesis. Other factors may account for a few unexpected words, including phonological

²¹ This number does not include those bracketed items from lexical sources that are unreliable with respect to phonological transcription.

²² It is relatively safe to suppose that an irregularity in the reflex of a syllable nucleus is due to borrowing when one or more consonantal segments are also irregular. For instance, the Chn reflex of pM **kab'* 'earth, land, world', *kab'*, shows an unexpected nucleus *a* (the expected one is *ä*). Its initial consonant, however, is also unexpected (*k* instead of *ch*). (For a summary presentation of contemporary Mayan language reflexes of pM consonants, see Campbell 1984:6.) This strongly suggests that Chn *kab'* is a loan. The following list gives additional examples where there are deviations from the expected reflexes both with regard to the nucleus and the coda and/or onset. In these cases we consider borrowing to be a strong hypothesis.

Language	Reflex	Expected Form	pM Word
Toj	<i>ahk'</i> -	<i>ach'</i>	<i>*aak'</i> 'wet, new'
Tz'ut	<i>tza'm</i>	<i>chaam</i>	<i>*ch'aam</i> 'nose'
Tek	<i>kiy</i>	<i>kat</i>	<i>*kyar</i> 'fish'
Mam	<i>kyixh</i>	<i>kyat</i>	(same)
Tzo	<i>nap</i>	<i>mop</i>	<i>*mAp</i> 'coyol palm'
Tz'ut	<i>nop</i>	<i>map</i>	(same)
Moch	<i>ngich</i>	<i>niik</i>	<i>*nihk</i> 'to shake'
Ixh	<i>uch</i>	<i>otx</i>	<i>*oo'ch</i> 'opossum'
Awa	<i>yax</i>	<i>ta'x</i>	<i>*ra'x</i> 'green'
Chu	<i>xan</i>	<i>xa'ang</i>	<i>*xaa'ng</i> 'palm'

conditioning contexts not yet recognized or fully understood,²³ conditioning due to associated morphological environments,²⁴ two or more closely related etyma incorrectly analyzed as a single etymon, or other linguistic processes such as analogy, field transcription error, and dictionary production error.

The following is a list of reconstructed pM words (from Appendix A) showing the greatest numbers of reflexes with unexpected syllable nuclei.²⁵ These pM words are rank-ordered by the number of reflexes showing unexpected syllable nuclei, from 7 to 3. (The list is not exhaustive since a number of pM words have less than three unexpected reflexes.) Also, given in brackets following these items are pM reconstructions offered by Kaufman (2003) for the same cognate sets when these reconstructions are found in his etymological dictionary.

- 7 *mAp ‘coyol palm’ [*map]
- 7 *oo’hch ‘opossum, fox’
- 7 *ra’x ‘green, unripe’ [*ra’x]
- 6 *ri’j ‘old, mature’ [*riij]
- 6 *tz’ihn ‘yucca’ [*tz’ihn]
- 5 *kaa’b’ ‘two, second’ [*ka’ ~ *kab’]
- 5 *kam ‘to die’ [*kam]
- 5 *leq’ ‘to lick’ [*leq’]

²³ Here follow two cases where phonological conditioning seems to be at work, but where more work on narrowing down the exact relevant contexts is needed.

Several Hua items show unexpected vowel qualities, but in at least some instances this is the result of assimilation to vowels of following syllables that have merged with the root in question to yield bound forms. Some clear examples of this phenomenon are the following:

Hua Reflex	Expected Form	Full Hua Stem	pM Word
<i>bek’-</i>	<i>bak’</i>	<i>bek’em</i>	*b’aq’ ‘seed’
<i>bek-</i>	<i>baak</i>	<i>beklek</i>	*b’aaq’ ‘bone’
<i>xek-</i>	<i>xak</i>	<i>xeklek</i>	*xaahq’ ‘leaf’

The Ch’r reflexes of pM *k’uhm ‘squash’ and *tz’ihn ‘yucca’, respectively *ch’um* and *tz’in*, have in common an unexpected loss of preconsonantal *h. They also share having a stem-initial ejective (*k’* and *tz’*) and a stem-final nasal (*m* and *n*). The combined presence of these types of consonants may constitute a context influencing the loss of *h*. Other Mayan languages that normally reflect pM *ah/*Vh with *ah/Vh*, i.e., Tze, Pqch, Tz’ut, and Toj, also show no preconsonantal *h* in reflexes of pM *k’uhm and *tz’ihn, suggesting that the proposed conditioned change is an ancient one. In addition, Q’eq unexpectedly shows a short vowel in its reflex of pM *tz’ihn, while a long vowel is expected.

²⁴ A secondarily developed high tone in Yuc is probably often caused by the associated morphological environment. One case of this has been noted by John Robertson (personal communication), according to whom the high tone in Yuc *léem-* (from pM *lem ‘shine, sparkle’) developed as a result of the affixation of *-b’al* to produce the stem *léemb’al* ‘flash, sparkle, gleam’. Robertson reports that every Yuc stem of the type CV(V)Cb’VC (where the medial C is a sonorant) has a high tone on the first syllable.

²⁵ If there is both an expected and unexpected reflex of a particular pM form in a language, then the unexpected word is not counted for the purpose of the pertinent statistic.

- 5 **k'uhm* 'squash' [**k'uhm* ~ **k'uum*]
 5 **mehs* 'broom' [**mes*]
 4 **b'aa'tz* 'howler monkey' [**b'a'tz'*]
 4 **haa'b'* 'year' [**ha'b'*]
 4 **q'ohr* 'dough, corn gruel' [**q'oor*]
 4 **aahl* 'heavy' [**ahl* ~ **aal*]
 4 **oohx* 'three' [**ooh-ib'*]
 4 **tyuu'h* 'stinking' [**tyu'h*]
 3 **aak'* 'wet, new' [**aak'*]
 3 **ehm* 'to lower'
 3 **huu'x* 'whetstone' [**hu'x*]
 3 **ii'm* 'maize' [**-e'm*]
 3 **jAr* 'how many?' [**jar-ub'*]
 3 **jo'l* 'hair, head'
 3 **jur* 'to stir'
 3 **kab'* 'earth' [**kab'* ~ **kaab'*]
 3 **k'aq* 'flea' [**k'aq*]
 3 **maa'y* 'tobacco' [**mahy* ~ **ma'y* diffused]
 3 **moohch* 'toad' [**amooch*]
 3 **nohj* 'to be filled' [**nohj*]
 3 **ook* 'to enter' [**ook*]
 3 **sahm* 'evening, morning'
 3 **suut* or **suuht* 'to twirl, turn, return' [**suht*]
 3 **toohng* 'stone'
 3 **tyaa'ng* 'lime, ash' [**tya'ng*]
 3 **tyuhb'* 'to spit' [**tyuhb'*]
 3 **ty'il* 'to toast, singe'
 3 **tz'ahq* 'stone pile'

Of the 36 items listed above, ten show reflexes with unexpected syllable nuclei in which vowel quality is unexpected, but otherwise the syllable nuclei are (usually) as anticipated. These include **mAp*, **oo'hch*, **ra'x*, **kam*, **kaa'b'*, **mehs*, **oohx*, **ii'm*, **k'aq*, and **toohng*. For example, unexpected reflexes of **oo'hch* are as follows (followed in parentheses by expected reflexes): Tzo *uch* (*och*), Tze *-uch* (*-och*), Ixh *uch* (*och* or *otx*), Moch *u'ch* (*o'ch*), Jak *utx-* (*otx-*), Toj *uhch* (*och*), Chu *uch-* (*och-*). The pM syllable nucleus **oo'h* yields *u* in Cholan languages (see table 9), thus, pM **oo'hch* yields Chl *uch* and Chn *-uch*. A Cholan language or languages, then, could have influenced development of unexpected vowel quality in the above non-Cholan reflexes of **oo'hch*.

A number of items on the above list have referents that probably were frequently the foci of commercial interaction among different Mayan-speaking groups. This was probably conducive to the diffusion of the terms from one

group to another, thus introducing words into languages that were not directly inherited from Proto-Mayan and consequently often show unanticipated syllable nuclei. These include **aahl* ‘heavy’, **huu’x* ‘whetstone’, **ii’m* ‘maize’, **jAr* ‘how many?’, **kaa’b* ‘two, second’, **k’uhm* ‘squash’, **maa’y* ‘tobacco’, **mAp* ‘coyol palm’, **mehs* ‘broom’, **oohx* ‘three’, **q’ohr* ‘dough, corn gruel’, **tyaa’ng* ‘lime, ash’, and **tz’ihn* ‘yucca’.

Three items on the list, **haa’b* ‘year’, **ra’x* ‘green’, and **kab* ‘earth’, are discussed elsewhere in the literature as having reflexes that have diffused from one or more Mayan languages to one or more other Mayan languages (see Brown 1987, Brown and Witkowski 1982, Campbell 1977:98; 1984:7, and Witkowski and Brown 1981:23). In addition, Kaufman (2003) presents two competing pM reconstructions for **maa’y* ‘tobacco’ and adds “diffused” (see **maa’y* in the above list).

However they may be explained, the unexpected reflexes of the above items are problematic for our analysis. But they are also problematic for Kaufman’s. In a number of instances, Kaufman provides exactly the same pM forms as we do: **aak’* ‘wet, new’, **kab’* ‘earth’, **kam* ‘to die’, **k’aq* ‘flea’, **k’uhm* ‘squash’, **leq’* ‘to lick’, **loq* ‘to boil’, **nohj* ‘to be filled’, **ook* ‘to enter’, **ra’x* ‘green, unripe’, **tyuhb’* ‘to spit’, and **tz’ihn* ‘yucca’ (see bracketed forms in the above list). Thus, at least 12 of his pM reconstructions suffer as many unexpected syllable nuclei in reflexes as do ours.

However, given problems with Kaufman’s analysis discussed at length in 2 above, specifically the under-reconstruction of pM syllable nuclei, pM forms employing the syllable nuclei offered by Kaufman unquestionably show many more reflexes manifesting unanticipated syllable nuclei than those presented in our analysis.

7. Theoretical and methodological issues. Scholars who have seen earlier versions of this work have called attention to two areas where our analysis might be seriously challenged. One involves the types of syllable nucleus we have chosen to stand as pM reconstructions and the other the validity of sound correspondences upon which these reconstructed syllable nuclei are based.

7.1. Types of pM syllable nuclei. We reconstruct ten pM syllable nuclei associated with ten sound correspondences (see table 9). These are **V*, **V_s*, **VV*, **Vh*, **VVh*, **V’*, **VV’*, **V’h*, **VV’h*, and **Vj*.²⁶ Kaufman (2003) uses five of these ten syllable-nucleus types in his analysis of Proto-Mayan: **V*, **VV*, **Vh*, **V’*, and **Vj*, all of which are found in at least one recorded daughter language. Five of our types, **V_s*, **VVh*, **VV’*, **V’h*, and **VV’h*,

²⁶ The reconstructed nucleus **Vj* is perhaps best regarded as a nucleus plus one-half of a consonant cluster.

are not found in any recorded Mayan language. If proto-language reconstruction is to be limited only to reconstruction of features that occur in daughter languages, then our analysis is found wanting.

Our observation of ten different syllable-nuclei sound correspondences for Mayan languages requires postulation of ten different syllable-nuclei reconstructions. This is problematic because very few, if any, syllable nuclei found in recorded Mayan languages, beyond the five used by Kaufman (2003), are appropriate for recruitment as pM syllable nuclei (but see below). This has constrained us to use types of syllable nucleus for five of the ten pM syllable nuclei that are not found in recorded Mayan languages (called here “non-Mayan-attested syllable nuclei”). A reasonable prerequisite for these five would be that each occurs in at least one of the world’s recorded languages.²⁷

One of the five non-Mayan-attested syllable nuclei is the special vowel, *V_s. While we suspect that this vowel is intermediate in vocalic length between *V and *VV (see 3 above), we nonetheless dub it “special”—in part to indicate our reluctance to be definitive at the present time about this vowel’s nature. However, we know of at least two non-Mayan modern languages for which three degrees of contrastive vowel length have been reported. These are Dinka, a Western Nilotic language spoken in the Sudan (Andersen 1993), and Yavapai, a Yuman language spoken in Arizona (Sharian 1983).²⁸

A second non-Mayan-attested syllable nucleus, *VV*h*, is clearly very rare among the world’s languages but nonetheless does occur. In fact, VV*h* is attested for a Mesoamerican language, Totontepec Mixe (Mixe-Zoquean), spoken just west of the area of Mayan language concentration in southern Mexico (Schoenhals and Schoenhals 1965:301 and Wichmann 1995:14–15).

Totontepec Mixe also shows VV’, another of the five non-Mayan-attested syllable nuclei. In a brief survey of Amerindian languages having both long vowels and glottal stops, we have found an additional language, Coast Tsimshian (Alaska) (Dunn 1995), with words showing VV’ as a syllable nucleus, although these words are very rare in the language.

²⁷ Some scholars may not agree that this prerequisite is reasonable and believe typological expectations should be even tighter. For example, Campbell (1999:130) writes, “[w]hen we check our postulated reconstructions for the sounds of a proto-language, we must make sure that we are not proposing a set of sounds which is never or only very rarely found in human languages.” We take the view that if a syllable-nucleus type occurs in any language, even if only one, it is typologically real and, hence, could occur in any hypothetical proto-language.

²⁸ It has also been reported for Lowland Mixe, a Mixe-Zoquean language of Oaxaca, Mexico, by Hoogshagen (1959), but Wichmann (1995:25–34) has demonstrated the incorrectness of Hoogshagen’s analysis. Estonian has also been reported to show three degrees of vowel length, but the currently predominant view among specialists is that a different, prosodically oriented analysis is warranted (Ehala 2003:54).

We considered reconstructing *V'V for the sound correspondence now denoted by *VV'. However, we decided on *VV' because in an earlier analysis (Kaufman and Norman 1984) Kaufman had conscripted *V'V for a pM sound correspondence which he apparently now (2003) no longer believes to be valid.²⁹ Nevertheless, *V'V remains a strong alternative to *VV' because this syllable nucleus actually occurs in some recorded Mayan languages, i.e., in all four of the Yucatecan languages and in Toj and Chu.

While the remaining two non-Mayan-attested syllable nuclei, *V'h and *VV'h, might be found in some languages, we have no evidence to that effect. A possible alternative to *VV'h worth considering is *V'Vh. While the syllable nucleus V'Vh does not occur in any recorded Mayan language, it is found in Totontepec Mixe. Should *V'Vh be used instead of *VV'h, then a certain symmetry could be achieved by also replacing *VV' with *V'V (see immediately preceding paragraph).

Three of the five non-Mayan-attested syllable nuclei—*VVh, *V'h, and *VV'h—show a glottal fricative (*h*) in postposition. We construct a fourth syllable nucleus with postposition *h*, i.e., *Vh, a syllable nucleus also reconstructed by Kaufman for the same correspondence series (see table 9). Several recorded Mayan languages in our sample (Chl, Chr, Tze, Pqch, Tz'ut, and Toj) yield reflexes of pM *Vh that are Vh. No Mayan languages yield reflexes of pM *VVh, *V'h, and *VV'h that show a postposition *h*. Nevertheless, there is motivation for including a postposition *h* as a constituent of the three non-Mayan-attested syllable nuclei: all four pM syllable nuclei showing postposition *h*, i.e., *Vh, *VVh, *V'h, and *VV'h, yield *o* (short central-back vowel) in Tzo when V = *a* and VV = *aa* (see table 9).

Of the ten pM syllable nuclei we have reconstructed, *V'h and *VV'h are the least frequently occurring. Only three pM words of our sample show *V'h and only five show *VV'h. The sound correspondences affiliated with *V'h and *VV'h are exactly the same as those affiliated with *V and *VVh respectively, except for reflexes in Moch that show V' for both *V'h and *VV'h (Moch shows V for *V and VV for *VVh; see table 9). Possibly, some as yet unobserved conditioning environments account for the uniqueness of Moch. If such contexts are eventually observed, pM *V'h and *VV'h could be collapsed into *V and *VVh respectively, thereby reducing the pM syllable-nucleus inventory to eight and eliminating two of the more exotic of our present syllable-nucleus reconstructions.

Apart from *V'h and *VV'h, our current syllable-nucleus reconstructions for Proto-Mayan are typologically defensible. Indeed, other than *V'h and *VV'h and the special vowel, *V_g, which we call “special” in part because we recognize that it represents a potential problem in terms of phonological

²⁹ No pM words in Kaufman's (2003) etymological dictionary are reconstructed with *V'V as a syllable nucleus.

typology, the pM system we present and that of Totontepec Mixe are very similar. Totontepec Mixe has the following nuclei: V, VV, Vh, VVh, V', VV', V'V, and V'Vh (Schoenhals and Schoenhals 1965: 301 and Wichmann 1995:14–15). Our system for Proto-Mayan shares V, VV, Vh, VVh, V', and VV' with Totontepec Mixe.

In fact, no recorded Mayan language shows an inventory of syllable nuclei that is as similar to the inventory reconstructed by us for Proto-Mayan as that of Totontepec Mixe. In our analysis, however, we do use the kinds of building blocks that occur in real Mayan languages: vowel length, post-position *h*'s, and postposition glottal stops. We do not introduce foreign features such as laryngealization and nasalization not found in Mayan languages, or even tones (which some Mayan languages do possess).

7.2. Validity of sound correspondences. The reconstruction of sound segments and syllable nuclei for a proto-language is secondary to the establishment of sound correspondences across its daughter languages. There is always a degree of arbitrariness (or, perhaps better put, art) in the process of choosing what reconstructions best account for sound correspondences. On the other hand, sound correspondences either exist or they do not. However, certain phonological processes can sometimes give the false impression of a sound correspondence. In other words, proposed sound correspondences are not always sound correspondences at all but merely artifacts of other linguistic phenomena. Such, for example, may be the case for sound correspondences associated with pM *V'h and *VV'h, as discussed in 7.1.

While we have done our best to examine all lines of evidence that bear on the validity of the ten syllable-nucleus sound correspondences charted in table 9, there remains the possibility that one or more may eventually be explained away as a deeper understanding of phonological and morphological processes in Mayan languages develops.

An example of a process which might lead to a false impression of a sound correspondence involving Mayan syllable nuclei has been brought to our attention by Terrence Kaufman (personal communication). As outlined in 2 above, Kaufman (2003) associates pM *VV with daughter language reflexes that we relate to two different reconstructed syllable nuclei, *VVh and *VV (see tables 3 and 4). The sound correspondences affiliated with *VVh and *VV are identical in all Mayan languages except in Hua, Tzo, and Cholan languages (Chl, Chn, Ch'r). In Hua, *VV yields VV (a long vowel) and *VVh yields V (a short vowel). In Tzo, *aa yields *a* (a short low-central vowel) and *aah yields *o* (a short mid-back vowel). In Tzo, both *oo and *ooh yield *o*, while in Hua and Cholan languages, *oo yields *oo* and *o*, respectively, and *ooh yields *u* (a short high back vowel). Kaufman (personal communication) proposes that the Hua alternation between V and VV can be explained without resorting to the postulation of

two distinct sound correspondences and, consequently, that only one sound correspondence (rather than our two) may be pertinent, one that relates solely to his *VV.

Kaufman (personal communication) suggests that the normal reflex of his pM *VV is VV in Hua and that VV has been shortened to V in some nouns through paradigmatic analogy. He refers specifically to analogy involving possession, mentioning the fact that in Mayan languages that manifest vowel length, there is a group of nouns with long vowels when possessed and short vowels when not possessed. Short vowels in Hua reflecting long vowels (*VV) in certain pM nouns could have developed as short vowels through analogy with those nouns showing the short/long alternation. Hua also has a class of nouns whose root vowels do not become long when possessed. By analogy, Hua nouns with short vowels that come from pM forms with *VV could have become affiliated with that class.

Kaufman's argument implies that Hua words for referents such as 'snake', 'avocado', 'sweet potato', 'chili', 'time', and 'breast' (all denoted by Hua terms that are reflexes of pM words with our *VVh) show a short vowel because of paradigmatic analogy involving possession. This explanation would be compelling if all referents in question were canonically possessed, but this can only be safely argued for 'breast'.

Kaufman (personal communication) discusses but does not provide a potential solution to the problem that his pM *aa sometimes yields *a* in Tzo and sometimes *o*. He suggests that it might be worthwhile to look at consonant conditioning, but he admits that a solution (other than the one we propose, i.e., that Tzo *a* is from *aa and *o* is from *aah) is yet to be proposed. In addition, he does not address the problem that his pM *oo, which yields *o* in Tzo, sometimes yields *o* (or *oo*) in Hua and Cholan languages and sometimes *u*. (Our explanation is that Hua *oo* and Cholan *o* are from *oo and that their *u* is from *ooh.)

A difficulty in accounting for these phonological findings by use of an explanation focusing on developments in a single language (i.e., Huastec) is that these phenomena almost certainly are not independent. Proposing that the alternation between V and VV in Hua is due to paradigmatic analogy involving nominal possession does not explain why Tzo *a* corresponds to Hua *aa*, while Tzo *o* corresponds to Hua *a*. Nor does it explain why Hua and Cholan *u* corresponds to Tzo *o*. The chances that these isomorphic phenomena are independent must be very small. On the other hand, the likelihood that they trace to the same developments in a common ancestral language must be considerably greater.³⁰

³⁰ It is not inconceivable that some of these isomorphic phonological features may be due to language contact and diffusion.

8. Conclusion. The intent of this study is to contribute positively to the investigation of Mayan historical phonology, not to be critical of preceding efforts. Indeed, without the pioneering work of scholars such as Campbell, Dayley, England, Fox, McQuown, Norman, Robertson, and especially Kaufman, formulation of the model proposed here would have been extremely difficult, if not impossible. We hope that this study will be of similar use to others, and that they will in turn find important ways to modify our model so that it approaches even more closely to the phonological reality of Proto-Mayan of the remote past.

9. Lexical sources. The lexical sources for this study are partitioned into “primary sources” and “secondary sources.” A primary source (PS) for a language is, with two exceptions, a single dictionary or word list from which the vast majority of words from that language have been extracted. (There are two PS sources for Chi and two for Tzo.) Only occasionally are words drawn from a secondary source (SS) for a language. All PS works, with the exception of Sapper (1912), Termer (1930), and Morán (1695), are highly reliable with respect to phonological transcription. SS dictionaries and other SS sources vary with respect to transcriptive adequacy. (All words from nonreliable sources are given as they appear in original sources and this is indicated in this work by surrounding them with angle brackets.³¹)

- Yuc: Bricker et al. (1998) (PS); Barrera Vásquez (1980) (SS); Fisher (1973) (SS)
 Itz: Hofling and Tesucún (1997) (PS)
 Mop: Ulrich and Ulrich (1976) (PS)
 Lac: Canger (1970) (only two words from this work are cited here)
 Hua: Larsen (1955) (PS); Tapia Zenteno (1985) (SS)
 Huav: Ochoa Peralta (1978) (PS)
 Chi: Sapper (1912) (PS); Termer (1930) (PS)
 Chl: Aulie and Aulie (1998) (PS); Schumann G. (1973) (SS)
 Chn: Keller and Luciano G. (1997) (PS)
 Ch'r: Pérez Martínez et al. (1996) (PS); Wisdom (1950) (SS)
 Chlt: Morán (1695) (PS)
 Tzo: Delgaty and Ruiz Sánchez (1978) (PS) and Laughlin (1975) (PS)
 Tze: Slocum et al. (1999) (PS)
 Tek: Kaufman (1969) (PS)
 Mam: Maldonado Andrés et al. (1986) (PS); Kaufman (1969) (SS)
 Ixh: Kaufman (1974) (PS); Jewett and Willis (1996) (SS)

³¹ Bracketed forms are given only to provide a greater understanding of the distribution of lexical items across Mayan languages. They are not meant to contribute to detailed phonological analysis.

- Awa: López Pérez et al. (1999) (PS)
 Pqch: Sedat (2001) (PS)
 Kaq: Cojti Macario et al. (1989) (PS)
 Tz'ut: Pérez Mendoza and Hernández Mendoza (1996) (PS)
 K'ich: Ajpacaja Tum et al. (1996) (PS)
 Q'eq: Sam Juárez et al. (1997) (PS)
 Moch: Kaufman (1967) (PS)
 Q'an: Diego Antonio (1996) (PS)
 Aka: Andrés et al. (1996) (PS)
 Jak: Ramírez Pérez (1996) (PS)
 Toj: Lenkersdorf (1979) (PS)
 Chu: Felipe Diego (1998) (PS); Hopkins (1967) (SS)

APPENDIX A
 ALPHABETICAL LISTING OF PROTO-MAYAN
 WORDS AND AFFILIATED REFLEXES

The cognate sets assembled in this appendix all meet our distributional criteria for attestation of Proto-Mayan words. These criteria involve distribution of reflexes across the five major Mayan subgroups: (a) Huastecan (specifically Huastec, not Chicomuceltec),³² (b) Yucatecan, (c) Greater Tzeltalan (Cholan and Tzeltalan), (d) Greater Q'anjob'alan, and (e) Eastern Mayan (Mamean and K'ichee'an) (see n. 3 for Mayan language constituency of these subgroups). If a form is found in three or more of these five subgroups, then it attests to a Proto-Mayan word. If it occurs in only two subgroups, it attests to a Proto-Mayan word only under the following conditions: (1) Huastecan is one of the two subgroups or (2) the two subgroups are not Yucatecan and Greater Tzeltalan, or Greater Tzeltalan and Greater Q'anjob'alan, or Greater Q'anjob'alan and Eastern Mayan.³³ By fiat then, a form found in only two of the five subgroups (neither of which is Huastecan) attests to a Proto-Mayan word if those two

³² Huastec, spoken in northeastern Mexico, apparently has been separated geographically from the more-or-less contiguous Mayan languages of southern Mexico and northern Central America for a considerable period of time. Consequently, it almost certainly has not borrowed lexical items as extensively from other Mayan languages as have its sister Mayan languages to the south, including Chicomuceltec (Wichmann and Brown 2003). For this reason, we view lexical evidence from Huastec as being stronger than that from Chicomuceltec and other Mayan languages with respect to distributional considerations pertaining to attestation of pM vocabulary.

³³ Evidence limited to Yucatecan and Greater Tzeltalan is excluded from the Proto-Mayan purview because these two subgroups are known to constitute a diffusion area (the Greater Lowland area; see Justeson et al. 1985:9–20). The pair Greater Tzeltalan and Greater Q'anjob'alan is excluded because a great many lexical items are limited to these two subgroups, suggesting that they either constitute a diffusion area or perhaps even a genetic grouping. Greater Q'anjob'alan and Eastern Mayan languages sometimes show mutual influences, mainly detectable in fairly recent, local situations of language contact. However, contact could

subgroups are Yucatecan and Greater Q'anjob'alan, or Yucatecan and Eastern Mayan, or Greater Tzeltalan and Eastern Mayan.

The orthography employed here is that commonly used for transcribing Mayan languages, following the norms of the Academia Maya de Guatemala. However, we use an *h* whenever there is no phonological contrast between *h* and *j* in a language, except for Ixh where we use *a.j*. Also, we use *ng* for the velar nasal instead of the *nh* of the official orthography since the latter can introduce ambiguity. Because of varying usage of some symbols in the literature, it should be noted that here *j* is the velar fricative, *q* is the uvular stop, *x* is the palato-alveolar fricative, and *y* is the palatal approximant.

Words listed here with initial vowels may actually be preceded by phonemic glottal stops since it is commonly assumed that all Mayan forms begin with a consonant (Campbell 1977:34).

Reflexes given in boldface type indicate unexpected syllable nuclei. (For some discussion of unexpected nuclei, see 6 above.) Words showing what may be unexpected consonants are not so identified.

We use V and VV to represent respectively lax and tense vowels in Kaq (see n. 14). Kaq neutralizes the distinction between lax and tense vowels in initial syllables of polysyllabic words. When there is no contrast, we use V.

In nonfinal syllables of polysyllabic words, K'ich generally neutralizes vowel length. Thus, when we cite a K'ich form followed by a hyphen to indicate that it is extracted from an affixed form in the source (see below), the reader should be alerted that the typical reflexes of quantity distinctions are usually not to be expected but rather a short vowel occurs in all cases. The exceptions are certain morphological environments, which are specified in Par Sapón and Can Pixabaj (2000:45). Whenever a K'ich reflex shows a long vowel outside of the environments specified by Par Sapón and Can Pixabaj (2000:45), we regard it as irregular. Whenever the expected vowel quantity is not found in an environment which does not cause neutralization, the reflex is also regarded as irregular.³⁴

Words given in angle brackets are from sources that are not clearly reliable with respect to transcription (see n. 31).

This paper deals only with words derived from monosyllabic pM stems (see n. 16). However, the former are often found as bound forms in compound constructions and, thus, exist as constituents of polysyllabic words. This is indicated in our data

have taken place in earlier times when languages of the two subgroups were less differentiated. Thus, even if an item reconstructs to both subgroups, we are cautious not to interpret this as evidence for pM status. The decision regarding Greater Q'anjob'alan and Eastern Mayan is the most conservative of the three we have made concerning exclusion of pairs of subgroups as providing evidence for pM ancestry of given lexical items.

³⁴The one instance we have found of a long vowel in an environment that is not specified as allowing for long vowels is in Par Sapón and Can Pixabaj (2000:45): *kooj-tir* 'four'; the instances of irregularity of vowel length found in an environment that should allow for retention of the distinction are *ok-eeem* 'to enter' and *chub'-axik* 'to spit', both of which are expected to show a long vowel.

presentation by hyphens articulated with stems, e.g., Kaq *b'al-* from Kaq *b'aluk* 'man's brother-in-law'.³⁵

Language name abbreviations are explained in n. 3.

- **ahn* 'to run, flee': Chl *ahñ-*, Chn *an-*, Ch'r *ahn-*, Chlt <*ahn-*>, Tzo *an-*, Tze *ahn-*, Kaq *an-*, Tz'ut *ahn-*, K'ich *aan-*, Moch *aan-/aang/ang*, Q'an *an-*, Aka *an-*, Jak *ang-*, Toj *ahn-*.
- **ahq* 'turtle, pig': Yuc *áak*, Itz *aak*, Mop *aak*, Chl *ahk*, Chn *ak*, Tzo *ok*, Tze *ahk*, Pqch *ahq*, Kaq *aaq*, Tz'ut *ahq*, K'ich *aaq*, Q'an *ak*, Aka *ak*, Jak *ak*.
- **aht* 'to count': Tzo *at*, Tze *aht-*, Ixh *ach-*, Q'eq *aat-*, Toj *aht-*.
- **ar* 'there is/are': Chn *ay-*, Ch'r *ay-*, Tzo *oy*, Tze *ay*, Tek *at*, Mam *at*, Ixh *at*, Awa *at*, Pqch *ar*, Tz'ut *ar-*, Q'an *ay*, Aka *ey*, Jak *ay*, Toj *ay*, Chu *ay*.
- **aahl* 'woman's offspring': Yuc *àal*, Itz *al*, Mop *al*, Chl *al*, Chn *al*, Ch'r *ar*, Chlt <*al*>, Tzo *ol-*, Tze *al-*, Tek *aal*, Mam *aal-*, Ixh *al*, Awa *aal-*, Kaq *al-*, Tz'ut *-aal*, K'ich *aal*, Q'eq *al*, Moch *aal*, Aka *al-*, Jak *al-*, Toj *al*, Chu *al-*.
- **aahl* 'heavy': Yuc *al*, Itz *al*, Hua *al-*, Chi <*al-*>, Chl *al*, Chn *al*, Tzo *ol*, Tze *al*, Tek *aal*, Mam *aal*, Ixh *al*, Awa *aal*, Pqch *ahl*, Kaq *aal*, Tz'ut *ahl*, K'ich *aal*, Moch *a'l*, Q'an *al*, Aka *al*, Jak *al*, Toj *al*, Chu *al*.
- **aahq* 'tongue': Yuc *àak'*, Itz *ak'*, Mop *ak'*, Chl *ak'*, Chn *ak'*, Ch'r *ak'*, Chlt <*ae*>, Tzo *ok'*, Tze *-ak'*, Tek *aaq'*, Mam *aaq'-*, Ixh *aq'*, Awa *aaq'-*, Pqch *aaq'*, Kaq *aaq'*, Tz'ut *aaq'*, K'ich *aaq'*, Moch *aaq'*, Q'an *aq'-*, Aka *aq'/'a'-*, Jak *aq'-*, Toj *ak'*, Chu *ak'*.
- **aahw* 'a shout, shouting': Yuc *aw-*, Itz *aw-*, Mop *aw-*, Chn *aw-*, Tzo *ow*, Tze *aw*, Moch *aaw*, Q'an *aw*, Aka *aw*, Jak *aw*, Toj *a'w-*, Chu *aw*.
- **aj* 'reed': Tzo *ah*, Ixh *aj*, Awa *aaj*, Pqch *aaj*, Kaq *aaj*, Tz'ut *aaj*, K'ich *aaj*, Q'eq *aj*, Moch *aah*, Q'an *aj*, Aka *aa*, Jak *ah*, Toj *ah*, Chu *aj*.
- **aak'* 'wet, new': Yuc *áak'*, Hua *aatz'*, Chl *ach'*, Chn *ach'*, Tzo *ach'*, Tze *ach'/ahch'*, Tek *aak'*, Mam *aak'-*, Ixh *ak'*, Awa *aak'*, Pqch *ak'*, Q'eq *ak'*, Moch *ak'/aak'*, Q'an *ak'*, Aka *ak'*, Jak *ak'-*, Toj *ahk'-*, Chu *ak'-*. [A possible collective approach to the phonologically irregular reflexes in this set is to hypothesize that an irregular form, **ahk'*, developed at some early point and subsequently diffused. An etymon of this shape would account for reflexes in Yuc, Chn, Tze (with *ahch'*), Tek, Mam, Ixh, Awa, Moch (with *aak'*), Q'an, Aka, Jak, Toj, and Chu.]
- **aaq'* 'vine, snake': Yuc *àak'*, Itz *ak'*, Mop *ak'*, Chl *ak'*, Tzo *ak'*, Tek *aaq'*, Mam *aaq'*, Ixh *aq'*, Awa *aaq'*, Pqch *aaq'*, Q'eq *aq'*, Aka *aq'/'a'*, Jak *aq'*, Toj *ak'*.
- **aaty* 'penis': Yuc *àach-*, Itz *ach-*, Mop *ach*, Hua <*at*>, Chl *-at*, Tzo *at*, Tze *-at*, Kaq *ach-*, Tz'ut *aach-*, K'ich *ach-*, Moch *aat*, Q'an *at-*, Aka *at-*, Toj *-at*, Chu *at*.

³⁵ As mentioned above, Kaq neutralizes the distinction between V and VV in initial syllables of polysyllabic words and we deal with this by using V in initial syllables of such words, which sometimes makes stems appear to have unexpected syllable nuclei when, in fact, they do not. For example, Kaq *b'al-* is from pM **b'aal*. Table 9 shows that the expected syllable nucleus of the Kaq word is *aa* (in *b'aal*). However, because these words are found only as stem-initial bound forms, the V/VV distinction is neutralized and the pertinent vowel is represented in our orthography by V. In addition, Kaq neutralizes the distinction between V and VV before a glottal stop and we have chosen to represent this through use of V.

- *Am ‘spider’: Yuc *am*, Hua *aam*, Chi <*am*>, Chl *am*, Ch’r *am*, Chlt <*am*>, Tzo *om/am*, Tze *am*, Tek *am*, Ixh *am*, Pqch *am*, Kaq *am*, Tz’ut *am*, K’ich *am*, Q’eq *-am*, Moch *am*, Toj *am*.
- *A’ ‘thigh, leg’: Chl *-a’*, Chlt <*a*>, Tzo *-o’*, Tze *-a’*, Pqch *aa’*, Kaq *a’*, Tz’ut *-aa’*, K’ich *-aa’*, Q’eq *a’*.
- **b’aj* ‘to nail’: Yuc *b’ah*, Itz *b’äh*, Mop *b’äh*, Chl *b’ah*, Chn *b’ah-*, Tzo *b’ah*, Tze *b’aj-*, Awa *paj-*, Kaq *b’aj-*, Tz’ut *b’aj*, K’ich *b’aj-*, Q’eq *b’aj-*.
- **b’aj-* ‘interrogative morpheme’: Yuc *b’ah-*, Chl *b’ah-*, Chn *b’ah-*, Tz’ut *b’aj-*.
- **b’al* ‘to fill an object, insert’: Hua *bal-*, Ixh *b’al-*, Kaq *b’al-*, Tz’ut *b’al-*, K’ich *b’al-*, Jak *b’al-*.
- **b’aq’* ‘seed, meat’: Yuc *b’ak’*, Itz *b’äk’*, Mop *b’äk’*, Hua *bek’-*, Chl *b’äk’*, Chlt <*bac-*>, Tzo *b’ek’*, Tze *-b’ak’*, Tek *b’aq’*, Mam *-b’aq’*, Ixh *b’aq’*, Awa *b’aq’*, K’ich *b’aq’*, Moch *b’aq’-*, Q’an *b’aq’*, Aka *b’aq’*, Jak *b’aq’-*, Toj *b’ak’*.
- **b’aty* ‘hail’: Yuc *b’at*, Itz *b’ät*, Mop *b’ät*, Ch’r *b’at*, Chlt <*bat*>, Tzo *b’ot*, Tze *b’at*, Ixh *-b’atz*, Kaq *-b’ach*, Tz’ut *b’ach*, K’ich *-b’ach*, Q’eq *-b’ach*, Toj *b’at*.
- **b’a’h*, ‘gopher, mole’: Yuc *b’ah*, Itz *b’ah*, Mop *b’ah*, Hua *ba’-*, Chl *b’ah*, Chn *-b’ah*, Ch’r *b’ah*, Tzo *b’a*, Tze *b’a*, Tek *b’aay*, Mam *b’aa*, Ixh *b’ay*, Awa *b’aa’*, Pqch *b’aah*, Kaq *b’aay*, Tz’ut *b’aay*, K’ich *b’ah*, Q’eq *b’a*, Moch *b’a’h*, Jak *b’ah*.
- **b’aal* ‘brother-in-law’: Yuc *b’aal*, Itz *b’al*, Mop *b’al*, Hua *baay*, Chi <*úai*>, Tzo *b’al/b’ol*, Tze *-b’al*, Mam *b’aal-*, Ixh *b’aal/b’al-*, Awa *b’aal-*, Pqch *b’al-*, Kaq *b’al-*, Tz’ut *-b’aal-*, K’ich *b’al-*, Q’eq *b’al-*, Moch *b’al-*, Toj *b’al-*. [A possible collective approach to the phonologically irregular reflexes in this set is to hypothesize that an irregular form, **b’al*, developed at some early point, perhaps in Proto-Greater Q’anjob’alan, and subsequently diffused. An etymon of this shape would account for reflexes in Tzo (with *b’ol*), Ixh (with *b’al-*), Pqch, K’ich, Q’eq, Moch, and Toj.]
- **b’aaq* ‘bone’: Yuc *b’àak*, Itz *b’ak*, Mop *b’ak*, Hua *bek-*, Chi <*vek-/uec-/vuec-*>, Chl *b’ak*, Chn *b’ak*, Ch’r *b’ak*, Tzo *b’ak*, Tze *b’ak*, Tek *b’aaq*, Mam *b’aaq*, Ixh *b’aq*, Awa *b’aaq*, Pqch *b’aaq*, Kaq *b’aaq*, Tz’ut *b’aaq*, K’ich *b’aaq*, Q’eq *b’aq*, Moch *b’aaq*, Q’an *b’aq*, Aka *b’aj*, Jak *b’aj*, Toj *b’ak*, Chu *b’ak*.
- **b’aa’tz’* ‘howler monkey’: Yuc *b’àatz’*, Itz *b’aatz’*, Mop *b’aatz’*, Lac *b’a’atz’*, Chl *b’atz’*, Chlt <*batz*>, Tzo *b’atz’*, Tze *b’atz’*, Ixh *b’a’tz’*, Kaq *b’aatz’*, Tz’ut *b’aatz’*, K’ich *b’aatz’*, Q’eq *b’atz’*, Q’an *b’atz’*, Aka *b’atz’*, Toj *b’atz’*, Chu *b’a’atz’*.
- **b’Ah* ‘first’: Ch’r *b’ah-*, Chlt <*ba-*>, Tzo *b’a-*, Tze *b’ah*, Tek *-b’aay-*, Awa *b’aj-*, Moch *b’aa-*, Q’an *b’a-*, Aka *b’aa-*, Toj *b’ah-*, Chu *b’a-*.
- **b’Aty* ‘corkwood tree’: Hua *baat*, Tzo *b’ot*, Tze *b’at*, Mam *b’atz*, Ixh *b’atz*, Q’eq *b’ach*, Moch *b’at*, Q’an *b’at*, Aka *b’at*, Jak *b’at*, Chu *b’at*.
- **b’ehj* ‘to break’: Yuc *p’èeh*, Mop *p’eeh*, Chl *p’ih-*, Kaq *b’eej*, Q’an *b’ij-*, Toj *b’ih-*, Chu *b’ij*.
- **b’ehl* ‘to carry’: Itz *b’el-*, Chl *b’ehl-*, Chn *b’el-*, Ch’r *b’ehr-*, Ixh *b’el-*, Awa *b’aal-*, Pqch *b’ehl-*, Q’eq *b’eel-*, Q’an *b’el-*, Aka *b’el-*, Jak *b’el-*.
- **b’Eh* ‘road’: Yuc *b’eh*, Itz *b’eh*, Mop *b’eh*, Chl *b’ih*, Chn *b’ih*, Ch’r *b’ih-*, Chlt <*bih-*>, Tzo *b’e*, Tze *b’e*, Tek *b’eeey*, Mam *b’ee*, Ixh *bey*, Awa *b’ee’/b’ea’/b’iya’*, Kaq *b’eeey*, Tz’ut *b’eeey*, K’ich *b’eh*, Q’eq *b’e*, Moch *b’eeh*, Q’an *b’e*, Aka *b’ee*, Jak *b’eh*, Toj *b’eh*, Chu *b’e*.

- **b'iixh* 'to sing, dance': Hua *bix-*, Tek *b'iixh-*, Mam *b'iix*, Ixh *b'ix*, Awa *b'iix-*, Tz'ut *b'iix*, K'ich *b'iix*.
- **b'oq* 'to uproot': Chl *b'ok*, Chn *b'ok-*, Ch'r *b'ok-*, Mam *b'o'q*, Pqch *b'oq-*, Kaq *b'oq-*, Tz'ut *b'oq*, K'ich *b'oq-*.
- **chaa'm* 'nose': Chi <*tzam/sam*>, Tek *txa'm*, Mam *txa'n*, Kaq *tzam-*, Tz'ut *tza'm*, K'ich *tz'am*, Moch *cha'm*, Aka *txaam*, Jak *txam*.
- **chu* 'breast, to suckle': Itz *chu-*, Mop *chu'*, Chl *chu'*, Chn *chu'*, Ch'r *chu'*, Chlt <*chu*>, Tzo *chu'*, Tze *-chu'*, Tek *txu-*, Ixh *txu'*, Awa *txu-*, Moch *chu'*, Q'an *txu-*, Aka *txu-*.
- **ch'a'k* 'wart, pimple': Tzo *ch'ok*, Tek *tx'a'k*, Ixh *ch'a'k*, Awa *tx'a'k*, Kaq *ch'a'k*, Tz'ut *ch'a'k*, K'ich *ch'a'k*, Aka *tx'ak*, Jak *tx'ak*.
- **ch'i'p* 'youngest child': Mop *ch'i'ip*, Mam *ch'i'p*, Awa *ch'i'p*, Pqch *ch'i'p*, Kaq *ch'i'p*, Tz'ut *ch'i'p*, K'ich *ch'i'p*, Moch *tz'i'p*.
- **ch'u'j* 'angered, surly, crazy': Hua *tz'uh-*, Mam *tx'u'j*, Ixh *ch'u'j*, Awa *tx'u'j*, Kaq *ch'u'j*, Tz'ut *ch'u'j*, K'ich *ch'u'j*.
- **ch'u'k* 'corner, elbow': Chlt <*chuc/xuc*>, Tek *txu'k*, Ixh *tx'uk-*, Tz'ut *ch'u'k*, K'ich *ch'u'k*, Q'eq *ch'uuk-*, Moch *ch'u'k*.
- **ehm* 'to lower, incline, tilt': Yuc *éem*, Itz *em-*, Mop *em*, Hua *em-*, Chl *ehm-*, Chn *em-*, Ch'r *em*, Chlt <*em-*>, Chu *em*.
- **ehtz'* 'to imitate, make fun of, play': Yuc *éetz'*, Itz *eetz'*, Ch'r *ehtz'*, Pqch *ehtz'*, Kaq *etz'-*, Tz'ut *ehtz'*, K'ich *etz'-*, Q'eq *eetz'-*, Q'an *etz'-*, Aka *etz'-*, Jak *etz'-*, Chu *etz'-*.
- **ety* 'to accompany, with': Yuc *éet*, Itz *et*, Mop *et-*, Ch'r *et'-*, Chlt <*et-*>, Ixh *etz*, Q'an *et-*, Aka *et*, Jak *et-*.
- **eeh* 'tooth': Yuc *eh*, Itz *-eh*, Hua *eey-*, Chl *eh-*, Chn *eh*, Chlt <*e*>, Tzo *e-*, Tze *-e*, Tek *ee'*, Mam *ee'*, Ixh *ej*, Awa *-ee'*, Pqch *eeh*, Kaq *ey-*, Tz'ut *eey-*, Q'eq *e*, Moch *eeh*, Aka *ee*, Jak *eh-*, Toj *eh*, Chu *e*.
- **ha'* 'water': Yuc *ha'*, Itz *ha'*, Mop *ha'*, Hua *ha'*, Chi <*haljá*>, Chl *ha'*, Chn *ha'*, Ch'r *ha'*, Chlt <*ha*>, Tzo *ho'*, Tze *ha'*, Tek *a'*, Mam *a'*, Ixh *a'*, Awa *a'*, Pqch *ha'*, Kaq *ya'*, Tz'ut *ya'*, K'ich *ja'*, Q'eq *ha'*, Moch *ha'*, Q'an *a'-*, Aka *ha'*, Jak *ha'*, Toj *ha'*, Chu *ha'*.
- **haa'* 'he, she, this, that': Hua *haa'*, Ch'r *ha'-*, Chlt <*ha-*>, Tzo *ha'*, Tze *ha'*, Mam *aa*, Ixh *a'*, Tz'ut *haa'*, Q'eq *ha'-*, Q'an *ha'*, Aka *ha'*, Jak *ha'*, Toj *ha'*, Chu *ha'*.
- **haa'b'* 'year' (originally 'wet season'): Yuc *há'ab'*, Itz *haab'*, Mop *haab'*, Chl *hab'*, Chn *hab'*, Ch'r *hab'*, Chlt <*hab*>, Tzo *hab'-*, Tze *hab'-*, Tek *aab'-*, Mam *ab'-*, Ixh *ya'b'*, Awa *yob'*, Pqch *haab'*, Kaq *-ab'-*, Tz'ut *-aa'*, K'ich *-aab'*, Q'eq *-ab'-*, Moch *ha'b'/hab'*, Q'an *ab'-*, Aka *aab'-*, Jak *hab'-*, Toj *hab'-*, Chu *hab'-*.
- **ho'* 'five': Yuc *hó-*, Itz *ho'-*, Chl *ho'-*, Chn *ho'-*, Chlt <*o*>, Tzo *ho'-*, Tze *ho'-*, Tek *jo'-*, Mam *j-*, Ixh *o'*, Awa *o'*, Pqch *ho'-*, Kaq *wo'-*, Tz'ut *ho'*, K'ich *jo'-*, Q'eq *ho-*,³⁶ Moch *ho'-*, Q'an *o*, Toj *ho'-*, Chu *ho'-*.

³⁶ According to Lyle Campbell (personal communication), the final glottal stop of numbers is lost in Q'eq in derived forms. The full Q'eq word for 'five' is *hoob'*, apparently derived from the compounding of *ho' + ob'*.

- **hoohy* or **joohy* ‘slow, sluggish’: Hua *huy-*, Moch *hooy-*.
- **hool* ‘hole’: Yuc *hòol*, Itz *hol*, Hua *hool*, Chi <*jol*>, Moch ***hol-***, Aka *hol-*, Jak *hol*, Chu *hol-*.
- **huu’ng* ‘amate bark (paper)’: Yuc *hú’un*, Itz *hu’um*, Mop *hu’um*, Hua *uu*, Chl *hun*, Chn *hun*, Ch’r *hun*, Tzo *hun/wun*, Tze *hun*, Tek *u’j*, Mam *u’j*, Ixh *u’*, Awa *u’j*, Pqch *huuj*, Kaq *wuuj*, Tz’ut *wuuj*, K’ich *wuuj*, Q’eq *hu*, Moch *hu’m*, Q’an *un*, Aka *huun*, Jak *hum*, Toj *hu’un*, Chu *hu’ung*.
- **huu’x* ‘whetstone’: Yuc ***hùux***, Itz ***hux***, Mop ***hux***, Chi <*hux*>, Chl *hux*, Tzo *hux-*, Tze *hux*, Tek *u’xh*, Mam *u’x*, Ixh *u’x*, Awa *u’x*, Pqch *huux*, Kaq *wuux*, Tz’ut *wuux*, Q’eq *hux*, Toj *hu’ux*.
- **ihq* ‘to carry’: Tzo *ik*, Tze *ihk-*, Tek *iiq-*, Mam *iiq*, Ixh *iq-*, Pqch *ihq*, Tz’ut *ihq-*, Q’eq *iiq*, Q’an *iq-*, Toj *ihk-*, Chu *ik-*.
- **iikh* ‘chile’: Yuc *iik*, Itz *ik*, Mop *ik*, Hua *itz*, Chi <*ich/ic*>, Chl *ich*, Chn *ich*, Ch’r *ich*, Chlt <*ich*>, Tzo *ich*, Tze *ich*, Tek ***ik***, Mam *iich*, Ixh *iky*, Awa *iich*, Pqch *iik*, Kaq *iik*, Tz’ut *iik*, K’ich *iik*, Q’eq *ik*, Moch *iik*, Q’an *ich*, Aka *ich*, Jak *ich*, Toj *ich*, Chu *ich*.
- **iim* ‘breast’: Yuc *iim*, Itz *im*, Hua *im-*, Chi <*im*>, Tek *iim*, Mam *iim-*, Awa *iim*, Moch *iim*, Q’an *im*, Aka *im*, Jak *im-*, Chu *im*.
- **iis* ‘sweet potato’: Yuc *iis*, Itz *is*, Mop *is*, Hua *ith*, Chi <*is*>, Ch’r *is*, Chlt <*iz*>, Tzo *is-*, Tek *iis*, Mam *iis*, Ixh *is*, Awa *iis*, Pqch *iis*, Kaq *iis*, Tz’ut *iis*, Q’eq *is*, Moch *iis*, Q’an *is*, Aka *is*, Jak *is*, Toj *is-*, Chu *is*.
- **ii’hq* ‘wind’: Yuc *iik’*, Itz *ik’*, Mop *ik’*, Hua *ik’*, Chi <*ik*>, Chl *ik’*, Chn *ik’*, Ch’r *ik’-*, Chlt <*yc/-ic*>, Tzo *ik’*, Tze *ik’*, Tek *-iiq’*, Mam *-iiq’*, Ixh *iq’*, Awa *iiq’*, Kaq ***-iq’***, Tz’ut *-iiq’*, K’ich *iiq’*, Q’eq *iq’*, Moch *-i’q’*, Q’an *iq’*, Aka *iq’*, Jak ***-e’***, Toj *ik’*, Chu *ik’*.
- **iik’* ‘moon, month’: Hua *iitz’*, Chi <*ich/itz*>, Ixh *iky’*, Kaq *iik’*, Tz’ut *iik’*, K’ich *iik’*.
- **ii’m* ‘maize’: Yuc *-i’im*, Itz *-i’im*, Mop *-i’im*, Hua ***eem***, Chl *-im*, Chn *-im*, Ch’r *-im*, Chlt <*-im*>, Tzo *-im*, Tze *-im*, Tek *-i’m*, Mam *-i’ng*, Ixh *-i’m*, Awa *-i’n*, Pqch *-iim*, Kaq *-iim/-iin*, Tz’ut *-iim*, K’ich *-iim*, Q’eq *-im*, Moch *-i’m*, Q’an *-im*, Aka ***-im***, Jak *-im*, Toj *-im*, Chu ***-im***.
- **ii’ng* ‘back, bark, skin’: Tek *i’j*, Ixh *i’*, Pqch *iiij*, Kaq *iiij*, Tz’ut *-iiij*, K’ich *-iiij*, Moch *i’ng*, Jak *ing-*.
- **jal* ‘to weave, to braid, to cross (things)’: Yuc *hal-*, Hua *hal-*, Chl *hal*, Chn *hāl-*, Ch’r *har-*, Chlt <*hal-*>, Tzo *hal*, Tze *jal-*, K’ich *jal-*, Q’eq *jal-*, Moch *hal*, Q’an *jal-*, Aka *hal-*, Jak *hal-*, Toj *hal-*, Chu *jal-*.
- **jap* ‘to open (mouth)’: Yuc *hap*, Itz *hāp*, Hua *hap-*, Chl *hap*, Chn *hāp-*, Ch’r *hap-*, Tzo *hap*, Q’eq *hap-*, Moch *hap*, Q’an *hap-*, Jak *hap-*.
- **jaq* ‘to open, unstop, detach, separate, dismount’: Hua *hak-*, Tek *jaq-*, Mam *jaq-*, Ixh *jaq-*, Awa *jaq-*, Kaq *jaq-*, Tz’ut *jaq-*, K’ich *jaq-*, Q’eq *jaq-*, Q’an *jaq-*, Aka *haj-*, Jak *haj-*, Chu *jak-*.
- **jaq’* ‘to inhale, pant, hiccup, choke, drown’: Yuc *hak’-*, Itz *hāk’-*, Mop *hāk-*, Hua *hak’-*, Chl *hak’-*, Chn *hāk’-*, Ch’r *hak’-*, Chlt <*hac-*>, Tze *jak’*, Q’eq *jaq’-*, Q’an *jaq’-*, Aka *haq’-*, Jak *haq’-*, Chu *jak’-*.
- **jaty* ‘to tear, slice, split’: Yuc *hat*, Itz *hāt*, Chl *hat*, Ch’r *hat-*, Tzo *hat-*, Tze *jat-*, Kaq *jach-*, Tz’ut *jach-*, K’ich *jach-*, Q’eq *jach-*, Q’an *jat-*, Aka *hat-*, Jak *hat-*, Chu *jat*.

- **jaahy* ‘thin’: Yuc *hàay*, Itz *hay*, Mop *hay*, Chl *hay*, Chn *hay*, Ch’r *hay*, Chlt <*hai*>, Tzo *hoy*, Tze *jay*, Q’eq *jay*, Toj *hay*, Chu *jay*.
- **ja’j* ‘hard palate’: Tze *-jaj*, Ixh *ja’afaja’*, Kaq *ja’j*, K’ich *ja’j*, Moch *ha’h*.
- **jaR* ‘how many?’: Yuc *hay*, Hua *haay*, Chi <*hai*->, Chl *hay*-, Chn *häy*-, Ch’r *hay*-, Tzo *hay*-, Tze *jay*-, Tek *jaat-/jat*-, Mam *jat*, Ixh *jat*-, Awa *jat*, Pqch *jar*-, Tz’ut *jar*-, K’ich *jaar*-, Q’eq *jar*-, Moch *hach*-, Q’an *jay*-, Aka *hay*-, Jak *hay*-, Toj *hay*-, Chu *jay*-.
 **jeb*’ ‘to open, pour out’: Yuc *heb’/he’*, Itz *heb’*, Mop *heb’*-, Hua *heb*-, Chl *heb’*, Ch’r *heb’*-, Chlt <*heb*->, Tze *jeb’*-, Jak *jeb’*-, Toj *heb’*-.
 **jee*’ ‘reinforcing or affirmative element (exclamation, interjection, particle, etc.)’: Itz *he’*-, Hua *hee’*, K’ich *jee’*, Tz’ut *jee’*, Q’an *je’*, Aka *he’*.
 **joy* ‘to detour, circle, encircle’: Yuc *hóoy*, Chl *hoy*, Tzo *hoy*-, Tze *joy*, Moch *hoy*, Aka *hoy*-, Jak *hoy*-, Toj *hoy*. [The Yuc form may be a loan from a Cholan language in which case this set does not attest to a pM form.]
 **jotz*’ ‘to extract, to scrape, to scratch’: Yuc *hotz’*, Itz *hotz’*, Mop *hotz’*-, Hua *hot’*-, Chl *hotz’*, Ch’r *hotz’*-, Tzo *hotz’*, Tze *jotz’*-, Tek *jotz’*-, Mam *jotz’*, Moch *hotz’*, Q’an *jotz’*-, Aka *hotz’*-, Jak *hotz’*-, Toj *hotz’*-.
 **jo’l* ‘hair, head’: Yuc *hó’ol*, Itz *ho’ol*, Chl *hol*, Ch’r *hor*, Chlt <*hol*>, Tzo *hol*, Tze *-jol*, Mam *jo’l*, Kaq *jol*-, K’ich *jol*-, Q’eq *jol*-, Q’an *jol*-, Aka *hol*-, Chu *jol*-.
 **jooj* ‘crow, heron’: Hua *hooh*, Chl *hoh*-, Tzo *hoh*, Tze *joj*, Tek *jooj*, Mam *jooj*, Ixh *joj*, Awa *jooj*, K’ich *jooj*, Moch *hooh*, Q’an *joj*, Aka *hoo*, Jak *hoh*, Toj *hoh*, Chu *joj*.
 **ju’hch*’ ‘to grind, scratch, scrape’: Yuc *huch’*-, Itz *huch’*, Mop *huch’*-, Chl *huch’*, Chn *huch’*, Ch’r *huch’*, Tzo *huch’*-, Tze *juch’*, Ixh *jutx’*, Kaq *juch’*-, K’ich *juch’*-, Q’eq *juch’*-, Moch *hu’ch’*, Q’an *jutx’*-, Aka *hutx’*-, Jak *hutx’*-, Toj *huch’*-, Chu *juch’*-.
 **jur* ‘to stir’: Yuc *húuy*, Itz *huuy*, Mop *huuy*-, Chl *huy*, Chn *huy*-, Ch’r *huy*, Chlt <*huy*->, Tzo *huy*-, Tze *juy*-, Ixh *jut*-, Q’eq *juy*-, Q’an *huy*-, Aka *huy*-, Toj *huy*-, Chu *juy*-.
 **juun* ‘one’: Yuc *hun* (‘one’)/*hùun* (‘alone’), Itz *hun*-, Mop *hun*, Hua *huun*, Chi <*jun*>, Chl *hum*-, Chn *hun*-, Chlt <*hun*->, Tzo *hun*, Tze *jun*, Tek *juun*, Mam *juun*, Ixh *jun*-, Awa *juun*, Pqch *-jun*, Kaq *juun*, Tz’ut *juun*, K’ich *juun*, Q’eq *jun*, Moch *huun*, Q’an *jun*, Aka *hun*, Jak *hun*-, Toj *hun*-, Chu *jun/ju’n*.
 **kab*’ ‘earth, land, world’: Yuc *kàab’*, Itz *kab’*, Hua *tzab*-, Chi <*cháu*->, Chn *kab’*, Tzo *chob’*, Ixh *kab’*-, Awa *kab’*, Kaq *kab’*-, Tz’ut *kab’*-, K’ich *kab’*-, Q’eq *kab’*.
 **kam* ‘to die’: Yuc *kíim*, Itz *kim*, Mop *kim*-, Hua *tzam-/tzem*-, Chi <*chem*->, Chl *chäm*-, Chn *chäm*-, Ch’r *cham*-, Chlt <*cham*->, Tzo *cham*, Tze *cham*-, Tek *kam*, Mam *kyim*, Ixh *kam*-, Awa *kyim*, Pqch *kam*-, Kaq *kam*, Tz’ut *kam*-, K’ich *kam*-, Q’eq *kam*-, Moch *kam*, Q’an *kam*-, Aka *kam*-, Jak *kam*-, Toj *cham*-, Chu *cham*-.
 **kaq* ‘red’: Yuc *chak*, Itz *chäk*, Mop *chäk*, Hua *tzak*-, Chi <*chac*->, Chl *chäk*, Chn *chäk*, Ch’r *chak*-, Tzo *chak*-, Tek *kyaq*, Mam *kyaq*, Ixh *kaq/kaj*, Awa *kyaq*, Pqch *kaq*, Kaq *kaq*, Tz’ut *kaq*, K’ich *kaq*, Q’eq *kaq*, Moch *kaq*, Q’an *kaq*, Aka *kaj*, Jak *kaj*, Toj *chak*, Chu *chak*.
 **kaab*’ ‘bee, honey’: Yuc *kàab’*, Itz *kab’*, Mop *kab’*, Chl *chab’*, Chn *chab’*, Ch’r *chab’*, Chlt <*chab*>, Tzo *chab’*, Tze *chab’*, Tek *kaab’*, Mam *kaab’*, Ixh *kab’*, Awa

- kaab'*, Pqch *kaab'*, Kaq *kaab'*, Tz'ut *kaab'*, K'ich *kaab'*, Q'eq *kab'*, Moch *kaab'*, Q'an *kab'*, Aka *kab'*, Jak *kab'*, Toj *chab'*, Chu *chab'*.
- **kaahn* 'snake': Yuc *kàan*, Itz *kan*, Mop *kan*, Hua *tzan*, Chi <*chan*>, Chn *chan*, Ch'r *chan*, Chlt <*chan*>, Tzo *chon*, Tze *chan*, Tek *kaan*, Ixh *kan*, Kaq *kaan*, Tz'ut *kaan*, K'ich *kaan*, Moch *kaan*, Toj *chan*, Chu *chan*. [In Yuc, Mop, Ch'r, Tzo, Awa, Moch, Q'an, Aka, Jak, and Chu, this item—sometimes in compounds, sometimes not—has the additional meaning 'cramps, pain'.]
- **kaa'b'* 'two, second': Hua *tzaab'*, Tzo *chib'*, Tze *cheb'*, Tek *kaab'*-, Mam *kab'*, Ixh *ka'w*, Awa *kab'*, Kaq *kaab'*, Tz'ut *kab'*, Pqch *kiib'*, K'ich *kaab'*, Q'eq *-kab'*, Moch *ka'b'*, Q'an *kab'*, Aka *kaab'*, Jak *kab'*, Toj *chab'*-, Chu *cha'ab'*.
- **kaa'ng* 'sky': Yuc *ká'an*, Itz *ka'an*, Mop *ka'an*, Hua *tzaay-*, Chl *chan*, Chn *chan*, Chlt <*chan*>, Tze *chan*, Tek *ka'j*, Mam *kya'j*, Awa *kya'j*, Kaq *kaaj*, Tz'ut *kaaj*, K'ich *kaaj*, Moch *ka'ng*, Q'an *kan*, Aka *kaan*, Jak *-kang*, Toj *cha'an*, Chu *cha'ang*.
- **kA* 'grindstone': Yuc *ka'*, Itz *ka'*, Mop *ka'*, Hua *tza'*, Chi <*cha/chá*>, Chn *cha'*, Ch'r *cha'*, Chlt <*cha*>, Tzo *cho'*, Tze *cha'*, Tek *kaa'*, Mam *kyaa'*, Ixh *ka'*, Awa *kaa'*, Pqch *kaa'*, Kaq *ka'*, Tz'ut *kaa'*, K'ich *kaa'*, Q'eq *ka'*, Moch *kaa'*, Q'an *ka'*, Aka *ka'*, Jak *ka'*, Toj *cha'*, Chu *cha'*.
- **kehj* 'deer': Yuc *kéeh*, Itz *keeh*, Mop *keeh*, Chl *chih-*, Chn *chi-*, Ch'r *chih*, Chlt <*chij*>, Tzo *chih*, Tze *chij*, Tek *keej*, Mam *cheej*, Ixh *kyeh/chej*, Awa *cheej*, Pqch *keej*, Kaq *keej*, Tz'ut *keej*, K'ich *keej*, Q'eq *kej*, Moch *keeh*, Q'an *chej*, Aka *chee*, Jak *cheh*, Toj *cheh*, Chu *chej*.
- **ki* 'sweet': Yuc *ki'*, Itz *ki'*, Mop *ki'*, Hua *tzi'*, Chi <*chi-*>, Chl *chi'* ('*nanche'*'), Chn *chi'* ('*nanche'*'), Ch'r *chi'*, Chlt <*chi-*>, Tzo *chi'*, Tze *chi'*, Tek *ki'*, Mam *chi'*, Ixh *kyi'/chi'*, Awa *chi'*, Pqch *ki'*, Kaq *ki'*, Tz'ut *ki'*, K'ich *ki'*, Q'eq *ki'*, Moch *ki'*, Aka *chi'*, Jak *chi'*, Toj *chi'*, Chu *chi'*.
- **kIh* 'maguey': Yuc *kih*, Itz *kih*, Mop *kih*, Hua *tzi'-*, Chl *chih*, Chn *chih*, Tzo *chi*, Tze *chi*, Mam *-chii*, Awa *chii'*, Kaq *-kiiy*, Tz'ut *-kiiy*, K'ich *kih*, Moch *kiih*, Q'an *chi*, Jak *chi*, Toj *chih*, Chu *chiy*.
- **kol* 'loose': Itz *kool*, Hua *tzol-*, Chn *kol-*, Tzo *-chol*, Mam *ko'l*, Ixh *kol-*, Kaq *kor*, Tz'ut *kor*, K'ich *kol*.
- **kooh* 'molar, cheek': Yuc *koh*, Itz *koh*, Mop *koh*, Hua *tzooh-*, Chl *choh*, Chn *choh*, Tze *-cho/-choh-*, Q'eq *ko*, Moch *kooh*, Toj *choh*.
- **koohng-* 'four': Mop *kon-*, Ch'r *chun-*, Tzo *chon-*, Tek *koj-*, Mam *kyaaaj*, Awa *koj/kyaaaj*, Tz'ut *koj-*, K'ich *koj-*, Moch *koong*, Q'an *kon-*, Aka *kon-*, Jak *kong-*, Chu *chong*.
- **kOj* 'puma': Yuc *koh*, Itz *koh*, Mop *koh*, Hua *tzooh*, Chi <*-cho/-chó*>, Chlt <*choh*>, Tze *choj*, Ixh *koj*, Kaq *koj*, Tz'ut *koj*, K'ich *koj*, Q'eq *koj-*, Q'an *koj*, Toj *choh*, Chu *choj*.
- **kuu'k* 'squirrel': Yuc *kú'uk*, Itz *ku'uk*, Mop *ku'uk*, Chl *chuch*, Chn *-chuch*, Ch'r *chuch*, Chlt <*chuch*>, Tzo *chuch*, Tze *chuch*, Tek *ku'k*, Mam *ku'k*, Ixh *ku'k*, Awa *ku'k*, Pqch *kuuk*, Kaq *kuuk*, Tz'ut *kuuk*, K'ich *kuuk*, Moch *ku'k*, Q'an *kuk*, Aka *kuk*, Jak *kuk*, Toj *chu'*, Chu *ku'uk*.
- **kyar* 'fish': Yuc *kay*, Itz *käy*, Mop *käy*, Chl *chäy*, Chn *chäy-*, Ch'r *chay*, Chlt <*chai*>, Tzo *choy*, Tze *chay*, Tek *kay/kiy*, Mam *kyixh*, Ixh *txay*, Awa *kay*, Pqch *kar*, Kaq *kar*, K'ich *kar*, Q'eq *kar*, Moch *kach*, Q'an *txay*, Aka *txay*, Jak *kay*, Toj *chay*, Chu *chay*.

- **kyong* ‘to sell’: Yuc *kon*, Itz *kon*, Mop *kon-*, Chl *chon*, Chn *chon-*, Ch’r *chon*, Chlt <*chon*>, Tzo *chon*, Tze *chon-*, Moch *chong*, Q’an *txon*, Aka *txon*, Jak *txong*, Toj *chon-*, Chu *chong*.
- **k’ah* ‘bitter’: Yuc *k’áah*, Itz *k’ah*, Mop *k’ah*, Hua *tz’a’-*, Chi <*choúic*>, Chl *ch’ah*, Chn *ch’ah*, Ch’r *ch’ah*, Chlt <*cha-*>, Tzo *ch’a*, Tze *ch’a*, Tek *k’ay*, Mam *k’aa*, Ixh *k’ay*, Awa *k’aa’*, Pqch *k’ah*, Kaq *k’ay*, Tz’ut *k’ay*, K’ich *k’ah*, Q’eq *k’a*, Moch *k’ah*, Q’an *k’a’*, Aka *k’a’*, Jak *k’ah*, Toj *k’ah*, Chu *k’a*.
- **k’aj* ‘corn flour’: Yuc *k’ah*, Hua *tz’ah-*, Chl *ch’ah*, Chlt <*chah*>, Tek *k’aj*, Mam *ky’aj*, Ixh *k’aj*, Pqch *k’aj*, Kaq *k’aj*, K’ich *k’aj*, Q’eq *k’aj*, Moch *k’ah/k’aaah*, Q’an *k’aj*, Aka *k’aa*, Jak *k’ah*, Chu *k’aj*.
- **k’ajb’* ‘fast (noun)’: Yuc <*ch’ab-*>, Chl *ch’ahb’*, Tzo *ch’ob’*, Q’an *k’ajb’-*, Chu *k’ajab’*.
- **k’al* ‘to tie, entangle, lock’: Yuc *k’al*, Hua *tz’al-*, Chn *ch’ál-/ch’al-*, Tzo *ch’al*, Tek *k’al*, Mam *k’al*, Ixh *k’al-*, Awa *k’al-*, Kaq *k’al*, Tz’ut *k’al-*, K’ich *k’al-*, Q’an *k’al-*, Aka *k’al-*, Jak *k’al*, Toj *ch’al-*, Chu *ch’al-*.
- **k’am* ‘to take’: Yuc *k’am*, Itz *k’ám*, Mop *k’ám-*, Chl *ch’ám*, Chn *ch’ám*, Ch’r *ch’am-*, Chlt <*cham-*>, Tzo *ch’am*, Tze *ch’am-*, Tek *k’am*, Mam *k’am*, Ixh *k’am*, Awa *k’am-*, Pqch *k’am*, Kaq *k’am*, Tz’ut *k’am*, K’ich *k’am-*, Q’eq *k’am*, Moch *k’am*, Jak *k’am-*.
- **k’aq* ‘flea’: Yuc ***ch’ik***, Itz ***ch’ik***, Mop ***ch’ik***, Hua *tz’ak*, Chi <*cha’c/chac*>, Chl *ch’ák*, Chn *ch’ák*, Ch’r *ch’ak*, Chlt <*chac*>, Tzo *ch’ak*, Tze *ch’ak*, Tek *k’aq*, Mam *ky’aq*, Ixh *k’aq*, Awa *ky’aq*, Pqch *k’aq*, Kaq *k’aq*, Tz’ut *k’aq*, K’ich *k’aq*, Q’eq *k’aq*, Moch *k’aq*, Jak *k’aj*, Toj *k’ak*, Chu *k’ak*.
- **k’a’n* ‘brave, strong, fierce, violent’: Yuc *k’á’an/k’á’am*, Itz *k’a’am*, Mop *k’a’am*, Ixh *k’a’n*, Awa *k’a’n*, Tz’ut *k’a’n*, K’ich *k’a’n*, Aka ***ch’aan***.
- **k’aa’j* ‘lazy’: Tzo *ch’ah*, Tze *ch’aj*, Mam *ky’aa’j*, Awa ***ky’aj***.
- **k’ex* ‘to exchange’: Yuc *k’ex*, Itz *k’ex*, Mop *k’ex-*, Chl ***k’ex***, Chn ***k’ex-***, Chlt <*quex-*>, Tzo *k’ex*, Tek *k’ex-*, Mam *ch’ex*, Kaq *k’ex*, Tz’ut *k’ex*, K’ich *k’ex-*, Moch *k’ex*, Q’an *k’ex*, Aka *k’ex-*.
- **k’ee’n* ‘stone’: Yuc *ch’é’en*, Mop *ch’e’en*, Hua *tz’een*, Chi <*chen/qu’en*>, Chl *ch’en*, Chn *ch’en*, Ch’r *ch’en*, Chlt <*chen*>, Tzo *ch’en*, Tze *ch’en*, Moch *k’e’n*, Q’an *ch’en-*, Aka *ch’een*, Jak *ch’en*, Toj *k’e’en*, Chu *k’e’en*.
- **k’ih* ‘to grow’: Chn *ch’ih-*, Ch’r *ch’ih-*, Chlt <*chi-*>, Tzo *ch’i*, Tze *ch’ih-*, Tek *k’i-*, Pqch *k’ih-*, Kaq *k’iy-*, Tz’ut *k’iy*, K’ich *k’ih*, Q’eq *k’i*, Toj *k’i-*.
- **k’ii’x* ‘thorn’: Yuc *k’i’ix*, Itz *k’i’ix*, Mop *k’i’ix*, Hua *k’iith*, Chi <*kis-*>, Chl *ch’ix*, Chn *ch’ix*, Ch’r *t’ix*, Chlt <*tix*>, Tzo *ch’ix*, Tze *ch’ix*, Tek *ky’i’xh*, Mam *ch’i’x*, Ixh *ch’i’x*, Awa *tx’i’x*, Pqch *k’iix*, Kaq *k’iix*, Tz’ut *k’iix*, K’ich *k’iix*, Q’eq *k’ix*, Moch *k’i’x*, Q’an *k’ix*, Aka *k’iix*, Jak *tx’ix*, Toj *k’i’ix*, Chu *k’i’ix*.
- **k’ohj* ‘mask’: Mop *k’ooh*, Hua <*coj-*>, Chl *k’oh*, Chn *k’oh-*, Chlt <*choh/eo*>, Tzo *k’oh-*, Tze *k’oj*, Tek *k’ooj*, Mam *k’ooj*, Ixh *k’oj*, Awa *k’ooj*, Pqch *k’ooj*, Kaq *k’ooj*, Tz’ut *k’ooj*, K’ich *k’ooj*, Q’eq *k’oj*, Moch *k’ooh*, Q’an *k’oj*, Aka *k’oo*, Jak *k’oh*, Chu *k’oj*.
- **k’uhm* ‘squash’: Yuc *k’úum*, Itz *k’uum*, Mop *k’uum*, Chl *ch’uhm*, Chn *ch’um*, Ch’r ***ch’um***, Chlt <*chum*>, Tzo *ch’um*, Tze ***ch’um***, Tek *k’uum*, Mam ***k’um***, Ixh *k’um*, Awa ***k’um***, Pqch *k’uum*, Kaq *k’uum*, Tz’ut *k’uum*, K’ich *k’uum*, Q’eq *k’um*, Moch *k’uum*, Q’an *k’um*, Aka *k’um*, Jak *k’um*, Toj ***k’um***. [A possible collective approach to the

- phonologically irregular reflexes in this set is to hypothesize that an irregular form, **k'um*, developed at some early point, perhaps in Proto-Tzeltalan or Proto-Mamean, and subsequently diffused. An etymon of this shape would account for reflexes in Chn, Ch'r, Tzo, Tze, Mam, Ixh, Awa, Q'eq, Q'an, Aka, Jak, and Toj.]
- **k'uhtz* 'wild tobacco': Yuc *k'úutz*, Itz *k'uutz*, Mop *k'uutz*, Huav *k'utz-*, Chi <*cuúch*>, Chl *k'uhtz*, Chn *k'utz*, Ch'r *k'uhtz*, Chlt <*cuctz*>, Q'an *k'utz*, Aka *k'utz*, Jak *k'utz*, Chu *k'utz*.
- **k'ux* 'to bite, gnaw, eat': Yuc *k'ux*, Itz *k'ux-*, Mop *k'ux-*, Chl *k'ux*, Chn *k'ux-*, Ch'r *k'ux*, Chlt <*cux*>, Tzo *k'ux*, Tze *k'ux-*, Mam *k'ux*, Ixh *k'ux-*, Pqch *k'ux*, Kaq *k'ux-*, Tz'ut *k'ux-*, K'ich *k'ux-*, Q'eq *k'ux-*, Moch *k'ux*, Q'an *k'ux-*, Jak *k'ux-*, Toj *k'ux-*, Chu *k'ux*.
- **lah* 'nettle': Yuc *láa-*, Itz *lah*, Mop *lah*, Hua *-lay'*, Chi <*lai*>, Chn *lah*, Ch'r *lah-*, Chlt <*la*>, Tzo *la*, Tze *la*, Tek *laa/laaj*, Mam *laa*, Ixh *lay*, Awa *laa'*, Pqch *lah*, Kaq *lay*, K'ich *lah*, Q'eq *la*, Moch *lah*, Q'an *la*, Aka *laa*, Toj *lah*, Chu *la*.
- **lahq'* 'army ant': Hua *laak'*, Chl *lahk'*, Chn *lak'*, Tz'ut *-laq'*.
- **laj* 'to finish, end': Tzo *-lah*, Tze *laj-*, Ch'r *lah-*, K'ich *laj*, Q'an *laj-*, Aka *laa-*, Jak *lah-*, Toj *lah-*, Chu *laj*.
- **laab'* 'bewitching or evil spirit, person, animal, thing': Hua *laab*, Chlt <*lab*>, Tzo *lab'-*, Tze *lab'-*, Mam *laab'*, Awa *laab'*, Kaq *lab'-*, Q'eq *lab'*, Moch *lab'-*, Q'an *lab'*, Aka *lab'*, Jak *lab'*, Chu *lab'*.
- **laq* 'bowl': Yuc *lak*, Itz *lak*, Hua *laak*, Chi <*lac*>, Chlt <*lac*>, Tek *laq*, Mam *laq*, Ixh *laq*, Awa *laq*, Tz'ut *laq*.
- **lem* 'to shine, sparkle': Yuc *léem-*, Itz *lem-*, Mop *lem*, Chl *lem-*, Chn *lem-*, Tze *lem-*, Tek *lem-*, Ixh *lem-*, K'ich *rem-*, Q'eq *lem*, Q'an *lem-*.
- **leq'* 'to lick': Hua *lek'-*, Chl *lek'-*, Chn *lek'-*, Tzo *lek'-*, Tze *lek'-*, Tek *leeq'*, Mam *leeq'-*, Ixh *leq'-*, Awa *laq'-*, Kaq *req'-*, Tz'ut *raq'-*, K'ich *reeq'-*, Q'eq *req'-*, Moch *leq'*, Aka *leq'-*, Jak *leq'-*, Toj *lek'-*, Chu *lek'-*.
- **lojb'* 'digging stock': Yuc *lóob'*, Hua *lohob*. [This set may be explained by language contact.]
- **loq* 'to boil': Itz *lok*, Mop *lok*, Chn *lok-*, Tek *loq-*, Mam *loog*, Kaq *roq-*, Tz'ut *roq*, K'ich *roq-*, Q'eq *loq-*, Moch *loq*, Q'an *loq-*, Toj *lok-*. [Also pertaining to this set are Chl *lohk* 'foam' and Yuc *lòok* 'boil' (a numeral classifier). These, however, are derived forms not directly reflecting the pM reconstruction.]
- **lo'* 'to eat fruit': Tzo *lo'-*, Tze *lo'-*, Tek *lo'*, Mam *lo'-*, Ixh *lo'-*, Awa *lo'-*, Moch *lo'*, Aka *lo'*, Toj *lo'-*, Chu *lo'-*.
- **looht'* 'pressed, tightened, cramped': Yuc *lòot'*, Mop *lot'-*, Chl *lut'-*, Tzo *lot'-*, Tze *lot'-*, Q'an *lot'-*, Jak *lot'-*, Toj *lot'-*, Chu *lot'*.
- **lool* 'caterpillar, grasshopper': Hua *lool*, Ixh *lol*, Tz'ut *lool*, K'ich *lool*, Moch *lool*, Q'an *lol*, Aka *lol*, Jak *lol*, Chu *lol*.
- **luhb'* 'to fall, to be tired': Yuc *lúub'*, Itz *lub'*, Mop *luub'-*, Chl *luhb'*, Chlt <*luhb-*>, Tzo *lub'*, Tze *luhb'-*, Q'eq *lub'-*. [The Q'eq form may be a loan, in which case this set does not attest to a pM form.]
- **maq* 'to stop up, close, cover': Yuc *mak*, Itz *mäk*, Mop *mäk-*, Hua *mak-*, Chn *mäk-*, Ch'r *mak-*, Tzo *mak-*, Tze *mak-*, Tek *maq-*, Mam *maq-*, Ixh *maq-*, Awa *maq-*, Kaq *maq-*, Moch *maq*, Q'an *maq-*, Aka *maj-*, Jak *maj*, Toj *mak-*, Chu *mak-*.

- **ma'* or **mA'* 'no (negative)': Yuc *má'*, Itz *ma'*, Mop *ma'*, Chl *ma'*, Chn *ma'*, Ch'r *ma'-*, Chlt <*ma*>, Tzo *mo'*, Tze *ma'-*, Pqch *ma'*, Chu *ma'-*.
- **maal* 'to swell': Hua *maal*, Tek *maal*, Mam *maal*, Ixh *mal-*, Awa *maal*, Q'an *mal-*, Aka *mal-*, Jak *mal-*, Chu *mal-*.
- **maam* 'grandfather, grandchild': Yuc *mam*, Itz *maam*, Mop *mam*, Hua *maam*, Chi <*mam*>, Chl *mam*, Chn *mam*, Ch'r *mam*, Chlt <*mam*>, Tzo *mam/mom*, Tze *mam*, Tek *maam*, Ixh *mam*, Awa *maam*, Pqch *maam*, Kaq *maam*, Tz'ut *-maam*, K'ich *maam*, Q'eq *mam*, Moch *maam*, Q'an *mam-*, Aka *mam-*, Jak *mam-*.
- **maatz* 'corn hull, corn-flour drink, corn gruel': Yuc <*mats*> ('dough for making corn-flour drink')/*má'atz* ('corn hull'), Itz *maatz'*, Chn *matz'*, Chlt <*matz*>, Tzo *matz'*, Tze *matz'*, Mam *matz'*, Ixh *matz'/maatz'*, Awa *maatz'*, Pqch *maatz'*, Tz'ut *maatz'*, Q'eq *matz'*, Q'an *matz'*, Aka *matz'*, Jak *matz'*, Toj *matz'*.
- **maa'x* 'spider monkey': Yuc <*ma'ax*>/*màax*, Itz *-ma'ax*, Mop *ma'ax*, Chl *max*, Ch'r *max*, Chlt <*max*>, Tzo *max*, Tze *max*, Mam *-maaxh*, Q'eq *max*, Q'an *max*, Aka *maax*, Jak *max*, Toj *ma'ax*.
- **maa'y* 'tobacco': Yuc *má'ay*, Hua *maay*, Chi <*may/mai*>, Tzo *moy*, Tze *may*, Tek *ma'y*, Mam *ma'xh*, Ixh *may*, Awa *maay*, Kaq *maay*, K'ich *maay*, Q'eq *may*, Moch *ma'y*, Toj *may*.
- **mAp* 'coyol palm': Yuc <*map*>, Mop *mäp*, Hua *maap*, Chi <*mep*>, Chl *mäp*, Chlt <*map*>, Tzo *nap*, Tze *map*, Tek *map*, Mam *map*, Ixh *map*, Awa *mop*, Kaq *moop*, Tz'ut *nop*, K'ich *mop*, Q'eq *map*, Moch *map*, Aka *map*, Jak *map*, Toj *nap*, Chu *map*.
- **mehs* 'broom': Yuc *mús*, Itz *müis*, Mop *miis*, Chl *mis-*, Chn *mis-*, Chlt <*müiz*>, Tzo *mes-*, Tze *mes*, Mam *mees*, Ixh *mes*, Pqch *mees*, Kaq *mes-*, Tz'ut *mes*, K'ich *mees*, Q'eq *mes-*, Moch *me's*, Jak *mes*, Toj *mes*, Chu *mes*.
- **me'x* 'facial hair, blond hair': Yuc *mé'ex*, Itz *me'ex*, Mop *me'ex*, Chlt <*meex*>, Tzo *nex*, Mam *me'xh*, Ixh *me'x*, Kaq *me'x*, Tz'ut *me'x*, Moch *me'x*.
- **moohch* 'toad': Yuc *müuch*, Itz *much*, Mop *much*, Chl *-much*, Chn *-much*, Chlt <*-much*>, Tzo *-moch*, Ixh *moch-*. [The Ixh form may be a loan, in which case this set does not attest to a pM form.]
- **mutz'* 'to close eyes': Yuc *mutz'*, Itz *mutz'*, Mop *mutz'*, Hua *mut'-*, Chl *mutz'*, Chn *mutz'*, Ch'r *mutz'-*, Chlt <*mutz-*>, Tzo *mutz'-*, Tze *mutz'-*, Mam *mutz'*, Pqch *mutz'-*, Q'eq *mutz'*, Moch *mutz'*, Q'an *mutz'-*, Aka *mutz'-*, Jak *mutz'-*, Toj *mutz'-*, Chu *mutz'-*.
- **najb* 'lagoon': Yuc *náab*, Itz *naab*, Chl *ñahb'*, Chn *nab'*, Tzo *nab'*, Tze *nahb'*, Mam *najab'*, Ixh *naab'*, Moch *nahab'*, Q'an *najab'*.
- **najt* 'far': Yuc *náach*, Itz *naach*, Mop *naach*, Chl *ñahht*, Chn *nat*, Ch'r *nahht*, Chlt <*nahht*>, Tzo *nat*, Tze *nahht*, Tek *najach*, Mam *najach*, Ixh *naach*, Pqch *najt*, Kaq *nah*, Tz'ut *nahht*, K'ich *naj*, Q'eq *najt*, Moch *nahat*, Q'an *najat*, Aka *naat*, Jak *nahat*, Toj *nahat*, Chu *najat*.
- **na'* 'to know': Yuc *ná'*, Itz *na'-*, Mop *na'-*, Chl *ñá'*, Chn *na'-*, Ch'r *na'-*, Chlt <*na-*>, Tzo *na'*, Tze *na'-*, Tek *na'*, Mam *naa*, Pqch *na'-*, Toj *na'-*, Chu *na'-*.
- **nA'* or **naa'* 'mother': Yuc *na'*, Itz *na'*, Mop *na'*, Chl *ñá'*, Chn *na'*, Chlt <*na*>, Ixh *na'*, Awa *naa'*, Q'eq *na'*, Moch *naa'*.
- **nehn* 'mirror': Yuc *néen*, Mop *neen*, Chl *ñehñ-*, Chlt <*neen*>, Tzo *nen*, Tze *nen*, Moch *neen-*, Q'an *nen*, Aka *nen*, Jak *nen*, Chu *nen*.
- **nehty'* 'to nibble': Yuc *néet'*, Itz *neet'*, Hua *net'-*, Chn *net'-*, Ixh *nech'-*, Toj *nech'-*.

- **nihk* ‘to shake, move’: Itz *niik*, Hua *nik-*, Chl *nihk-*, Chn *nik-*, Ch’r *nihk-*, Chlt <*nic/nihc*>, Tzo *nik-*, Tze *nihk-*, Moch **ngich**, Toj *nihk*.
- **ni’ng* ‘fine (like flour), mealy bug’: Yuc *ni’in*, Chlt <*niin*>, Tzo *nin*, Ixh *ni’*, Kaq *ni’j*, K’ich *ni’j*.
- **noq’* or **nOq’* ‘creature (including bugs)’: Yuc **nòok’**, Itz *nok’-*, Mop *nok’*, Chn *nok’*, Moch *noq’*, Q’an *no’*, Aka *noq’*, Jak *noq’*, Chu *nok’*.
- **nohj* ‘to be filled’: Tzo *noh*, Tze *noj-*, Tek **noj-**, Mam *nooj*, Ixh *noj-*, Awa *nooj-*, Kaq *noj-*, Tz’ut **no’j**, K’ich *nooj-*, Moch **noj**, Q’an *noj-*, Aka *noo-*, Jak *noh-*.
- **nooq’* ‘cloth, cotton’: Yuc *nòok’*, Itz *nok’*, Mop *nok’*, Chl *ñok’-*, Chn *nok’*, Chlt <*noc*>, Tzo *-nok’*, Tek *nooq’*, Mam *nooq’*, Awa *nooq’*, Pqch *nooq’*, Q’eq *noq’*, Moch *-nooq’*, Toj *-nok’*.
- **nuuq’* ‘neck’: Mop *nuk’-*, Hua *nuuk’*, Chi <*nuc*>, Ch’r *nuk*, Chlt <*nuc*>, Tzo *nuk’-*, Tze *-nuk’*, Q’eq *nuq’-*, Moch *nuuq’*, Q’an *nuq’-*, Aka *nuq’-*, Jak *nuq’-*, Toj *nuk’*.
- **ngAb’* ‘rain’: Hua *aab*, Chi <*aiú*>, Tek *jab’*, Ixh *jab’-*, Awa *ab’-*, Pqch *jab’*, Kaq *jab’-*, Tz’ut *jab’*, K’ich *jab’*, Q’eq *hab’*, Moch *ngab’*, Q’an *nab’*, Aka *nab’*, Jak *ngab’*, Chu *ngab’*.
- **ngAh* ‘house, birthplace’: Yuc *nah*, Itz *nah*, Mop *nah*, Hua *wa’-*, Tzo *na*, Tze *na*, Tek *jaay*, Mam *jaa*, Kaq *jaay*, Tz’ut *jaay*, K’ich *jah*, Moch *ngaah*, Q’an *na*, Aka *naa*, Jak *ngah*, Toj *nah*, Chu *nga*.
- **ngeeh* ‘tail’: Yuc *neh*, Itz *neh*, Mop *neh*, Hua *weew*, Chi <*véu*>, Chl *ñeh*, Chn *neh*, Ch’r *neh*, Chlt <*ne*>, Tzo *-ne*, Tze *-ne*, Tek *jee’*, Mam *jee’*, Ixh *jej*, Awa *jee’*, Pqch *jeeh*, Kaq *jeey*, Tz’ut *jeey*, K’ich *jee’*, Q’eq *ye*, Moch *ngeeh*, Q’an *ne-*, Aka *nee*, Jak *ngeh-*, Toj *neh*, Chu *nge*.
- **ojb’* ‘cough’: Hua *ohob*, Chl *ohb’-*, Chn *ob’-*, Chlt <*ohob*>, Tzo *ob’-*, Tze *ohb’*, Pqch *ojb’*, Kaq *ohob’*, Tz’ut *ohb’*, K’ich *ojob’*, Q’eq *ojb’-*, Moch *ohob’*, Q’an *ojob’*, Aka *-oob’*, Jak *-ohob’*, Toj *ohb’-*, Chu *ojob’*.
- **ojl* ‘heart, center, interior, within, inside’: Yuc *óol*, Itz *ool*, Mop *ool*, Chl *ohl-*, Tzo *ol*, Tze *ohl*, Chu *-ojol*. [The Chu form may be a loan, in which case this set does not attest to a pM form.]
- **ojx* ‘breadnut’: Yuc *óox*, Itz *oox*, Mop *oox*, Hua *ohox*, Ch’r *ox*. [This set is possibly explained by language contact.]
- **oohj* ‘to know’: Yuc *òoh-*, Itz *oh-*, Chl *uh-*, Tzo *oh-*, Tz’ut *oo-*, Q’an *oj-*, Aka *oo-*, Jak *oh*, Chu *oh-*.
- **oohng* ‘avocado’: Yuc *òon*, Itz *om*, Mop *on*, Hua *uh/oh*, Chi <*ou/ou’oy*>, Chn *un*, Ch’r *un*, Chlt <*hun*>, Tzo *on*, Tze *on*, Tek *ooj*, Mam *ooj*, Ixh *oj*, Awa *ooj*, Pqch *ooj*, Kaq *ooj*, Tz’ut *ooj*, K’ich *ooj*, Moch *oong*, Q’an *on*, Aka *on*, Jak *ong*, Toj *on*, Chu *ong*.
- **oohq’* ‘to cry’: Yuc **ok’**, Itz *ok’*, Mop *-ok’-*, Hua *uk’-*, Chl *uk’-*, Chn *uk’-*, Ch’r *uk’-*, Chlt <*uquel*>, Tzo *ok’-*, Tze *ok’-*, Tek *ooq’-*, Mam *ooq’*, Ixh *oq’*, Pqch *ooq’-*, Kaq *oq’-*, Tz’ut *ooq’-*, K’ich *oq’-*, Q’eq *oq’-*, Moch *ooq’*, Q’an *oq’-*, Aka *oq’-*, Jak *oq’-*, Toj *ok’-*, Chu *ok’-*.
- **oohx* ‘three’: Yuc **óox**, Itz *ox-*, Mop *ox*, Hua **oox**, Chi <*ox-*>, Chl *ux-*, Chn *ux-*, Ch’r *ux-*, Tzo *ox-*, Tze *ox-*, Tek *ooxh*, Mam *oox*, Ixh *ox*, Awa *oox*, Pqch *ix-*, Kaq *oox*, Tz’ut **ox-**, K’ich *ox-*, Q’eq *ox-*, Moch *oox-*, Q’an *ox-*, Aka *ox-*, Jak *ox-*, Toj *ox-*, Chu *ox-*.

- **oo'hch* 'opossum, fox': Yuc *òoch*, Itz *och*, Mop *och*, Chl *uch*, Chn *-uch*, Tzo *uch*, Tze *-uch*, Ixh *uch*, Moch *u'ch*, Jak *utx-*, Toj *uhch-*, Chu *uch-*.
- **oo'hq* 'coyote, fox': Hua *ok*, Moch *o'q*, Q'an *oq*, Aka *ooj*, Jak *oj*, Chu *ok-*.
- **ook* 'to enter': Yuc *ok*, Itz *ok-*, Mop *ok-*, Hua *otz-*, Chl *och-*, Chn *och-*, Ch'r *och-*, Chlt <*och-*>, Tzo *och-*, Tze *och-*, Tek *ook-*, Mam *ook-*, Ixh *ok-*, Awa *ook-*, Kaq *ook*, Tz'ut *ook*, K'ich *ok-*, Q'eq *ok*, Moch *ook/ok*, Q'an *ok-*, Aka *ok-*, Jak *ok-*, Toj *och-*, Chu *och-*.
- **oong* 'far': Yuc <*on*>, Hua *oow*, Chl *on-*, Chn *on-*, Ch'r *on-*, Chlt <*on-*>, Tzo *on-*, Mam *oj-*, Kaq *oj-*, Tz'ut *ooj-*, K'ich *oj-*.
- **ooq* 'foot': Yuc *òok*, Itz *ok*, Mop *ok*, Chl *ok*, Chn *ok*, Ch'r *ok*, Chlt <*oc*>, Tzo *ok-*, Tze *-ok*, Tek *ooq*, Ixh *oq*, Pqch *ooq*, Tz'ut *-ooq*, Q'eq *oq-*, Moch *ooq*, Jak *oj-*, Toj *ok-*, Chu *ok*.
- **pa'hj* 'sour': Yuc *pah*, Itz *päh*, Mop *päh*, Chl *pah*, Chn *pah*, Ch'r *pah-*, Chlt <*paah*>, Tzo *poh*, Tze *paj*, Moch *pa'h*, Q'an *paj*, Aka *pa*, Jak *pah*, Toj *pah*, Chu *paj*.
- **pajk* 'pineapple': Chl *pahch'*, Chn *pach'*, Tze *pahch'*, Tek *pajak'*, Moch *pahak'*, Toj *pahak'*, Chu *pajach'*.
- **paq* 'to fold': Yuc *pak*, Itz *päk*, Hua *pak-*, Chl *päk*, Chn *päk-*, Ch'r *pak-*, Chlt <*pac-*>, Tzo *-pak*, Tek *paq-*, Mam *paq*, Ixh *paq*, Awa *paq-*, Moch *paq*, Q'an *paq-*, Aka *paj-*, Jak *paj-*, Toj *pak-*, Chu *pak-*.
- **paat* 'back, shell, house': Yuc *pàach*, Itz *pach*, Mop *pach*, Hua *pet*, Chl *pat*, Chn *pat*, Ch'r *pat*, Chlt <*pat*>, Tzo *pat-*, Tze *-pat*, Mam *paach*, Ixh *pach*, Awa *paach*, Pqch *paat*, Moch *paach*, Q'an *pat*, Aka *pat*, Jak *pat*, Toj *pat*, Chu *pat*.
- **peq* 'toad': Chl *-pek-*, Ch'r *pek*, Kaq *-peeq*, Tz'ut *-peq*, K'ich *-peq*.
- **peehty* 'circular, to make round': Yuc *pèet*, Itz *peet*, Hua *pet-*, Chi <*pet-*>, Chn *-pet-*, Ixh *petz-*, Q'eq *pech-*, Moch *peet*, Aka *pet-*, Jak *pet-*, Toj *pet-*, Chu *pet-*.
- **pii'hm* 'thick': Yuc *piim*, Itz *pim*, Mop *pim*, Chl *pim*, Chn *pim*, Ch'r *pim*, Chlt <*pim*>, Tzo *pim*, Tze *pim*, Tek *piim*, Mam *piim*, Ixh *pim*, Awa *piim*, Pqch *pim*, Kaq *piim*, Tz'ut *piim*, K'ich *piim*, Q'eq *pim*, Moch *pi'm*, Q'an *pim*, Aka *pim*, Jak *pim*, Toj *pim*, Chu *pim*.
- **pohp* 'mat': Yuc *póop*, Itz *pop*, Mop *poop*, Chl *pohp*, Chn *pop*, Ch'r *pohp*, Tzo *pop*, Tze *pohp*, Tek *poop*, Mam *poop*, Ixh *pop*, Awa *poop*, Pqch *pohp*, Kaq *poop*, Tz'ut *pohp*, K'ich *poop*, Q'eq *poop*, Moch *pohop*, Q'an *pop-*, Aka *pop-*, Jak *pop*, Toj *pop*, Chu *pop*.
- **pohq* 'to singe, toast, roast': Yuc *póok*, Itz *pook*, Mop *pook-*, Mam *poohq*, Awa *poohq-*, Moch *poohq-*.
- **pojq* 'blister': Yuc *póok'*, Mop *pook'*, Hua *pok'*, Mam *pojq'*, Ixh *pojq'*, Tz'ut *poohq'*, K'ich *poohq'*.
- **pojs* 'dust, powder': Yuc *póos*, Hua *pohoth*, Chi <*pohós*>. [This set is possibly explained by language contact.]
- **poohl* 'to fry, to burn': Chl *pul*, Chn *pul-*, Ch'r *pur-*, Tek *pool-*, K'ich *pool-*.
- **poohl* 'head, forehead': Yuc *pòol*, Itz *pol*, Mop *pol*, Chn *pul*. [This is probably a diffused Maya Lowland form and, therefore, not Proto-Mayan. Nonetheless, it is cited here because it relates to the vowel-quality shift reported in 4 above.]
- **poohs* 'bubbling, steam, steam bath': Hua *puh-*, Chl *pus*, Tzo *pus*, Tze *pus*, Mam *poos-*.

- **poom* ‘incense’: Yuc *pòom*, Itz *pom*, Mop *pom*, Chi <*pom*>, Chl *pom*, Chn *pom*, Chlt <*pom*>, Tzo *pom*, Tze *pom*, Tek *poom*, Mam *poon*, Ixh *pom*, Awa *poom*, Pqch *poom*, Kaq *poom*, Tz’ut *poom*, K’ich *poom*, Q’eq *pom*, Moch *poom*, Q’an *pom*, Aka *pom*, Jak *pom*, Toj *pom*, Chu *pom*.
- **qeeb* ‘belch’: Yuc *kèeb*’, Itz *keeb*’, Mop *keeb*’, Hua *kee-*’, Chl *keb*’, Chn *keb*’, Ch’r *keb*’, Chlt <*queeb*>, Tzo *keb-*’, Tze *keb*’, Awa *qeeb*’, Moch *qeeb*’, Aka *qe-*’, Jak *je*’, Toj *keb*’, Chu *keb*’.
- **q’ab* ‘hand’: Yuc *k’ab*’, Itz *k’ä*’, Mop *k’ä*’, Hua *k’ub-*’, Chi <*kov-*>, Chl *k’äb*’, Chn *k’äb*’, Ch’r *k’ab*’, Chlt <*cab*>, Tzo *k’ob-*’, Tze *-k’ab-*’, Tek *q’ab-*’, Mam *q’ab-*’, Ixh *q’ab*’, Awa *q’ab*’, Pqch *q’ab*’, Kaq *q’ab-*’, Tz’ut *q’ab-*’, K’ich *q’ab-*’, Moch *q’ab*’, Q’an *q’ab-*’, Aka *q’ab-*’, Jak *q’ab-*’, Toj *k’ab*’, Chu *k’ab*’.
- **q’an* ‘yellow, ripe’: Yuc *k’an*, Itz *k’än*, Mop *k’än*, Hua *k’an-*, Chi <*k’an-*>, Chl *k’än*, Chn *k’än*, Ch’r *k’an-*, Chlt <*can*>, Tzo *k’on*, Tze *k’an*, Tek *q’an*, Mam *q’an*, Ixh *q’an*, Awa *q’an*, Pqch *q’an*, Kaq *q’an*, Tz’ut *q’an*, K’ich *q’an*, Q’eq *q’an*, Moch *q’an*, Q’an *q’an*, Aka *q’an*, Jak *q’an*, Toj *k’an*, Chu *k’an*.
- **q’ahq* ‘fire’: Yuc *k’áak*’, Itz *k’aak*’, Mop *k’aak*’, Hua *k’aak*’, Chi <*k’a’k*>, Chl *k’ahk*, Chn *k’ak*’, Ch’r *k’ahk*, Chlt <*cac/cahc/caac*>, Tzo *k’ok*’, Tze *k’ahk*’, Tek *q’aaq*’, Mam *q’aaq*’, Awa *q’aaq*’, Pqch *q’aaq*’, Kaq *q’aaq*’, Tz’ut *q’aaq*’, K’ich *q’aaq*’, Moch *q’aaq*’, Q’an *q’aq*’, Aka *q’a*’, Jak *q’a*’, Toj *k’ak*’, Chu *k’ak*’.
- **q’ahr* ‘to get used to, to be patient’: Hua *k’ay-*, Chl *k’ahy-*, Ch’r *k’a’y*, Chlt <*cay-*>, Tze *k’ahy-*, Q’eq *-k’aay-*, Moch *q’aach*, Q’an *q’ay-*, Aka *q’ey-*, Jak *q’ay-*, Toj *k’ahy-*.
- **q’a’hng* ‘to sound, shout, speak, ask for’: Chn *k’än-*, Mam *q’aj*, Ixh *q’aj-*, Awa *q’aj-*, Pqch *q’aj-*, Kaq *q’aj-*, Tz’ut *q’aj*, K’ich *q’aj-*, Moch *q’a’ng*, Q’an *q’an-*, Aka *q’an-*, Jak *q’ang*, Toj *k’an-*, Chu *k’ang*.
- **q’aab* ‘liquid, juice, urine’: Yuc *k’àab*’, Itz *k’a*’, Mop *k’a*’, Chn *k’ab*’, Tzo *k’ab-*’, Ixh *q’ab-*’, Moch *q’aab*’.
- **q’aa’ng* ‘seat, pillow, wedge’: Chlt <*can*>, Mam *q’a’j*, Ixh *q’a-*’, Awa *q’a’j*, Q’an *q’an-*, Aka *q’aan*, Jak *q’ang-*, Toj *k’a’an*, Chu *k’ang-*.
- **q’iihng* ‘sun, day’: Yuc *k’iin*, Itz *k’in*, Mop *k’in*, Hua *k’ih*, Chi <*k’ij/k’i*>, Chl *k’in*, Chn *k’in*, Ch’r *k’in*, Chlt <*quin*>, Tzo *k’in*, Tze *k’in*, Tek *q’iij*, Mam *q’iij*, Ixh *q’ij*, Awa *q’eej*, Pqch *q’iij*, Kaq *q’iij*, Tz’ut *q’iij*, K’ich *q’iij*, Moch *q’iing*, Q’an *q’in*, Aka *q’in*, Jak *q’ing*, Toj *k’in*, Chu *k’ing*.
- **q’ohl* ‘sap, thick liquid’: Yuc *k’óol*, Itz *k’ool*, Tek *q’ool*, Mam *q’ool*, Ixh *q’ol*, Awa *q’ool*, Pqch *q’ool*, Kaq *q’ool*, Tz’ut *q’ool*, K’ich *q’ool*, Q’eq *q’ol*, Moch *q’ool*, Q’an *q’ol*, Aka *q’ol*, Jak *q’ol*, Toj *k’ol-*.
- **q’ohr* ‘dough, corn gruel’: Yuc *k’ey*, Itz *k’ey-*, Hua *k’oy-*, Chl *k’oy*, Chn *k’oy*, Chlt <*coy-/εoi*>, Tek *q’oot-*, Mam *q’oot-*, Ixh *q’ot-*, Awa *q’oot*, Pqch *q’oor*, Kaq *q’oor*, Tz’ut *q’oor*, K’ich *q’oor*, Moch *q’o’ch*.
- **q’uuh* ‘to shell, to scrub, to crush’: Yuc *k’ut*, Itz *k’ut*, Hua *k’uch-*, Chl *k’ut-*, Tzo *k’ut*, Tze *k’ut-*, Mam *q’uuch-*, Ixh *q’uch-*, Awa *q’uuch-*, Kaq *q’ut-*, Tz’ut *q’ut*, K’ich *q’uut-*, Moch *q’uuch*, Toj *k’ut-*.
- **q’U* ‘bird nest, clothes’: Yuc *k’u*’, Itz *k’u*’, Mop *k’u*’, Hua *k’u-*, Chl *k’u*’, Tzo *k’u-*’, Tze *k’u-*’, Tek *q’uu*’, Mam *q’uu*’, Kaq *q’u*’, Tz’ut *q’uu*’, K’ich *-q’uu*’, Moch *q’uu*’, Toj *k’u*’, Chu *k’u*’.

- **ra'h* 'spicy, painful, sick, wounded': Yuc *yah*, Itz *yah*, Mop *yah-*, Hua *yaw-*, Chl *yah*, Chn *yah*, Ch'r *yah-*, Tzo *ya*, Tze *ya*, Tek *taay*, Ixh *tay-*, Pqch *raah*, K'ich *rah*, Q'eq *ra*, Moch *cha'h*, Q'an *ya*, Aka *yaa-*, Jak *ya*, Toj *yah*, Chu *ya*.
- **ra'x* 'green, unripe': Yuc *yá'ax*, Itz *ya'ax*, Mop *ya'ax*, Hua *yax-*, Chi <*yax-*>, Chl *yäx-*, Chn *yäx*, Ch'r *yax-*, Chlt <*yax*>, Tzo *yox*, Tze *yax*, Tek *txa'xh*, Mam *cha'x*, Ixh *tax-/cha'x*, Awa *txa'x/yax*, Pqch *rax*, Kaq *rax*, Tz'ut *rax*, K'ich *rax*, Q'eq *rax*, Moch *chex*, Q'an *yax*, Aka *yaax*, Jak *yax*, Toj *ya'ax*, Chu *ya'ax*. [Alternatively, two related etyma may pertain to this set, **rax* and **raa'x*. Except for forms in boldface, all the above are regular reflexes of pM **ra'x*. If **ra'x* is abandoned, then the set is analyzed as involving two related etyma, **rax* and **raa'x*. Expected reflexes of **rax* are found in Hua, Chl, Chn, Ch'r, Tzo, Tze, Ixh (with *tax-*), Awa (with *yax*), Pqch, Kaq, Tz'ut, K'ich, Q'eq, Q'an, and Jak. Expected reflexes of **raa'x* are found in Yuc, Itz, Mop, Ch'r, Tze, Tek, Mam, Ixh (with *cha'x*, should be *ta'x*), Awa (with *txa'x*), Q'eq, Q'an, Aka, Jak, Toj, and Chu. Moch remains irregular under all the alternative analyses.]
- **ri'j* 'old, mature': Yuc *yí'ih*, Itz *yi'ih*, Hua *yeh-*, Tzo *yih*, Tze *yij*, Tek *tiij*, Mam *tiij*, Ixh *tij*, Awa *tiij*, Kaq *ri'j*, Tz'ut *ri'j*, K'ich *ri'j*, Moch *chi'h*, Aka *yij-*, Jak *yij-*, Toj *yih*.
- **sahk'* 'grasshopper': Yuc *sáak'*, Itz *saak'*, Mop *saak'*, Chl *sahk'*, Ch'r *sahk*, Ixh *sak'*, Awa *saak'*, Kaq *saak'*, Tz'ut *saak'*, Q'eq *saak'*.
- **sahm* 'evening, morning': Yuc *sáam*, Itz *sam-*, Mop *sam-*, Hua *tham-*, Chl *sahm-*, Chn *sam-*, Ch'r *sahm-*, Tzo *sam-*.
- **saq* 'white': Yuc *sak*, Itz *säk*, Mop *säk*, Hua *thak-*, Chi <*sak-*>, Chl *säk*, Chn *säk*, Ch'r *sak*, Chlt <*zac*>, Tzo *sak*, Tze *sak*, Tek *saq*, Mam *saq*, Ixh *saq*, Awa *saq*, Pqch *saq*, Kaq *saq*, Tz'ut *saq*, K'ich *saq*, Q'eq *saq*, Moch *saq*, Q'an *saq*, Aka *saj*, Jak *saj*, Toj *sak*, Chu *sak*.
- **sat* 'to lose': Yuc *sat*, Itz *sät*, Mop *sät*, Chl *sät*, Chn *sät*, Moch *sat*, Chu *sat*.
- **saal* 'mange': Yuc *sàal*, Mop *sal*, Hua *thaal*, Chl *sal*, Ch'r *sar*, Chlt <*çal*>, Tzo *sal*, Tze *sal*, Mam *saal*, Ixh *sal*, Awa *saal*, Pqch *saal*, Kaq *sal-*, Tz'ut *saal*, K'ich *saal*, Q'eq *sal*, Moch *saal*, Q'an *sal*, Aka *sal*, Jak *sal*, Chu *sal/sa'l*.
- **sehb'* 'rapid': Yuc *séeb'*, Itz *seeb'*, Mop *seeb'*, Hua *thub-*, Chl *sehb'*, Chn *seb'*, Ixh *seb'*, Q'eq *seeb'*, Aka *seb'*, Chu *seb'*.
- **sihm* 'mucus': Yuc *siim*, Itz *siim*, Mop *siim*, Hua *thim-*, Chl *sihm-*, Chn *sim-*, Ch'r *sihm*, Chlt <*zim/zihm*>, Tzo *sim-*, Tze *sihm*, Ixh *sim-*, Kaq *sim-*, Toj *sihm-*, Chu *sim*.
- **sii'k* 'cold, chilled, numb': Tzo *sik*, Tze *sik*, Ixh *sik-*, Pqch *siik*, Kaq *siik*, Tz'ut *siik*, K'ich *sik-*, Q'eq *sik*, Moch *si'k*, Q'an *sik*, Aka *sik*, Jak *sik-*, Chu *si'ik*.
- **si'* 'firewood': Yuc *si'*, Itz *si'*, Mop *si'*, Hua *thi'*, Chi <*si*>, Chl *si'*, Chn *si'*, Ch'r *si'*, Chlt <*zi*>, Tzo *si'*, Tze *si'*, Tek *sii'*, Mam *sii'*, Ixh *si'*, Awa *sii'*, Pqch *sii'*, Kaq *si'*, Tz'ut *sii'*, K'ich *sii'*, Q'eq *si'*, Moch *sii'*, Q'an *si'*, Aka *si'*, Jak *si'*, Toj *si'*.
- **sohl* 'to skin, peel': Yuc *sóol*, Itz *sool*, Mop *sool*, Ch'r *sohr-*, Tzo *sol-*, Mam *sool*, Ixh *sol*, Awa *sool-*, Kaq *sol-*, Tz'ut *sohl/sol*, Q'eq *sol*, Chu *sol-*.
- **soohtz'* 'bat': Yuc *sòotz'*, Itz *sotz'*, Mop *sotz'*, Hua *thut'*, Chi <*so*>, Chl *sutz'*, Chn *sutz'*, Ch'r *sutz'*, Chlt <*zut*>, Tzo *sotz'*, Tze *sotz'*, Tek *sootz'*, Ixh *sotz'*, Awa *sootz'*, Pqch *sootz'*, Kaq *sootz'*, Tz'ut *sootz'*, K'ich *sootz'*, Q'eq *sotz'*, Moch *sootz'*, Aka *sotz'*, Jak *sotz'*, Toj *sotz'*, Chu *sotz'*.

- **soo'ty* 'rattle, rattlesnake': Yuc <*so'ot*>, Hua *thoot*, Chi <*sot-*>, Tzo *sot*, Tze *sot*, Awa *so'tz*, Kaq *soch-*, Tz'ut *sooch*, K'ich *soch-*, Aka *sot*, Jak *sot*, Toj *so'ot*.
- **suh* or **sUh* 'belly, uterus': Hua *thu'-*, Q'eq *su*, Toj *suh-*.
- **suut* or **suuht* 'to twirl, turn, return': Yuc *sut*, Itz *sut*, Mop *sut*, Chl *sut-*, Chn *sut-*, Ch'r *sut-*, Chlt <*zut*>, Tzo *sut-*, Tze *sut-*, Tek *suut-*, Mam *suut-*, Ixh *sut-*, Awa *suut-*, Pqch *sut*, Kaq *sut-*, Tz'ut *suut*, K'ich *suut*, Q'eq *sut*, Moch *su't*, Toj *sut*.
- **su'n* 'sunflower': Yuc *sú'um*, Chl *sun*, Tzo *sun*, Tze *-sun*, Mam *su'n*, Ixh *su'n*, Awa *su'n*, Kaq *su'n*, Tz'ut *su'm*, K'ich *su'n*, Q'eq *sun*, Jak *sun*, Chu *su'un*.
- **tah* or **tyah* or **tAh* or **tyAh* 'at times': Hua *ta'-*, Chl *tah-*. [This set may be explained by language contact.]
- **teehm* 'bench': Yuc *chèem*, Itz *chem*, Mop *chem*, Hua *-tem*, Chl *tem*, Chn *tem*, Chlt <*tem*>, Tzo *tem*, Ixh *chem*, Awa *cheem*, Kaq *teem*, Tz'ut *teem*, K'ich *teem*, Q'eq *tem*, Q'an *-chem*, Aka *chem*, Jak *chem*.
- **tiq* 'plural suffix': Hua *-chik*, Tzo *-tik*, Tze *-tik*, K'ich *tiq-*, Toj *-tik*.
- **ti'* 'to eat meat, to bite': Yuc *chi'*, Itz *chi'*, Tzo *ti'-*, Tze *ti'-*, Tek *chi'*, Mam *chi'*, Ixh *chi'-*, Awa *chi'-*, Kaq *ti'-*, Tz'ut *ti'*, K'ich *ti'-*, Q'eq *ti'-*, Moch *chi'*, Q'an *chi*, Aka *chi'*, Toj *ti'-*, Chu *chi'-*.
- **tiihs* 'fart': Yuc *tis*, Hua *tith*, Chl *tis*, Chn *tis*, Chu *tis*. [This set is probably onomatopoeic but nevertheless is phonologically regular.]
- **toj* 'to pay': Yuc *toh-*, Chl *toh-*, Chn *toh-*, Ch'r *toh-*, Chlt <*toh-*>, Tzo *toh-*, Tze *toj-*, Tek *choj-*, Mam *choj*, Ixh *choj*, Awa *choj*, Kaq *toj*, Tz'ut *toj*, K'ich *toj-*, Q'eq *toj-*, Q'an *toj*, Aka *too-*, Jak *toh-*, Chu *toj-*.
- **toohng* 'stone': Yuc *tùun*, Itz *tun*, Mop *tun-*, Chl *tun*, Chn *-tun*, Ch'r *tun*, Chlt <*tun*>, Tzo *ton*, Tze *ton*, Moch *toong*, Aka *ton-*, Jak *tong*, Toj *ton*.
- **tuhtz'* 'frog': Chl *tuhtz'*, Kaq *-tuutz'*, K'ich *-tuutz'*.
- **tuu'hx* 'vagina, female': Yuc *tùux*, Itz *tux*, Ch'r *tux*, Ixh *tux*, Awa *tuux*, Kaq *-tux*, Tz'ut *tuux-*, K'ich *-tux-/tu'x*, Q'eq *tux*, Moch *tu'x*, Toj *tux*.
- **t'iiw* 'eagle': Mop *t'iiw*, Hua *t'iiw*, Ch'r *t'iw*, Mam *t'iiw*, Q'eq *t'iw*, Moch *t'iiw*, Jak *t'iw*, Chu *t'iw*.
- **tyaj* 'pine': Yuc *tah*, Itz *täh*, Hua *tah-*, Chi <*ta/taj*>, Chl *tah*, Ch'r *tah-*, Chlt <*tah*>, Tzo *toh*, Tze *taj*, Tek *tzaj*, Mam *tzaj*, Ixh *tzaj*, Pqch *chaj*, Kaq *chaj*, Tz'ut *chaj*, K'ich *chaj*, Q'eq *chaj*, Moch *tah*, Q'an *taj*, Aka *taa*, Jak *tah*, Toj *tah*, Chu *taj*.
- **tyaq'* 'to answer': Hua *tak'-*, Chn *tak'-*, Tzo *tak'*, Tek *tzaq'-*, Mam *tzaq'-*, Ixh *tzaq'-*, Pqch *chaq'-*, Q'eq *chaq'-*, Moch *taq'*, Q'an *taq'*, Jak *taq'*.
- **tyaty* 'thick': Yuc *tat*, Itz *tät*, Mop *tät*, Chl *tät*, Chn *tät*, Chlt <*tät*>, Tzo *tot*, Tze *tat*, Tek *tzatz*, Mam *tzatz*, Ixh *tzatz*, Pqch *sas*, Moch *tat*, Q'an *tat*, Aka *tat*, Jak *tat*, Toj *tat*, Chu *tat*.
- **tyaal* 'to come': Yuc *tàal*, Itz *tal*, Mop *tal-*, Hua *taal*, Chl *tääl*, Chlt <*tal-*>, Tzo *tal-*, Tze *tal-*, Pqch *chal-*, Q'eq *chal-*, Toj *tzal-*.
- **tyaa'ng* 'lime, ash': Yuc *tá'an*, Itz *ta'an*, Mop *ta'an*, Hua *tay'*, Chi <*tai*>, Chl *tan*, Chn *tan*, Ch'r *tan*, Chlt <*tan-*>, Tzo *tan*, Tek *tza'j*, Mam *tza'j*, Ixh *tza'*, Awa *tza'j*, Pqch *chaj-*, Kaq *chaaj*, Tz'ut *chaaj*, K'ich *chaaj*, Q'eq *cha*, Moch *ta'ng*, Q'an *tan*, Aka *taan*, Jak *tang*, Toj *ta'an*, Chu *tang*.
- **tyE'* 'tree, wood': Yuc *che'*, Itz *che'*, Mop *che'*, Hua *te'*, Chi <*te/té*>, Chl *te'*, Chn *te'*, Ch'r *te'*, Chlt <*te/che*>, Tzo *te'*, Tek *tzee'*, Mam *tzee'*, Ixh *tze'*, Awa *tzee'*, Pqch

- chee'*, Kaq *che'*, Tz'ut *chee'*, K'ich *chee'*, Moch *tee'*, Q'an *te'*, Aka *te'*, Jak *te'*, Toj *te'*, Chu *te'*.
- **tyi'* or **tyii'* 'mouth': Yuc *chi'*, Itz *chi'*, Mop *chi'*, Chl *ti'*, Chn *ti'*, Ch'r *ti'*, Chlt <*ti*>, Tzo *ti'*, Tze *-ti'*, Tek *tzii'*, Mam *tzii'*, Ixh *tzi'*, Awa *-tzii'*, Pqch *chii'*, Kaq *chi'*-, Tz'ut *chii'*, Moch *tii'*, Q'an *ti'*-, Aka *ti'*-, Jak *ti'*-, Toj *ti'*, Chu *ti'*.
- **tyuhb'* 'to spit': Yuc *túub'*, Itz *tuu'*, Mop *tuub'*, Hua *tub-*, Chl *tuhb'*, Chn *tub'*, Ch'r *tuhb'*, Chlt <*tub-*>, Tzo *tub'*, Tze *tuhb'*-, Tek *tzuub'*-, Mam *tzuub'*, Ixh *tzub'*, Pqch *chuhb'*, Kaq ***chub'***-, Tz'ut ***chuub'***, K'ich *chuub'*, Q'eq ***chuub'***, Moch *chuub'*, Q'an *tzub'*-, Aka *tzub'*, Jak *tzub'*-, Toj *tzuhb'*-, Chu *tzub'*.
- **tyuu'h* 'stinking': Yuc *tú'u-*, Itz *tu'u-*, Mop *tu'uh*, Chl *tuw*, Chn *tuh*, Ch'r *tuh-*, Tzo *tu*, Tze *tuh*, Tek *tzú'j*, Mam *tzú'w*, Ixh *tzú'w-*, Awa *tzú'j*, Pqch ***chuh***, Kaq ***chuw***, Tz'ut ***chuw***, K'ich ***chuh***, Q'eq *chu*, Moch *tu'h*, Toj *tu'uh*. [Proto-Mayan **tyuu'h* is the only reconstructed form with the nucleus *VV' that shows stem-final **h*. Stem-final **h* (like stem-final *') more than occasionally influences the preceding syllable nucleus, producing reflexes having nuclei different from those not ending in **h* (for examples, see tables 10–12). Possibly, the four unexpected words (in boldface) from K'ichee'an languages actually show nuclei that should be anticipated when pM *VV' is immediately followed by stem-final **h*.]
- **ty'il* 'to toast, singe': Hua *t'il-*, Chl *ch'il*, Chn *ch'il-*, Ch'r ***ch'ihr-***, Tzo *ch'il*, Tze *ch'il-*, Mam ***ch'i'l***, Ixh *ch'il-*, Awa ***ch'iil***, Kaq *ch'il-*, Tz'ut *ch'il-*, K'ich *ch'il-*, Jak *ch'il-*.
- **tA'* 'shit': Yuc *ta'*, Itz *ta'*, Mop *ta'*, Hua *ta'*, Chl *ta'*, Chn *ta'*, Ch'r *ta'*, Chlt <*ta*>, Tzo *tzo'*, Tze *tza'*, Tek *txaa'*, Mam *txaa'*, Ixh *txa'*, Awa *txaa'*, Pqch *saa'*, Q'eq *sa'*, Moch *tzaa'*, Q'an *tza'*-, Aka *tza'*-, Jak *tza'*-, Chu *tza'*. [Lyle Campbell (personal communication) speculates that more than one etyma may be involved with this set, a reasonable proposal since initial consonants of forms in Yucatecan, Cholán, and Mamean languages are all unexpected.]
- **tzeh* 'raw, young': Yua *teh-*, Chl *tzih*, Ch'r *tzih-*, Tzo *tze*, Tze *tze*, Jak *tzeh*.
- **tze'* 'to laugh': Yuc *ché'-*, Itz *che'-*, Mop *che'-*, Hua *te'-*, Chl *tze'-*, Chn *tze'-*, Ch'r *tze'-*, Tzo *tze'-*, Tze *tze'-*, Mam *tze*, Ixh *tze'*, Awa *tze'-*, Pqch *se'-*, Kaq *tze'-*, Tz'ut *tze-*, K'ich *tze'*, Q'eq *se'*, Moch *tze'-*, Q'an *tze'-*, Aka ***tzee***, Jak *tze'*, Toj *tze'-*, Chu *tze'-*.
- **tzoo'n* 'moss, hair': Yuc *chó'om*, Chl *tzun-*, Ch'r *tzun*, Tzo *tzon-*, Tze *tzon-*, Q'eq *tzon-*. [The Q'eq form may be a loan, in which case this set does not attest to a pM form.]
- **tzoo'tz* 'hair, fur': Yuc *tzó'otz*, Itz *tzo'otz*, Mop *tzo'otz*, Chl *tzutz*, Chn *-tzutz-*, Ch'r *tzutz*, Chlt <*tzutz*>, Tzo *tzotz*, Tze *tzotz*, Toj *tzo'otz*. [The Toj form may be a loan, in which case this set does not attest to a pM form.]
- **tzuh* 'bottlegourd': Yuc *chúuh*, Itz *chuh*, Mop *chuh*, Hua *tu'*, Chi <*tu*>, Tzo *tzú*, Tze *tzú*, Mam *tzú*, Ixh *tzuj*, Awa *tzúu'*, Pqch *suh*, Kaq *tzúuy*, Tz'ut ***tzúhy***, K'ich *tzuh*, Q'eq *su*, Moch *tzuh*, Q'an *tzú*, Aka ***tzú***, Jak *tzuh*, Toj *tzuh*, Chu *tzú*.
- **tzuh*s 'to obstruct': Mop *tzúus-*, Hua *tuth-*. [This set may be explained by language contact.]

- **tzuy* ‘to sew, join together, tie together’: Yuc *chuy*, Itz *chuy*, Mop *chuy*, Hua *chu-*, Chl *tzuy*, Ch’r *tzuy-*, Chlt <*chuy-*>, Ixh *tzuy-*, K’ich *tzuy-*, Moch *tzuy-*.
- **tzuuhq* ‘belly’: Yuc *tzùuk*, Itz *tzuk*, Hua *chuk-*, Chi <*tuc-*>, Tzo *tzuk-*, Tze *tzuk-*, Q’an *tzuk-*, Aka *tzuk-*, Chu *tzuk-*.
- **tz’ahq* ‘stone pile’: Yuc *tz’ak*, Itz *tz’aak*, Chl *tz’ahk*, Ch’r *tz’ahk-*, Tzo *tz’ak*, Tze *tz’ahk*, Mam *tz’aq-*, Pqch *tz’aq*, Tz’ut *tz’aaq*, K’ich *tz’aaq*, Q’eq *tz’ak*, Moch *tz’aaq-*, Q’an *tz’aq*, Aka *tz’aj-*, Jak *tz’aj-*, Toj *tz’ak-*, Chu *tz’ak-*.
- **tz’aq* ‘complete (adjective)’: Chl *tz’äk-*, Chn *tz’äk-*, Ch’r *tz’ak-*, Tzo *tz’ak*, Tze *tz’ak-*, Mam *tz’aq-*, Ixh *tz’aq-*, Awa *tz’aq-*, Kaq *tz’aq-*, Tz’ut *tz’aq-*, Q’eq *tz’aq-*, Moch *tz’aq*, Q’an *tz’aq-*, Jak *tz’aj-*, Chu *tz’ak-*.
- **tz’ihb’* ‘to draw’ (later, ‘to write’): Yuc *tz’iib’*, Itz *tz’iib’*, Mop *tz’iib’*, Hua *t’ip-*, Chl *tz’ihb’-*, Chn *tz’ib’-*, Ch’r *tz’ihb’-*, Chlt <*tzib-*>, Tzo *tz’ib’-*, Tze *tz’ihb’-*, Tek *tz’iib’-*, Mam *tz’iib’*, Ixh *tz’ib’-*, Awa *tz’iib’-*, Pqch *tz’ihb’*, Kaq *tz’iib’*, Tz’ut *tz’ihb’*, K’ich *tz’iib’*, Q’eq *tz’iib’*, Moch *tz’iib’*, Q’an *tz’ib’*, Aka *tz’ib’-*, Jak *tz’ib’*, Toj *tz’ihb’-*, Chu *tz’ib’*.
- **tz’ihn* ‘yucca’: Yuc *tz’iin*, Itz *tz’iim*, Mop *tz’iin*, Hua *t’in-*, Chi <*tzin-/tz’in-/chin-*>, Chl *tz’ihn*, Chn *tz’in*, Ch’r *tz’in-*, Chlt <*tzin*>, Tzo *tz’in*, Tze *tz’in*, Ixh *tz’in*, Awa *tz’iin*, Pqch *tz’iin*, Kaq *tz’iin*, Tz’ut *tz’iin*, K’ich *tz’iin*, Q’eq *tz’in*, Moch *tz’in-*, Q’an *tz’in*, Jak *tz’in-*, Toj *tz’in-*.
- **tz’is* ‘to sew’: Hua *t’ith-*, Chl *tz’is*, Tzo *tz’is*, Tze *tz’is-*, Awa *tz’is/tz’iis*, Kaq *tz’is-*, Moch *tz’is*, Q’an *tz’is*, Aka *tz’is*, Toj *tz’is*, Chu *tz’is*.
- **tz’i’* ‘dog, small deer’: Hua *t’i’-*, Chl *tz’i’*, Ch’r *tz’i’*, Chlt <*tzì*>, Tzo *tz’i’*, Tze *tz’i’*, Tek *tx’i’-*, Mam *tx’y-*, Ixh *tx’i’*, Awa *tx’i’*, Pqch *tz’i’*, Tz’ut *tz’i’*, K’ich *tz’i’*, Q’eq *tz’i’*, Moch *ch’i’*, Q’an *tx’i*, Aka *tx’i’*, Jak *tx’i’*, Toj *tz’i’*, Chu *tz’i’*.
- **tz’oohl* ‘to peel, to skin’: Yuc *tz’òol*, Itz *tz’ol*, Chl *tz’ul*, Ch’r *tz’uhr-*, Mam *tz’ol*, Ixh *tz’ol-*, Jak *tz’ol-*.
- **tz’ut* ‘corn tassel’: Hua *t’uch-*, Tzo *tz’ut-*, Tze *tz’ut-*, Ixh *tz’uch-*, Tz’ut *tz’ut-*, Q’eq *tz’ut-*, Jak *ch’uch*, Toj *tz’ut-*.
- **tz’u’* ‘to suck’: Yuc *tz’ù’-*, Chl *tz’u’-*, Chn *tz’u’-*, Ch’r *tz’u’-*, Tzo *tz’u’-*, Tze *tz’u’-*, Tek *tz’u’-*, Kaq *tz’u’-*, Tz’ut *tz’u’-*, K’ich *tz’u’-*, Moch *tz’u’*.
- **uhtz’* ‘to kiss, to sniff’: Yuc *úutz’*, Itz *utz’*, Mop *utz’-*, Chl *uhtz’-*, Chn *utz’-*, Ch’r *uhtz’-*, Tzo *utz’-*, Tze *uhtz’-*, Pqch *uhtz’-*, Q’eq *utz’-*, Toj *uhtz’-*.
- **uk’* ‘louse’: Yuc *uk’*, Itz *uk’*, Mop *uk’*, Hua *utz’*, Chi <*uch*>, Chl *uch’*, Chn *uch’*, Ch’r *uch*, Tzo *uch’*, Tze *uch’*, Mam *uk’*, Ixh *uk’*, Pqch *uk’*, Kaq *uk’*, Tz’ut *uk’*, K’ich *uk’*, Q’eq *uk’*, Moch *uk’*, Q’an *uk’*, Aka *uk’*, Jak *uk’*, Toj *uk’*, Chu *uk’*.
- **uk’* ‘to drink’: Yuc *uk’*, Itz *uk’*, Mop *uk’*, Hua *utz’*, Chl *uch’*, Chn *uch’*, Ch’r *uch’*, Tzo *uch’*, Tze *uch’*, Tek *uk’*, Ixh *uk’*, Awa *uk’-*, Pqch *uk’-*, Kaq *uk’*, K’ich *uk’-*, Q’eq *uk’*, Moch *uk’*, Q’an *uk’*, Aka *uk’*, Jak *uk’-*, Toj *uk’*, Chu *uk’*.
- **ut* ‘to be able, to do, to happen’: Yuc *úuch*, Itz *uch*, Mop *uch-*, Chn *ut-*, Ixh *uch-*, Moch *ut*, Q’an *ut-*, Aka *ut-*, Jak *ut-*, Chu *ut-*.
- **uty* ‘to mutter, say’: Hua *uch-*, Chn *ut-*, Tzo *ut-*, Tze *ut-*, Kaq *uch-*, K’ich *-uch-*, Moch *ut*, Toj *ut-*.
- **uuh* ‘moon, bead, necklace’: Yuc *uh*, Itz *uh*, Mop *uh*, Hua *ow-*, Chl *uh-*, Chn *uh*, Ch’r *-uh-*, Chlt <*u*>, Tzo *u*, Tze *u*, Tek *uuw-*, Mam *uuw-*, Ixh *uj*, Awa *-uuw*, Pqch *uuh*, Moch *uuh*, Q’an *u’-*, Aka *u’*, Jak *uw-*, Toj *uh*, Chu *uh*.

- **uul* or **Ul* 'snail, slug': Yuc *úul*, Lac *ul-*, Hua *uul*, Chi <*ul*>, Ixh *ul*.
- **waj* 'to sprinkle, scatter, sow': Yuc *wah*, Hua *wah-*, Tzo *wah*, Tze *waj-*. [This set may be explained by language contact.]
- **wajb* 'drum': Hua *ahab*, Chi <*ajau/ahau*>, Tzo *wob'*, Q'eq *wajb'*, Moch *wahab'*, Q'an *wajab'*, Aka *waab'*, Jak *ahab'*, Toj *wahab'-*, Chu *wajab'*.
- **war* 'to sleep': Yuc *way-*, Mop *wäy-*, Hua *way-*, Chl *wäy-*, Chn *wäy-*, Ch'r *way-*, Tzo *way*, Tze *way-*, Tek *wat-*, Mam *wat*, Ixh *wat-*, Awa *waat-*, Pqch *war*, Kaq *war*, Tz'ut *-war*, K'ich *-war-*, Q'eq *-war*, Moch *wach*, Q'an *way-*, Aka *wey-*, Jak *way-*, Toj *way*, Chu *way-*.
- **wa'* 'to stand upright': Yuc *wá'-*, Itz *wa'*, Mop *wa'-*, Chl *wa'-*, Chn *wa'-*, Ch'r *wa'-*, Tzo *wa'-*, Tek *wa'-*, Mam *wa'-*, K'ich *wa'-*, Moch *wa'*, Q'an *wa-*, Aka *wa-*, Chu *wa'-*.
- **wa'* 'proximate deictic root: this/here/now': Itz *wa'-*, Mop *wa'-*, Kaq *wa'*, Tz'ut *-wa'*.
- **waaj* 'tortilla': Yuc *wàah*, Itz *wah*, Mop *wah*, Chl *wah*, Chn *wah*, Tzo *wah*, Tze *waj*, Awa *waj*, Jak *wah*, Toj *wah*.
- **waak* 'twigs': Tzo *wach'*, Ixh *wak'-*, Kaq *wak'-*, K'ich *wak'-*, Moch *waak'*, Toj *wach'*.
- **waan* 'certainly, perhaps': Tzo *wan*, Tze *wan*, Tz'ut *waan*.
- **waahq* 'to break': Tzo *wok'*, Tze *wak'-*, Mam *waaq'*, Awa *waaq'-*, Aka *waq'-*.
- **wAy* 'sapote seed, pimple': Chl *way*, Chn *-way*, Ch'r *way*, Kaq *way*, K'ich *way-*, Q'an *way*, Aka *wey*, Chu *way*.
- **weex* or **weehx* 'trousers': Yuc *èex*, Itz *wex*, Mop *wex*, Chl *wex*, Chn *wex*, Chlt <*vex*>, Tzo *wex-*, Tze *wex*, Tek *weexh*, Mam *weex-*, Ixh *wex*, Awa *weex*, Pqch *weex*, K'ich *weex*, Q'eq *wex*, Moch *wex*, Q'an *wex-*, Aka *wex-*, Jak *wex-*, Toj *wex*, Chu *wex*. [Possibly, Hua *eex* 'small basket made of palm' is a member of this set. If so, then **weex* rather than **weehx* is the pertinent reconstruction for Proto-Mayan.]
- **witz* or **wItz* 'mountain, hill': Yuc *witz*, Itz *witz*, Mop *witz*, Chl *witz*, Chn *witz*, Ch'r *witz*, Tzo *witz*, Tze *witz*, Mam *witz*, Ixh *witz*, Awa *witz*, Moch *witz*, Q'an *witz*, Aka *witz*, Jak *witz*, Toj *witz*, Chu *witz*.
- **woo* 'frog': Yuc *wo'*, Itz *wo'*, Mop *wo'*, Hua *oo'*, Tzo *-wo'*, Mam *woo'*, Awa *woo'*, Pqch *woo'*, Toj *wo'*, Chu *wo'*.
- **wul* 'to make noise, mutter, say': Hua *ul-*, Chl *wul-*, Chn *wul-*, Tzo *wul-*, Tze *wul-*, Mam *wul-*, Ixh *wul-*, Kaq *wul-*, Tz'ut *wul-*, K'ich *wul-*, Aka *wul-*, Jak *wul-*, Chu *wul-*.
- **xap* 'to put into': Hua *xap-*, Moch *xap*, Jak *xap*, Toj *xap*.
- **xaahq* 'leaf': Hua *xek-*, Chi <*sek-/sequel-*>, Chlt <*xaahc*>, Tzo *xak-*, Tze *xak-*, Tek *xhaaq*, Mam *xaaq-*, Ixh *xaq*, Awa *xaaq*, Pqch *xaaq*, Tz'ut *-xaaq*, K'ich *-xaaq*, Q'eq *xaaq*, Moch *xaaq*, Q'an *xaaq-*, Aka *xaj*, Jak *xaj*.
- **xaan* 'palm': Yuc *xá'an*, Itz *xa'an*, Mop *xa'an*, Chl *xan*, Chn *xan*, Ch'r *xan*, Tzo *xan*, Tze *xahn*, Mam *xa'j*, Moch *xa'n*, Q'an *xan*, Jak *xang*, Toj *xa'an*, Chu *xan*.
- **xAt* 'forked pole, forked legs': Chl *xat*, Tze *xat*, Ixh *xach*, Kaq *xat-*, K'ich *xat*.
- **xehl* 'leftover': Chlt <*xel-*>, Ixh *xel-*, K'ich *-xeer*, Q'eq *xeel*, Moch *xeel-*.
- **xeeh* or **xEh* 'vomit': Yuc *xeh*, Itz *xeh*, Mop *xeh*, Chl *xeh*, Chn *xeh*, Ch'r *xeh*, Chlt <*xee*>, Tzo *xe-*, Tze *xe*, Awa *xaa'-*, Moch *xeeh*, Toj *xeh*, Chu *xej*.

- **xee'p* 'tamal with bean filling': Mop *xee'p*, Mam *xe'p*, Ixh *xe'p*, Pqch *xee'p*, Tz'ut *xee'p*, Q'eq *xep*, Q'an *xep*, Aka *xep*. [The Mop form may be a loan from a K'ichee'an language, in which case this cognate set does not attest to a pM form.]
- **xi'* 'hair, to comb': Hua *xi'*, Tek *xhi'*, Mam *xii'*, Ixh *xi-*, Awa *xi'*, Moch *xi'*, Q'an *xi'*, Aka *xi'*, Jak *xi'*, Chu *xi'*.
- **xiib'* 'male': Yuc *xiib'*, Itz *xiib'*, Hua *xib-*, Ch'r *-xib'*, Tzo *xib'-*, Tek *xhiib'-*, Mam *-xiib'-*, Ixh *xib'-*, Awa *xiib'-*, Pqch *xib'-*, Kaq *xib'-*, Tz'ut *xiib'*, Moch *xiib'*, Chu *xib'*.
- **yaq'* 'to thrust (as in intercourse), to massage': Tzo *yak'*, Mam *yaq'*, Awa *yaq'-*, Tz'ut *yaq'*, K'ich *yaq'-*.
- **yaahj* 'pain, frail': Hua *yah-*, Tzo *yoh-*, Tze *yah*, Tek *yaaj*, Mam *yaaj*, Q'eq *yaj*, Q'an *yaj*.
- **yaan* 'more, other, another': Yuc *yàan-*, Itz *yan*, Mop *yan*, Hua *yaan*, Chl *yam-*, Chlt <*yan-*>, Tzo *yan*, Tze *yan*. [This set may be partly explained by language contact.]
- **yaa'* 'soft spot (on head)': Yuc *yá'-*, Itz *ya'-*, Mop *ya'-*, Tzo *ya'-*, Tze *ya'-*, Ixh *ya'-*, Kaq *ya'*, Tz'ut *yaa'*.
- **yaa'w* 'sick, illness, pain': Tzo *yaw-*, Ixh *ya'w*, Kaq *yaw-*, Tz'ut *yaaw-*, K'ich *yaw-*, Aka *yaaw-*, Jak *yaw-*, Toj *yaw*.
- **yol* 'smooth, slippery': Hua *ol-*, Ixh *yol-*, Awa *yul-*, K'ich *yol-*, Q'eq *yol-*, Q'an *yol-*, Aka *yol-*, Jak *yol-*, Chu *yol-*.
- **yool* 'word, to speak': Hua *ool*, Tek *yool*, Mam *yool*, Ixh *yol*, Kaq *yool*.
- **yuhk* 'to shake, to move': Yuc *yúuk*, Chl *yuhk*, Chn *yuk*, Ch'r *yuhk*, Mam *yuuk*, Awa *yuuk-*, Q'an *yuk*, Aka *yuk-*, Jak *yuk*, Chu *yuk*.
- **yuhl* 'to anoint, to rub, to plane': Yuc *yúul*, Itz *yuul-*, Mop *yuul*, Mam *yuul*, Ixh *yul-*, Kaq *yul*, Q'eq *yul-*.

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