

Supplementary Materials

The Language of Teotihuacan Writing – *Current Anthropology*, Vol. 66(5)

In this supplementary material, we present the reconstructions of Southern Uto-Aztec languages that are the basis for the proposed readings of signs in the writing system of Teotihuacan. We begin with (1) a chronological model for the development of Corachol-Nahua. And then go on to proposed readings for selected signs (2) presented in the main manuscript. For this section, we present tabulations of all of the word forms in Uto-Aztec languages on which each reconstruction is based, as well as a prose description of the arguments and principles of reconstruction, the relevant sound correspondences, and any doubts or outstanding questions. This is then followed by (3) motivated readings of signs that co-occur in sign combinations that support their phonetic readings. The supplementary materials are closed by (4) the sources for word forms and (5) the references cited.

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1. Chronological Model for the Development of Corachol-Nahua

A major issue in proposing a Uto-Aztecan language in Teotihuacan during its heyday, is what stage of development the language would be in the period AD 200-400, whether Nahuatl had split to form its own subgroup or not, and whether this subgroup could realistically have reached Central Mexico at that point. This section proposes a chronological model of the development of Corachol-Nahua and its subsequent split into the individual branches.

Dating of proto-languages can potentially be approached through lexicostatistical methods such as glottochronology, in which the percentage of shared vocabulary between two languages or proto-languages are related to a rate of lexical replacement which is presumed to be stable. The assumption of a stable rate of lexical replacement, however, has been demonstrated to be highly problematic, and there is currently a consensus among historical linguists that the question of when, cannot be established conclusively except through correlation with historical or archaeological sources. However, in the absence of such evidence, lexicostatistics is the only way of estimating quantitatively the time elapsed since languages known to be related split from each other, as long as the dates are considered provisional and approximate. Original glottochronology as proposed by Swadesh involved a constant average rate of lexical substitution across the 100 items of the basic vocabulary list, as a kind of lexical clock. Currently, new methods of lexicostatistical dating based on Bayesian modeling, offer different options for calculating likely splitting dates, based on flexible or relaxed clock models. It should be noted that missing or undetected cognates in included varieties and undetected borrowings between related languages, is a source of error in all lexicostatistical models. And this source of error is amplified when intuitive judgments of cognacy are used instead of full etymological analyses. The most recent publication of traditional glottochronological dating results for Uto-Aztecan languages is that of Wright Carr (2016:24-25). He uses the dates and data of Swadesh's original work but adds a margin of error of +/- 25% to Swadesh's (1956) dates. Swadesh sees Pochutec as a separate branch outside of Nahuatl, and does not find support for Corachol-Nahua in his 100 wordlist. This gives a split date for "Nahua-Pochuteco" ca. AD 250-750, for Proto-Nahuatl ca. AD 400-1100, and Proto-Corachol AD 100-600. Here we should note that his "Nahua Pochuteco" is in fact what we today, call Proto-Nahuatl because of Dakin's demonstration that Pochuteco is a highly innovative language within the Western branch. We also should note that documentation of Cora and Huichol was extremely limited at the time when Swadesh wrote his study, and he thereby missed several of the cognates that we can now recognize due to better knowledge of the sound processes involved in the diversification of the languages. The most recent study applying modern Bayesian lexico-statistical dating to Uto-Aztecan is that of Greenhill et al. (2020). This uses a wordlist of 121 lexical items, and cognate coding was done by experts Jane Hill and Lyle Campbell. This study does find support for Corachol Nahua and dates the Corachol-Nahua stage to ~800 BC–AD ~300, and the Proto-Nahua stage to AD ~300-1100, and the Corachol stage to AD ~300-600. Even though Campbell and Hill had much more information to base their cognacy judgments on, they will also have missed some cognates, since some of the sound changes have not yet been fully explained in the literature (but see Pharao Hansen ms. for an explanation of sound changes that allows the recognition of additional cognates). Nevertheless it is interesting to see that the dates provided by the much criticized traditional glottochronology and the modern Bayesian methods that are much more well-regarded overlap to a considerable degree.

While undetected borrowings make a relation look closer than it is, undetected cognates makes languages look less related than they are, and makes the split date appear older than it actually is. One way to mitigate this problem is to not use data from individual varieties, but to reconstruct the vocabulary of the intermediate varieties e.g. Proto-Nahuatl, Proto-Corachol, Proto-Cahita, Proto-Tepima etc. This corrects for the effects of vocabulary loss in one variety of a language group, where the cognate is concurrently retained in another. For example, most varieties of Nahua have a word for mother that based on the root *naam*, which is not reconstructible to Uto-Aztecan. But the original Uto-Aztecan root **ye* is retained as *ye* in the Nahua varieties in the South of Veracruz, which means that Proto-Nahuatl must have also had this root. Probably most Nahua

varieties opted for the root *naan*, because the root *ye* had become homophouns with the word for beans when *he ‘beans’ changed to *ye* – only the Isthmus Nahua varieties retained it. If instead of comparing Colonial Nahuatl with Cora and Huichol, we compare Proto-Nahuatl, then we have a match, raising the rate of detected cognates. Similarly the Corachol root for ‘nose’ *tsuri* is not cognate to the Colonial Nahua word for nose *yeka* or *yaka*. But in fact most Nahua varieties use *yeka* primarily in the meaning ‘point’, and the word for nose is *yekatsol*, a compound word where the second element *-tsol* is cognate to the corachol word *tsuri*. This method of calculation, by comparing proto-language vocabularies instead of individual varieties, was used in Pharao Hansen (2020) and had the effect of adding more cognates based on recognizing new sound correspondence through each of the intermittent stages / proto-forms. This raised the degree of cognacy between Corachol and Nahua considerably, including several items that are uniquely shared between Nahua and Corachol, showing that they do form a subgroup based on shared lexicon.

There is also no consensus concerning the question of when early Nahua speakers arrived in Central Mexico, and hence whether they could have been present at Teotihuacan. Because of the ethnohistorical migration accounts, Nahua-speaking populations have traditionally been seen as late-comers, to Central Mexico and the Mesoamerican cultural and linguistic area, but over the past decades this has increasingly been questioned (Hill 2013:4-5). Nahua ethnohistorical sources have been interpreted as suggesting that the split between Eastern and Western Nahuatl dialect groups took place in the Early Postclassic or Epiclassic, when there is evidence of migrations of speakers of Eastern Nahua from Central Mexico into Central America (Fowler 2019). This would then also be the period when Pochutec most likely traveled south to settle on the coast of Oaxaca. The model given here, is compatible with the dates produced by lexicostatistics, and also not incompatible with Beekman & Christensen’s (2003) model positing a migration of Uto-Aztec speakers into the basin of Mexico from the Bajío area after the fall of Teotihuacan. This would, however, then be an eastward migration of Western Nahua groups (and probably Otomies) as the Eastern Nahuas began to move southeast.

Proto-Corachol-Nahua	Early Proto-Nahua (or pre-Nahua)	Late Proto-Nahuatl (or Proto-Nahuatl proper)	Eastern and Western Nahuatl
Early Corachol-Nahuans are likely semi-nomadic peoples in West Mexico.	Speakers of early Eastern dialect of PCN begin interactions with Mesoamericans. This initiates the breakup of Proto-Corachol-Nahua into an eastern and a Western group.	Speakers of Nahuatl have now adopted all of the traits of the Mesoamerican Language Area, and undergone all the linguistic changes that are shared by modern Nahuatl languages.	The Nahua population has split into a Western and an Eastern branch, the eastern population gradually migrate southwards.
Late Formative 200 BC – AD 200	Classic Period AD 200 – 600		Early Postclassic AD 600 – 1100

Early Proto-Nahua or pre-Nahua would have begun as the easternmost dialect of Corachol-Nahua, gradually splitting into a separate language through contact with Mesoamerican languages in Central Mexico. This development would have to be complete before the splitting off of the Eastern branch. If we accept the latest date proposed by Greenhill et al. (2022) for Corachol-Nahua, this would put the beginning of the gradual splitting of Nahuatl from Corachol in the Late Formative, coinciding with the transition from the Patlachique (c. 100-0 BC) to the Tzacualli (c. 0-100 AD) phase at Teotihuacan, which also marks a change in the architectural patterns of the city (Cowgill 2015: 53-78).

For further details of the phonology and phonological developments linking Proto-Corachol (PCC) with Proto-Nahua, and for a list of reconstructed vocabulary, consult the Supplementary Material of Pharao Hansen (Forthcoming *a*).

Language abbreviations used:

- UA:** Uto-Aztecan
- PUA:** Proto-Uto-Aztecan
- PSUA:** Proto-Southern Uto-Aztecan
- PCN:** Proto-Corachol-Nahua
- PPN:** pre-*proto*-Nahua
- PN:** Proto-Nahuatl
- PC:** Proto-Cora
- PCC:** Proto-Corachol

2. Detailed reconstructions of word forms used in the readings

2a. NAKA

NAKA ‘nopal/opuntia pad’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
* <i>naká</i> ‘nopal’	* <i>nakáti</i> ‘nopal’ (PCN)	Nah.	<i>naka-</i>	<i>nac(a)-tl</i>	flesh, meat / carne	NAH1:155
		Nah.	<i>nanakatl</i>	<i>nanac(a)-tl</i>	mushroom / hongo	NAH1:159
		Nah.	<i>xonakatl</i>	<i>xonac(a)-tl</i>	onion / cebolla	NAH1:330
		Hch.	<i>nakári</i>	<i>nacári</i>	nopal	WIX1:74
	* <i>naká</i> ‘nopal’ (SUA)	Cr.	<i>naká</i>	<i>nacá</i>	nopal	COR1:69
		Op.	<i>nakó</i>	<i>nacó</i>	nopal	OPA1:139
		Tb.	<i>nakasí-</i>	<i>naka-sí-t</i>	nopal	TUB1:77
		Tep.	<i>nakaab</i>	<i>nakaab</i>	tuna	TEP1:133

The root **naká* can be reconstructed for Proto-Southern-Uto-Aztecan (PSUA) in the meaning ‘nopal cactus’ (*Opuntia* spp.). This is the core meaning in all of the SUA languages – except Nahuatl. In Nahuatl the reflex has shifted its meaning to ‘meat’ but is also found in the words for ‘onion’ and ‘mushroom’ suggesting that it may have had a meaning along the lines of ‘the umami-tasting and protein-rich part of a meal’, which would have facilitated the semantic shift from ‘nopal cactus’ to ‘meat’. In Nahuatl, the word for ‘nopal’ was instead based on the root **náwo* ‘tuna’ which created the roots *nóhpal-* from pre-Nahua **náwo-pári* lit. ‘tuna-pad’ for the edible pad of the *Opuntia* sp. cactus, and *no:ch-* from **náwo-tsi* lit. ‘tuna point’ in the meaning ‘prickly pear’.

NAKASA ‘ear’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
* <i>naká</i> ‘ear’	* <i>nakása</i> ‘ear’ (PCN)	Nah.	<i>nakas-</i>	<i>nacaz-tli</i>	ear / oreja	NAH1:156
		Hch.	<i>naaká</i>	<i>nacá</i>	oído, oreja,	WIX1:74
		Cr.	<i>nasaiñ</i>	<i>nasaij</i>	oído, oreja	COR1:152
	* <i>naká</i> ‘ear’ (SUA)	War.	<i>nabká</i>	<i>nabká</i>	oreja, oído / ear	WAR1:361
		Tb.	<i>naká-r</i>	<i>naká-r</i>	oreja	TUB1:61
		Eud.	<i>naká-t</i>	<i>nacát</i>	oreja	OPA1:
		Yaq.	<i>naka-m</i>	<i>nakám</i>	orejas	YAQ1:144
		Tep.	<i>naak</i>	<i>naak</i>	oreja	TEP1:131

Another, homophonous, root **naká* can be reconstructed for PSUA in the meaning ‘ear’, which in Proto-Corachol-Nahua (PCN) has been extended with a suffix *-sa* (perhaps an instrumental suffix) giving PCN **nakása*. This root has been transformed due to the process of syncope of unstressed short vowels as already

described by Sapir (1913) with subsequent elision of syllable-final consonants in Cora and Huichol, leading to the disappearance of an entire syllable.

Nahuan and Huichol also show that with the added suffix, the accent originally remained on the second syllable **nakása* because the final **a* has been dropped due to syncope of unstressed short vowels giving **nakas*, which was then further reduced to *naaká* in Huichol. Whereas in Proto-Cora (PC) the accent must have shifted to the third syllable (PC **nákasáhi* adding also a suffix *-hi*) leading to the loss of the second syllable (**naksaihi*) and reduction of the consonant cluster *ks > s* (*nasaíh*). This explanation, positing elision of the syllable **sa* in Huichol and of the syllable **ka* in Cora is what produces the odd correspondence between Huichol *naká* ‘ear’ and Cora *nasaíh* ‘ear’. That this must be the development is further supported by the fact that Nahuatl retains the final *-s*, having traces of both the **ka* and **sa* syllables. In Nahuatl, we can further see that the syncopated vowel must have been an **a* or an **o* since the vowel **i* or **í* would have caused palatalization of the preceding sibilant (Dakin 1982:51-56).

The root is a fine example showing that pre-Nahuan and Proto-Corachol (PCC) must have shared the same form **nakása* ‘ear’ – a shared innovation in this language group, not found in the other SUA languages. Complete homophony between **naká* ‘nopal’ and **naká* ‘ear’ is found only in the northern SUA languages, whereas Corachol-Nahuan distinguishes by adding the *-sa* suffix to the root for ‘ear’.

2b. NAWA

NAWA ‘root’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
<i>*nawa</i> ‘root’	<i>*nawa</i> ‘root’	Hch.	<i>naná</i>	<i>naná</i>	raíz, guía, tallo	WIX2:17
		Yq.	<i>naáwa</i>	<i>naawa</i>	raíz	YAQ1:144
		War.	<i>nawá</i>	<i>nawá</i>	raíz	WAR1:363
		Eud.	<i>náwa</i>	<i>náwa</i>	raíz	OPA1:148
	<i>*neri</i> ‘edible root’ (PCN)	Hch.	<i>ínieri</i>	<i>ínieri</i>	raíz que se saca de la tierra	WIX1:146
		Cr.	<i>iíne’e</i>	<i>iíne’e</i>	guía, raíz, vid	COR1:136
		Nah.	<i>nelwa</i>	<i>nelhua-tl</i>	root / raíz	NAH1:163

The root **nawa* can be reconstructed for PSUA in the meaning ‘root’. This root has reflexes with that meaning in all SUA branches except Nahuatl and Tepiman. In Coracholán the root is found in Huichol *naná* which is a reduplicated form, where the final syllable has been dropped because it was unstressed (**na-náwa > *nanáw > naná*). In Corachol it is another root PCC **inieri* wherein its reflex refers to a particular type of root in Huichol and meaning ‘root’ in general in Cora. This root is clearly cognate to the Nahuatl root for ‘root’ *nelwa-*, which does not have the *i-* prefix (presumably originally from the PSUA prefix *hi-* of uncertain meaning), but instead has a suffix *-wa*, which is likely the suffix marking alienable possession in body part nouns. It would appear that already in PCN the name of a specific edible root **(i)neri* was becoming generalized in the meaning ‘root’, and the original root for ‘root’ was only conserved in Huichol.

NAWA ‘near’

PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
* <i>náwa</i> 'near'	* <i>nawa</i> 'near/vicinity'	Yq.	<i>nanaú</i>	<i>nanaú</i>	cerca, contiguo	YAQ1:146
		Yq.	<i>nau</i>	<i>nau</i>	junto	YAQ1:147
		Myo.	<i>nawi</i>	<i>naubui</i>	juntos	MYO1:167
		Nah.	<i>-na:wa-ke</i>	<i>-nāhuac</i>	postposition, near to, adjacent to, within earshot / par de mí o conmigo	NAH1:157

The homophonous postpositional suffix *-*nawa* can be reconstructed for PSUA in the meaning 'near' based on reflexes in Nahuatl and Yaqui-Mayo. Karttunen (1992:157) relates it to words meaning 'clear-sounding' to produce the interpretation of an original meaning of 'within earshot', but it may as well originally have meant 'close by' or 'in plain view' – perhaps related to the Teguima Ópata word *navera* 'clearly, in public, overtly' (Shaul 2020:106). If the word was originally an adverb as in Yaqui-Mayo and Ópata then the *-ke* ending in Nahuatl is likely to be the *-ke* suffix used for secondary predication and adjectives, but there is also the possibility that it was originally the noun meaning 'root' and that the *-ke* suffix in Nahuatl then is from the *-ke* locative suffix.

2c. KO

KO 'hole, hollow, vessel'						
PUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
*ko 'hole /hollow'	*ko 'dig, hollow out'	Ute.	<i>qoy'ə</i>	<i>qoy'ə</i>	hollow out	UTE1:291
		Opa.	<i>keo</i>	<i>keo</i>	scarbar = dig, dibble, scratch the dirt; wear out (of grinding stones).	OPA2:81
	*komi 'hollow, hole' (PSUA)	Nah.	<i>ke:mi-</i>	<i>cōm(i)-tl</i>	pot / olla o barril de barro	NAH1:41
			<i>koma-</i>	<i>com(a)tl</i>	vessel, container / jarro	NAH1:41
		Nah.	<i>tekoma-</i>	<i>tecom(a)-tl</i>	clay pot / vaso de barro como taza honda. Husk of tomato.	NAH1:217
		Nah.	<i>komal-</i>	<i>comal-li</i>	griddle / comal a donde cuecen tortillas de maíz, o el bazo	NAH1:41
		Nah.	<i>komo:lli</i>	<i>comōl-li</i>	gully or depression	NAH1:41
		Tep.	<i>kómi</i>	<i>kómi</i>	cáscara, concha, espalda	TEP2:139
		Cr.	<i>-kuni</i>	<i>veacuni</i>	hoyo	COR2:55
		Cr.	<i>-kun</i>	<i>-kun</i>	hollow	COR5:117
		Eud.	<i>kom</i>	<i>com</i>	para abajo	OPA1:171
		Eud.	<i>komát</i>	<i>comát</i>	cueva	OPA1:172
		Myo.	<i>keó'omi</i>	<i>có'omi</i>	abajo	MYO1:131

*koyo 'hole' (PUA)	Nah.	<i>koyok-</i>	<i>coyoc-tli</i>	hole / hoyo, agujero	NAH1:42
	Nah.	<i>koyo:ni</i>	<i>coyōn(i)</i>	for something to get full of holes / se agujerea	NAH1:42
	War.	<i>kolátsi</i>	<i>koláci</i>	calabaza tierna, cueva superficial como una escarpa de piedra. Eng. Immature squash, bowl-like hollow in a rock wall.	
	Hop.	<i>koro</i>	<i>koro</i>	small cavity, cave or hollow in a cliff or wall, niche, cranny	HOP1:153
	Hop.	<i>qölö</i>	<i>qölö</i>	hole, as a hole in the ground, pit	HOP1:471

A root **keo* can be reconstructed for Proto-Uto-Aztecan (PUA) in the meaning 'hole, hollow' with the derived forms **komi* and **koma* 'hole, hollow, vessel' in PSUA, and **koyo* 'hole' in PUA (attested in Numic (Ute), Hopi, Nahuatl and possibly Wari'ho (if Wari'ho /l/ here corresponds to Nahuatl /y/ and Numic/Hopi /r/)). The root has an interesting range of meanings all referring to things with concave shapes: hole, pit, cave, depression in the ground, or the depression worn into a grindstone, gourd bowls, ceramic vessels, shells, husks – and verbs

for digging, boring or hollowing out. It is likely also present in the SUA word for ‘river’ **pako* lit. ‘water-hole/depression’.

KO ‘locative postposition’					
PSUA	Reflex Lang.	Phon. Form	Citation Form	Function	Source
- <i>ko</i> ‘locative’	Nah.	- <i>ko</i>	- <i>co</i>	locative suffix	NAH1:35-36
	Yq.	- <i>ku</i>	- <i>ku</i>	locative suffix (entre, en medio)	YAQ5:127
	Hch.	- <i>ki</i>	- <i>ki</i>	instrumental suffix	WIX
	Cor.	- <i>kin</i>	- <i>kin</i>	instrumental suffix	COR
	Opa.	- <i>ko’o</i>	- <i>ko’o</i>	postp. below (Sp. abajo)	OPA2:16

One or two locative/instrumental postpositional or case suffixes with the form **-ku* and/or **-ko* can be reconstructed for PSUA. Yaqui and Corachol suggest the original form **ku*, while Nahua and Teguima/Ópata suggest the form **ko* and a potential relation with the sense of ‘down, below, under’, given the previous reconstruction of the word for ‘hole’. In both cases, it is a postpositional suffix attaching to nouns, in Nahua, Yaqui and Ópata where its meaning is locative, whereas in Corachol it is instrumental. It is not unheard of in SUA that some languages have reflexes with *o* and others with *u* of the same morpheme, but there may be reason to reconstruct two different suffixes, a **-ku* instrumental and a **-ko* locative.

2d. KOSA

A root **kosa* meaning ‘yellow’ or ‘nacreous’ (color of mother-of-pearl and rainbows) can be reconstructed for PSUA based on forms in Nahuan, Corachol and Yaqui. The root is found in Nahuan words for ‘rainbow’, ‘yellow’, and in the Cora word for ‘rainbow’ (and probably in the Tubar word for ‘yellow’, though with the aberrant vowel *i* instead of *o*). A form derived with the nominalizing suffix *-ka*, can be found in the Nahuan word for ‘necklace’ and in the Huichol word for ‘*chaquirá*’ (beaded band). In both Huichol and Nahuan the unstressed short vowel in the middle syllable *sa* underwent syncope (**kósaka* > *koska*), and then in Huichol the resulting consonant cluster was reduced (**koska* > **koka* > *kuka*) (the same process that turned **nakasa* into *nasa(ih)* in Cora). The form *kóoka* is also found in Yaqui, where the same process occurred. In Nahuan we can see that the syncopated vowel must have been an *a* or an *o*, because otherwise the *s* in *ko:stik* and *ko:skatl* would have palatalized to /ʃ/ - and it fits with the *a* in *ko:sama:lo:tl* and Cora *ku’usa’a*.

Another set of words with a similar range of meanings ‘shell’, ‘bead/rattle bell’, ‘necklace’, ‘rainbow’ (and ‘snake’) can be reconstructed as **koyo*. There is a possibility that the roots **kosa* and **koyo* are ultimately related (there are other examples of a three-way correspondence between y/s/r in SUA), but these appear to have been distinct roots already in PSUA, and definitely in PCN.

KOSA ‘nacreous, yellow’						
PSUA	Intermediate	Reflex	Phon.	Citation	Citation	Source

		Lang.	Form	Form	Gloss	
* <i>koosa</i>	* <i>koosa</i> 'nacreous, rainbow'	Nah.	<i>koosa-maaloo-</i>	<i>cōzamalō-tl</i>	rainbow / arco del cielo	NAH1:43
		Nah.	<i>kos-tik</i>	<i>coztic</i>	something yellow, golden / cosa amarilla	NAH1:43
		Cor.	<i>kú'usa'a</i>	<i>cú'usa'a</i>	arco iris	COR1:125
		Tbr.	<i>kís- kísa-ra-ka-r</i>	<i>kís- kís-ara-ká-r</i>	amarillo	
	* <i>koóosa-ka</i> 'shell, pearl, necklace'	Nah.	<i>ko:ska-</i>	<i>cōzca-tl</i>	jewel, ornament, necklace / joya, piedra preciosa labrada de forma redonda, o cuenta para rezar	NAH1:43
		Hch.	<i>kúuka</i>	<i>cúuca</i>	chaquira, cuello de chaquira	WIX2:5
		Yq.	<i>koókam</i>	<i>kookam</i>	collar	Yaq1:124
* <i>kooyo</i>	* <i>kooyo-ka</i> 'shell, conch'	War.	<i>koloká</i>	<i>koloká</i>	soguilla, collar Eng.: necklace	WAR1:348
		Eud.	<i>kodó</i>	<i>codó</i>	concha	OPA1:171
		Nah.	<i>kooyo-l</i>	<i>coyol-li</i>	jingle bell / cascabel / sonaja	NAH1:43
		Yaq.	<i>kuru-es</i>	<i>kurues</i>	arcoiris, boa	Yaq1:127
		Yaq.	<i>kooyo</i>	<i>kooyo</i>	concha, ostión	Yaq1:124

2e. “STONE SERIES”: TE, TEPE, TESAKA, TESO

The PUA root for ‘stone/rock’ has been reconstructed as *tɪ̃ (Stubbs 2011) based on forms in Northern UA languages. Except for Tepiman, SUA languages changed PUA *tɪ̃ to /e/, so in Tepiman the root remains *tɪ̃* (only found in compounds), but in the other SUA languages it has become *te*. There are many compound words in UA languages that begin with *tɪ̃-*/*te-*, where the element functions almost as a prefix describing or classifying things that are related to stone. But there are also of course words that begin with the syllable *tɪ̃-*/*te-* where it appears to be part of the root – or where the compound has been lexicalized into a single root long ago.

TE ‘stone’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
*te	*te	Nah.	<i>te-</i>	<i>te-tl</i>	stone / piedra generalmente	NAH1:235
		Hch.	<i>teté</i>	<i>teté</i>	piedra, roca	WIX1:101
		Cr.	<i>teté</i>	<i>teté</i>	piedra	COR1:77
	*te-ri	Nah.	<i>te-tel-</i>	<i>tetelli</i>	stone mound	UOR
		Nah.	<i>teškal-</i>	<i>texcalli</i>	peñasco, risco, o horno	NAH2:112
		Nah.	<i>tel-olob-tli</i>	<i>telolob-tli</i>	pellet / bodoque de piedra	NAH1:221
		Nah.	<i>tel-oa</i>	<i>teloā</i>	to stumble	NAH1:220
	*te-páiri	Nah.	<i>tepal-katl</i>	<i>tepalca-tl</i>	potsherd, broken tile / casco de vasija de barro quebrada, o teja quebrada	NAH1:215
		Hch.	<i>tepári</i>	<i>tepári</i>	piedra que tapa el pozo ceremonial	WIX2:27
	*tɪ̃soni ‘tezontle’ (volcanic rock used for building, for fireplaces and temascales)	Nah.	<i>teson-</i>	<i>tezón-tli</i>	porous red volcanic rock used in construction	NAH1:240
		Tep.	<i>tɪ̃sona-karoi</i>	<i>tɪ̃sónakaroi</i>	el tenamastle (piedra que no revienta) para detener el nixtamalero	TEP2:259

TEPE

It is not easy to establish a SUA etymology for words for ‘hill’ or ‘mountain’. Corachol uses the word *híiri* (perhaps related to the Yaqui-Mayo word *huye* referring to ‘wilderness’), but Tarahumara, Warihío and Yaqui-Mayo have a word **kami*. Nahuatl of course has *tepe-* which is unrelated to these – it seems related instead to

words for ‘tall’ and ‘high’, which also in some languages comes to mean ‘hill’. Having to do apparently primarily with height, it is possible that the first syllable in this word is not a reflex from the root meaning ‘rock’. However, the use of the **TE** ‘stone’ sign with the logogram for ‘mountain’ remains significant in the context of writing, serving at very least as a phonetic cue.

TEPE ‘mountain’					
PSUA	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
*tɪpi	Nah.	<i>tepe:tl</i>	<i>tepe-tl</i>	hill, mountain, precipice / sierra	NAH1:230
	Tep.	<i>tuwī-daga</i>	<i>tuwīdaga</i>	el cerro, el picacho	TEP2:285
	Tep.	<i>tivī-du</i>	<i>tivīdu</i>	estar alto, largo	TEP2:262
	Tep.	<i>tib</i>	<i>teb</i>	alto, elevado	TEP1:162
	Tb.	<i>tepe</i>	<i>tepe</i>	alto, cerro	TB1:66
	Tar.	<i>rabó</i>	<i>rabó</i>	cerro	TAR1:90
	Hch.	<i>tévi</i>	<i>tévi</i>	parado, alto	WIX1:102

TESAKA

In Corachol-Nahua a word for ‘vitreous rock’ can be reconstructed as **tesaka*, in Corachol the middle syllable is elided through syncope (Cora retains a reflex of the *s* as *h*, but in Huichol it disappears). In Nahuatl the word comes to mean ‘mirror’, whereas in Corachol it refers to all knappable stone, including both chert and obsidian.

Nahuatl introduces the word *tecpatl* for ‘flint’, in which the *tek* element could be from the verbal root *teki* meaning ‘to cut’, or from a combination of *te-* ‘stone’ with another (unknown) element **kVpa*. Or perhaps from a process that inserts *k* before *p* in words like Nahuatl *tecpin* from PUA **tippu* (it may be a reflex of geminated *p*, or of a geminating final feature) – another explanation for this *k* is given by Dakin (1991).

TESAKA ‘obsidian’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
* <i>tesaka</i> ‘obsidian’	* <i>téska</i> (PCN)	Cr.	<i>tehka</i>	<i>teja</i>	está obsidiana	COR1:180
		Hch.	<i>téka</i>	<i>téca</i>	piedra vidriosa, piedra volcánica, volcán	WIX2:26
		Nah.	<i>te:ska-</i>	<i>težca-tl</i>	mirror, glass / espejo parrar mirarse en él	NAH1:239

TESO

The word for ‘cave’ can be reconstructed as **t̥so* for PUA, with reflexes in Tepiman and Hopi, and **teso* for the rest of the southern UA languages. The forms in Nahuatl and Corachol require a bit of explanation.

The Nahuatl form *osto* shows that the word must have had stress on the second syllable, causing the first syllable to undergo syncope. When this happens to an initial syllable in Nahuatl a prothetic vowel is inserted – (an *i*, though perhaps originally **i̥*) (step 1: **tesó* > **itso*), then in Nahuatl when a consonant cluster /*ts/* occurs it undergoes metathesis (perhaps to avoid the similarity to the single consonant *t̥*) (step 2: **itso* > **isto*). The same

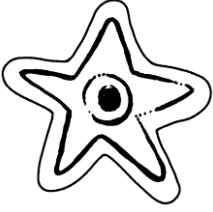
metathesis is seen in the word for ‘white’ **tosá* which became *ista-* in Nahuatl. Then finally, the initial *i-* must have assimilated to the subsequent *o* (step 3: *isto* > *osto*).

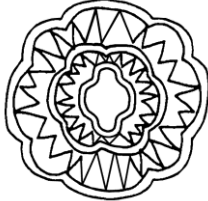
In Corachol, we have the Cora form *tastaa* and the Huichol form *teri* or *terita*. The Cora form *tastaa* seems to come from **tesota* where the *-taa* is a locative suffix – here the middle syllable was syncopated, and then the *e* was assimilated to the *a* in the final syllable (**tesotaa* > **testaa* > *tastaa*). Huichol has a tendency to rhotacize sibilants especially when they occur between vowels. Here it seems that Huichol also underwent the change *tesota* to *testa*, and while Huichol usually drops the first consonant in a consonant cluster, the vowel *i* is instead inserted here to break up the cluster – and then it rhotacized the *s* to *r* (*tesota* > *testa* > *tesita* > *terita*). In Cora and Huichol, the same process is evident in other word pairs derived from a root with the form CVsVCV: *taska/terika* ‘scorpion’, *wiski/wiriki* ‘vulture’, *kwaspwa/kwariipa* ‘plum’, *haska/harika* ‘otter’.

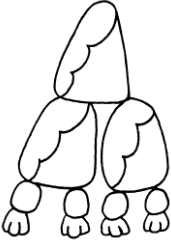
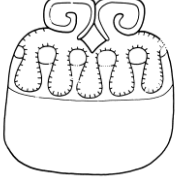
Interesting here is that the PCN form **tesó* began with the syllable *te-* (perhaps derived from the ‘stone’ *te*, but not necessarily), but neither the Cora nor the Nahuatl form begins with this syllable today, suggesting that the fit is only with the earliest form of the word.

TESO ‘cave’						
PSUA	Intermediate	Reflex Lang.	Phon. Form	Citation Form	Citation Gloss	Source
<i>*t̥iʰso</i> ‘cave’ (PSUA)	<i>*tesó</i> ‘cave’	Nah.	<i>osto</i>	<i>ōz̥tō-tl</i>	cave / cueva o caverna	NAH1:181
		Yq.	<i>teéso</i>	<i>teeso</i>	cueva	YAQ1:182
		War.	<i>tesó</i>	<i>tesó</i>	cueva / cave	WAR1:394
		Cr.	<i>tastaa</i> < <i>*teso-taa</i> or <i>*terita</i>	<i>tásta’a</i>	cueva	COR1:178
		Hch.	<i>teri</i>	<i>terü</i>	cueva	WIX1:100
		Hch.	<i>teeri-ta</i>	<i>teerütaa</i>	cueva	WIX1:185
	<i>*t̥iʰso</i> ‘cave’ (PSUA)	Tep.	<i>t̥ihóoi</i>	<i>t̥ijóoi</i>	la cueva	TEP1:256
		Hop.	<i>t̥iʰso</i>	<i>t̥iʰsō</i>	rockshelter, cliff overhang	HOP1:687

3. Proposed readings of Teotihuacan signs using PCN values motivated by phonetic cues (rebus, phonetic complementation), and semantic and syntactic context

	Sign	Reading (PCN)	Motivation
1.		SIHO *siho 'star / Venus'	A rising or setting star. The etymologies of SUA words for 'star' are often related to the word for Venus, and there are two word for Venus as morning and evening star reconstructable as * <i>supo</i> and * <i>sipo</i> which become * <i>sibo</i> and * <i>sibo</i> in PCN respectively (see Phraao Hansen Forthcoming <i>b</i>). The reading is motivated by the combination of the star with the trilobe <i>yawi</i> sign.
2.		YAWI ~ RAWE *yawi/rawe (from SUA *yawi) 1. 'rain' 2. 'predator'/'warrior' 3. 'blue' 4. 'walk'?	* <i>yawi</i> is the reconstructed form for words meaning 'rain, precipitation' (Nahuatl <i>kiyawitl</i> 'rain', <i>a:yawitl</i> 'mist', <i>seppayawitl</i> 'snow'), 'walk, dance' (Lionnet 1985), but also the color 'blue', and as a root appearing as a suffix with the meaning 'warrior, predator', related to Uto-Aztec words for 'to fight'. The root has two variants * <i>yawi</i> and * <i>rawe</i> depending on accent and preceding vowel (giving - <i>yo:</i> and - <i>lo:</i> in PN respectively). In several contexts, a predatory beast is depicted as knotted or netted (some say reticulated) – functioning as a phonetic complement written YAWI[wi] cueing the last syllable of the classification as <i>yawi</i> 'predators'.
3.		SIHO-RAWE *siho-rawe 1. 'Venus deity' 2. 'war'?	Phraao Hansen (Forthcoming <i>b</i>) has proposed *siho-rawe as the etymology of the name of the Aztec Venus deity Xolotl, with the meaning 'east star-warrior/predator'. This sign pairs off the <i>yawi</i> trilobe with the star sign.
4.		KOSA *koosa 'yellow/shell'	
5.		TE 'stone'	
6.		TEKA(PARI) *te-(ka-pari) 'obsidian knife'	

			
7.		TEPE *tepe 'mountain'	
8.		TESO *te(so) 'cave'	
9.		NAWA *-nawa- 1. 'root' 2. 'near'	
10.		KO *-ko 'at'	
11.		NAWA-KO *-nawako 'at the root of'	SUA <i>nawa</i> 'root' + <i>ko</i> 'at' (locative postpositional suffix)
12.		NAKA *naka(sa) 'ear'	
13.		NAKA *naka(ri)	

		‘nopal’	
14.		WI *wi ‘net’ ‘movement’ ‘year’	In SUA <i>-wi</i> or <i>-mwi</i> is a movement suffix used to make movement verbs (e.g. <i>yawi</i> ‘to walk, go’, <i>panawi</i> ‘pass’, <i>wika</i> ‘carry’, <i>witsa</i> ‘arrive’), and also a nominal postposition suffix indicating movement towards a place. The root <i>wi</i> also means a ‘thread’ or refers to the act of spinning threads or twisting cords. Related is <i>wipi</i> a woven’s garment for women, a hairnet or blouse. The root <i>wi</i> is also a ‘year’ or ‘rain’.
15.		TEKOYAWI *teko(-yawī) ‘(war)lord’	The SUA word for ‘lord’ or ‘owner’ reconstructs as *teko (Nah. <i>tekw-</i> , Eud. <i>teko</i> , Cr. <i>tekw’a’aran</i>). But *teko is also the word for ‘vulture’ in Yaqui and part of the word for ‘owl’ in Nahuatl <i>tekolo:tl</i> . Given homonymy, it is possible to use an owl or raptorial bird, as logograms used in a rebus for ‘lord’. Having reconstructed <i>yawi/raawe</i> as ‘warrior/predator’, we may read the armed and martial owl as <i>teko-raawe</i> standing for either ‘owl-predator/warrior’ or ‘lord-warrior’ (<i>yawi</i> being cognate then with the <i>-lo:-</i> suffix in <i>tekolo:tl</i>).
16.		HAI-KO *hai-ko(sa) ‘three-snake/yellow’	The entity known as <i>haikeu</i> ‘cloud serpent’ is a Huichol rain and fertility deity corresponding to Mixcoatl and Quetzalcoatl. The PCN form of the name would be <i>hai-ko</i> . This compound is composed of three dots and the prominent upper lip of the Storm god with a <i>koosa</i> glyph held within the mouth. These are features of the martial manifestation of the Teotihuacan Storm god (Nielsen and Helmke 2017; Wrem Anderson and Helmke 2013). If the three dots are read as ‘three’, for its phonetic value (/hai/) and KOSA for <i>ko</i> , we obtain the deity name.
17.		YAO(RI) YAW-YAO(RI) *yao-ri ‘heart’	Hearts in Teotihuacan imagery are frequently marked with the trilobe glyph – which given the reading YAWI is likely a phonetic complement given that <i>yaori</i> ‘heart’ shares the initial sound *yao- with <i>yawi</i> (in Proto-Nahua both *yao- and *yawi turn into the syllable /yo:/).

			
18.		MAYAWI MA-YAWI MAYAWI-WI *ma:-yawī 'hand-scatter'	In SUA languages 'hand' reconstructs as *<i>ma</i>. The stream flowing from the hands can be equivalent to the trilobe glyph in terms of 'precipitation' and read <i>yawi</i>. In Nahuatl the verb <i>mayawi</i> (composed of <i>ma</i>: 'hand' + <i>yawi</i>) means 'to scatter, to spill' – and is used for example in ritual contexts. The reading is further motivated by the example of a scattering hand with a knot, spelling the final syllable <i>wi</i> phonetically, as MAYAWI-wi.

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