

**PROTO-MAYAN ee, oo >  
PROTO-CH'OLAN e/i, o/u:  
REGULAR OR SPORADIC  
SOUND CHANGE?**

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# BACKGROUND

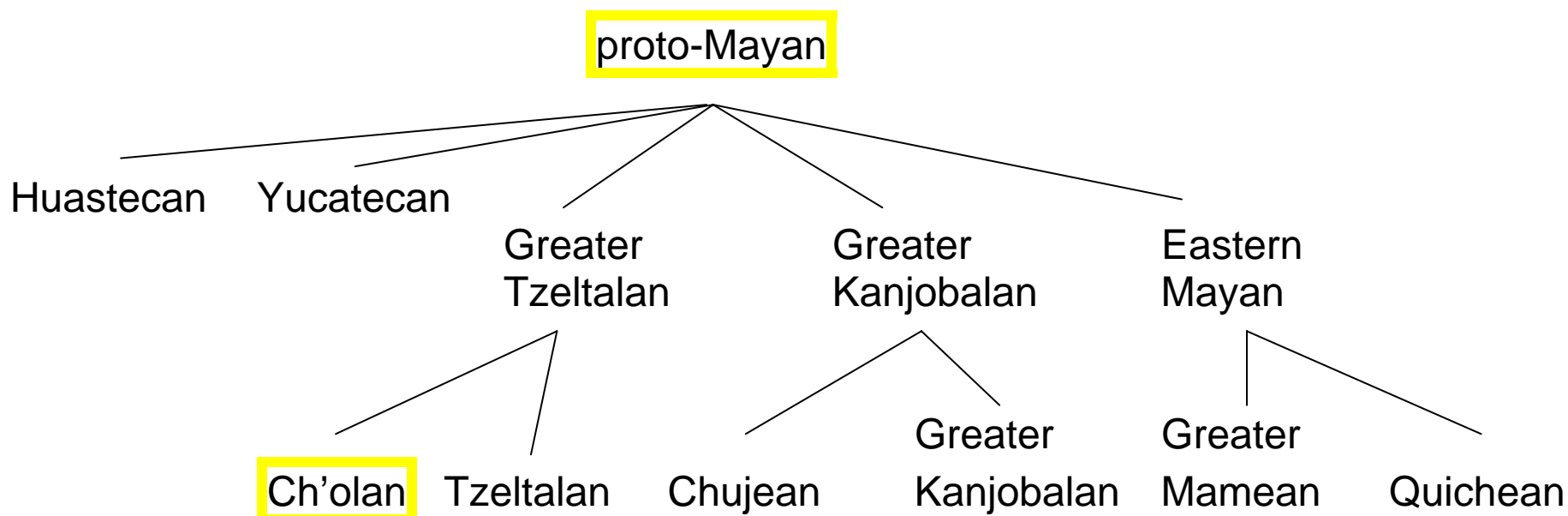
proto-Mayan: pre-2200 BCE, spoken in highlands of modern day Guatemala (Kaufman 1976)

vowel inventory: a, e, i, o, u, aa, ee, ii, oo, uu (Kaufman and Norman 1984)

proto-Ch'olan: circa 100 CE, spoken in lowlands on eastern side of Usumacinta River, in modern day Mexico (Kaufman 1976)

vowel inventory: a, e, i, o, u (Kaufman and Norman 1984)

*Genetic relations of Mayan subgroups* (Kaufman and Norman 1984):



# INTRODUCTION TO THE PROBLEM

the long mid vowels of proto-Mayan split in proto-Ch'olan:

\*\*ee > \*ee, \*ii; \*\*oo > \*oo, \*uu

after split, long and short vowels merge: \*\*VV > \*V

Is the split regular or sporadic?

Kaufman and Norman (1984: 87) have assumed the change is sporadic:

*“...this change is neither regular nor pervasive, i.e. there are more cases where it does not take place than where it occurs.”*

however, a closer look at the data reveals regular patterns

blocking environments: raising never happens after certain segments

conditioning environments: affix-conditioned vowel harmony

*hypothesis*: the split was a **regular sound change**

- mid vowel raising occurs in roots that commonly took a suffix with a high vowel = development of affix-conditioned vowel harmony in proto-Ch'olan (not present in proto-Mayan)
- vowel harmony was blocked in phonetically predictable environments

# THE DATA

Kaufman and Norman 1984; data in IPA instead of standard Mayan orthography

**ee				**oo			
raising		no raising		raising		no raising	
proto-Mayan	proto-Ch'olan	proto-Mayan	proto-Ch'olan	proto-Mayan	proto-Ch'olan	proto-Mayan	proto-Ch'olan
ḃeeh	ḃih	k'eʔn	tʃ 'en	kooŋ-eex	tʃun-ix	kooh	tʃoh
kehx	tʃix	eeh	eh	soʔts'	suts'	tʃ 'ool	tʃ 'ol
-eex	-ix	qeeḃ	keḃ	toŋ	tun	hoonon	honon
-eer	-i	meet	met	tsoʔn	tsun	xoox	xox
=peeḃ	=pik	ŋeeh	neh	tsoʔts	tsuts	xoʔl	xol
tseʔh	tzih	tʰeeʔ	teʔ	oʔq'	uk'	q'ot	k'ot
weetʃ '	witʃ '	teem	tem	ooŋ	un	q'oor	k'oj
		t'eel	t'el	ooʃ=	uʃ=	nooq'	nok'
		ʃeeh	ʃeh			ook	otʃ
		ʃeep	ʃep			ooq	ok
		ʃeeʃ	ʃeʃ			ooŋ-eer	oni
		weeʃ	weʃ			oor	oj
		meʔḃaaʔ	meḃaʔ			atʰootʰ	otot
						tʰooq(-al)	tokal
						t'oot'	t'ot'
						ax tsooʔ	ax tsoʔ
						ʃootʃ '	ʃotʃ'

criteria for inclusion: word must be reconstructable to proto-Mayan and directly inherited into proto-Ch'olan from proto-Mayan (i.e. no diffusion)

# BLOCKING ENVIRONMENTS

mid-vowel raising never occurs directly after

- ejectives: [-voice, +constricted glottis]
- fricatives (except [s]): [-sonorant, +continuant] but not [CORONAL, +anterior]
- tautomorphemic nasals: [+nasal]

## VOWEL HARMONY

vowels of disyllabic words in the data set all agree with respect to [ $\pm$ high]  
one exception: *oni* ‘formerly’ could be due to avoidance of homophony  
cf. *un* ‘avocado’ + commonly used suffix *iW* (Mora-Marín, p.c.)

## TESTING HYPOTHESIS: GLYPHIC EVIDENCE

Mayan hieroglyphic writing from the proposed time period of proto-Ch’olan provides a means for testing the hypothesis

- decipherment of glyphs and reconstruction of proto-languages have so far been done independently
- now well-established decipherments can be used to test proposals about proto-Ch’olan

Mayan glyphs record the Ch'olan and Yucatecan languages, specifically proto-Ch'olan (before the break-up of the Ch'olan languages) (Justeson and Campbell 1997, Justeson and Fox 1989, Mora-Marín et al. 2005; see Houston et al. 2000 for counter claim)

Is there evidence in the glyphs that a type of vowel harmony was productive in proto-Ch'olan?

Mayan glyphs: logograms and syllabograms (CV symbols)

Mayan roots = (CV)CVC; suffixes = VC

spellings with syllabograms typically end in a “fictitious” vowel:  $CVCV_1CV_1$

principle of *synharmony* (Knorozov)

when a word ends in C, the final V of the spelling will match the preceding V, i.e. ‘dog’ *tzul* = tz'u-lu

however, many spellings are disharmonic:  $CVCV_1CV_2$

a final silent V does not match the preceding V

# A THEORY OF DISHARMONY: REPRESENTATION OF SUFFIXES

final vowels (synharmonic and disharmonic) are not always silent, but sometimes represent the first vowel of a suffix (Mora-Marín 2005)

\**k'in* 'day' spelled as K'IN-ni = *uk'inil* 'his/her/its special day'  
spelling a-na-b'i for *a(j)nahb'il* 'he of the lake'

Affix Conventionalization Hypothesis (ACH):

“in phonetic spellings of root/word closing segments, the second vowel is likely to correspond to the vowel of the most common suffix or suffixes that root may exhibit in the texts” (Mora-Marín 2005)

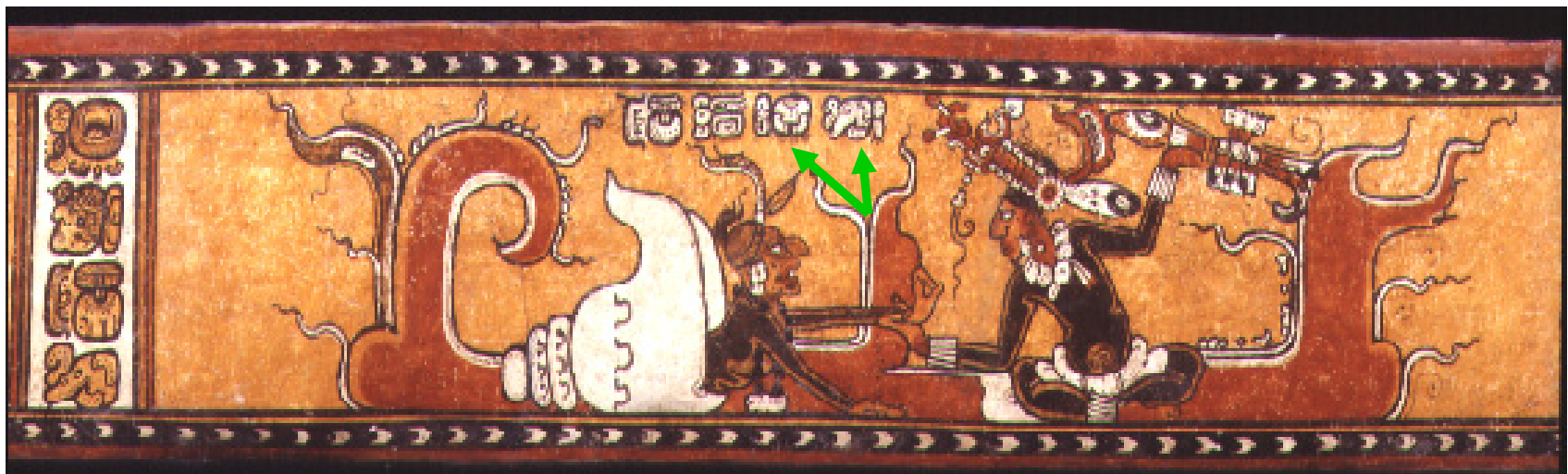
suffixes can be overtly spelled in the glyphs and, according to the ACH, glyphs can also contain indirect evidence of morphology

# IMPLICATIONS FOR FUTURE WORK

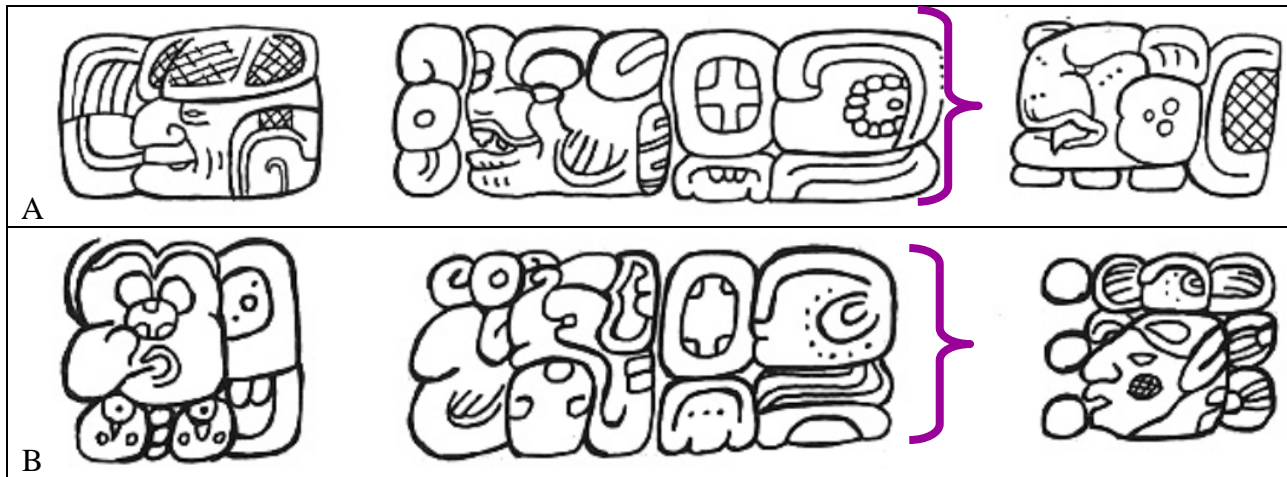
the hypothesis of vowel harmony should be tested with a thorough search for syllabic spellings of words in the data set

the following photographs and drawings show glyphic spellings that support the vowel harmony hypothesis





top: Northern Yucatan; bottom: Chama area  
**tzi-hi-li (kakawa)** *tzihil kakaw* 'fresh cocoa' cf pM tse?h



VS sentences with possessed noun as subject.

A: possessed noun spelled **K'AN-na-TUN-ni.**

B: possessed noun spelled **K'AN-na-TUN-ni-li.**

cf pM \*toon 'stone'

Drawings by David F. Mora-Marín



**u-su-tz'i-**. cf pM \*soʔts' 'bat'

## CONCLUSIONS

more work is needed, but there is no reason to assume mid vowel raising in proto-Ch'olan is sporadic

glyphic evidence can be used to either confirm or reject the vowel harmony hypothesis

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