



On Whorf's Law and Related Questions of Aztec Phonology and Etymology

Alexis Manaster Ramer

International Journal of American Linguistics, Vol. 62, No. 2. (Apr., 1996), pp. 176-187.

Stable URL:

<http://links.jstor.org/sici?sici=0020-7071%28199604%2962%3A2%3C176%3AOWLARQ%3E2.0.CO%3B2-Z>

International Journal of American Linguistics is currently published by The University of Chicago Press.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/ucpress.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

The JSTOR Archive is a trusted digital repository providing for long-term preservation and access to leading academic journals and scholarly literature from around the world. The Archive is supported by libraries, scholarly societies, publishers, and foundations. It is an initiative of JSTOR, a not-for-profit organization with a mission to help the scholarly community take advantage of advances in technology. For more information regarding JSTOR, please contact support@jstor.org.

ON WHORF'S LAW AND RELATED QUESTIONS OF AZTECAN PHONOLOGY AND ETYMOLOGY¹

ALEXIS MANASTER RAMER

WAYNE STATE UNIVERSITY

1. In this paper, I introduce some extensions and amplifications of Whorf's classic (1937) work deriving Nahuatl /tl/ from */t/ before */a/, seeking to account for most of the handful of problematic cases of /tl/ occurring before vowels other than /a/.

Before starting, it may be well to review briefly the history of the problem. The early comparative work on Uto-Aztecan assumed that Nahuatl /tl/ reflects a distinct phoneme of Proto-Uto-Aztecan (PUA) (Sapir 1915 [1919:456]). Moreover, it was believed that those Aztecan dialects which lack /tl/ altogether and have /t/ in its place, such as "Pipil and Nahuatl dialects spoken in Oaxaca" (Sapir 1915 [1919:456]), including Pochutec (see also Boas 1917:14), must originally have had /tl/ and then merged it with /t/.

In the meantime, Mason (1923) suggested that /tl/ must be a Nahuatl development "under as yet unelucidated rules" of PUA */t/, a suggestion which was immediately adopted by Whorf (1935a; 1935b). In 1937, Whorf finally elucidated the rules in question, showing that /tl/ arose from PUA */t/ before */a/, observing that the vast majority of the synchronic examples of /tl/ still occur before /a/, while /t/ is synchronically rare before /a/.² While this was a major step forward in Uto-Aztecan studies, Whorf (1937:265) made the mistake of postulating that this development occurred only in a subset of the Aztecan dialects "forming one major dialectal division, which may be called Central Nahuatl, or Aztec." The source of this error, and its subsequent history, seem quite mysterious to me.

¹ I owe a debt of gratitude to an anonymous referee for valuable comments and corrections. I would also like to thank Irén Hegedüs, Frances Karttunen, Edith Moravcsik, Martti Nyman, and Steven Starkey for calling to my attention the examples in n. 10, and Mary L. Clayton for sending me a copy of her important manuscript. The forms cited in this paper are given in the Miller-Langacker transliteration commonly used in Uto-Aztecan studies rather than in the (often Spanish-based) orthographies of the sources. Note that vowel length is indicated by doubling the vowel, *tl* and *kw* are single phonemes, and *c* represents a coronal affricate. The Nahuatl glosses follow Karttunen (1983), except for words which are not found in that work, in which case I follow Whorf (1937) or, failing that, the Molina and Siméon dictionaries.

² I have nothing to add to Whorf's remark about the origin of forms with the synchronic sequence /ta/.

For example, I fail to understand how Whorf came to ignore Boas's argument that Pochutec agrees with other Aztecan dialects in showing signs of once having had */tʎ/ in the form of traces of the further change of */tʎ/ to /l/ after /l/. Whorf (1937:274, n. 7) himself found something similar in other dialects, noting that "[c]ertain present-day Nahuatl dialects that do not contain" *tl* "evidently once did, as they have -*l* corresponding to final" -*tl* "but *t* corresponding to" *tl* "before vowels . . .",³ although he assumed that "[s]uch dialects . . . are to be distinguished from original *t*-dialects of Nahuatl," which he took to never have had /tʎ/ at all. If Whorf had paid as much attention on this point to Boas's work as he did on others, he would presumably have realized what was finally pointed out by Campbell and Langacker (1978:207), namely, that ALL Aztecan dialects have some such traces of */tʎ/, including in particular the assimilation of */tʎ/ to a preceding /l/ discussed by Boas. But here we find yet another discontinuity in the historical record, since Campbell and Langacker attribute this discovery to unpublished work of Terrence Kaufman, Alice Anderton, and Una Canger, without any mention of the Boas or Whorf contributions, and they fail to exempt Sapir and Boas from the statement that "Aztecan scholars have generally held the *tl*-change to be quite late, accounting for the classification of G[eneral A[ztec] dialects into the so-called *t*-dialects and *tl*-dialects."

In this paper, I assume, pace Whorf, that all the Aztecan dialects once had /tʎ/, even if some of them have since changed it back to /t/, but, pace Dakin (1990), that Whorf was basically right about the conditions which gave rise to /tʎ/, namely, that it (typically) is nothing more than the regular reflex of */t/ before /a/. My contribution is in the refinement and some elaboration of these conditions.

Specifically, I am concerned with the few exceptional forms in which /tʎ/ is found synchronically before vowels other than /a/, such as the absolutive suffix -*tl* ~ -*tli*, *tʎe-tʎ* 'fire' (in some compounds 'heat'), *tʎehkoo* 'to ascend', *tʎe(h)* 'what', *tʎeyoo-tʎ* 'fame', *tʎekoo-tʎ* 'line traced in [the] middle of [a] ball court', *tʎekotia* 'to grant a delay or stay of time', *tʎolololtin* 'gathering, group', *tʎloh-tʎ* '(sparrow) hawk', *tʎlok* 'near', *tʎiil-li* 'black ink, soot', and *tʎlahtʎil-li* 'wedge used for splitting wood'. Except for -*tl(i)*, which is fully accounted for by Whorf's (1937) and, in a more precise formulation, Campbell and Langacker's (1978:206, 208) hypothesis that word-final */a/ changed, in several stages, to /i/ (cf. Dakin 1982:42), none of these forms has been satisfactorily explained to date. In particular, Whorf's attempts to account for the remaining forms can be considered largely to have failed, and alternative explanations are necessary.

³ Whorf cites the Guayapa-Ajoya dialect vocabulary published by Kroeber (1934:18–19).

First, Whorf assumed, contrary to all evidence, a contrast of three distinct vowel lengths for PUA and then suggested that Nahuatl /tle/ sequences reflect PUA */t/ before the shortest of the three grades of */a/. Even though a better explanation was already available, in the form of Sapir's (1913:411) proposal that *tle-tl* comes not from **tă-*, as Whorf assumed, but rather from **tai-*, it would be left to Campbell and Langacker (1978:207, 278) to revive Sapir's suggestion and to refine the proto-form to **tahi* (compare Oodham *tai*, Cora *taih*, Huichol *tai*, and, crucially, Yaqui *tahi*).⁴ All we need to assume is that the changes required to get from */ahi/ to /e/ did not occur until after the shift of */t/ to /t/, and this putative counterexample to Whorf's hypothesis falls in line.

This proposal is a major advance over Whorf's and deserves to be extended to the other cases of /tle/. Yet, in trying to explain another one of the /tle/ forms, *tlehko* 'to ascend', Campbell and Langacker unfortunately accept as a realistic possibility Whorf's idea that this comes from *ta-* 'unspecified object prefix' + *ahko* 'up, high', even though they properly caution that this is "speculative" (1978:208). This etymology does not hold water, for there is no evidence that a */a-a/ sequence can ever yield /e/ in Nahuatl. Moreover, it is hard to see how the unspecified object prefix could combine with an adverb to create an intransitive verb. Instead, we should derive the *tleh-* part of *tlehko* from **taHi* (where *H* could be any of the various consonants lost intervocalically in Nahuatl), just as in the case of *tle-tl*. Specifically, we are probably dealing with something like⁵ Proto-Southern-Uto-Aztecan (PSUA) **ta?i*, reflected in Oodham *ta?i* 'back; up; towards the north' as well as perhaps⁶ in Guarijio *te-*, a bound form attested in various words with the basic sense of 'arriba' ('up') (Miller, n.d., chap. 15, p. 10) and Tarahumara *re?-pa* 'arriba' ('up').⁷ If correct, all this means that we must suppose that PUA */a?i/, like PUA */ahi/, became /e/ in Nahuatl, which makes sense given the loss of the PUA distinction between */h/ and */'/ in this language.

⁴ The regularity of the change */ahi/ > /e/ is confirmed by Nahuatl *me-tl* 'agave', which comes from **mahi*, as shown by Guarijio *mahi*, Cora *maih*, Huichol *mai*. There are no counterexamples, as far as I know, to this proposed sound shift.

⁵ Here (and elsewhere in my work), when I say "something like," I am alluding to the fact that in this case, as in many others, we cannot be sure about the exact proto-form, especially as far as the quantities of the vowels and the possibility of a final consonant are concerned, for lack of crucial information.

⁶ The connection is not certain, because I cannot at the moment explain the /e/ reflex of */a'i/ in the Tarahumara and Guarijio forms.

⁷ The anonymous referee suggests that "the reader . . . immediately perceives" the Tarahumara form "as Spanish *arriba* in borrowed form." If so, the reader is hereby cautioned that any such connection is out of the question if for no other reason than because the Tarahumara and Guarijio forms are closely related (with Tarahumara /r/ being a regular reflex of /t/).

We can thus account for the *tleh-* part of this word. As for the *-ko* part, this must be the remnant of some archaic verb of motion, conceivably the same one which survives in Nahuatl in the “centripetal” suffix *-ko* ~ *-kiiwi* ‘to come in order to’, although the details remain obscure at the present time.

So far, we have seen that two apparent examples of Nahuatl /tl/ before /e/ can be explained as involving **taHi/* sequences, i.e., sequences which had **a/* after **t/* at the time Whorf’s Law applied. It may also be assumed, although the specifics are less clear, that the same kind of explanation will be possible for a third instance of /tle/. Thus, *tle(h)* ‘what’ is presumably related in some way to *itlah* ‘something’. Such a relationship is strongly suggested by Guarijio *ihta* ‘what’, *ihta=peri* ~ *ta?=peri* ‘thing’, where the form *ihta* comes from **hitaC*, while the first part of *ta?=peri* appears to reflect something like **taHV-* (perhaps **tahi*). The details are opaque, but it would seem we have some basis for saying that Nahuatl *tle(h)* comes from **tahi* (or something very much like it) as well. If, as I tentatively assume, Whorf was right to treat *tleyoo-tl* ‘fame’ as related to the words for ‘what’ and ‘something’, then the same applies to the former.

The remaining cases of /tle/ are *tleko-tl* ‘line traced in the middle of a ball court’ and *tlekotia* ‘to grant a delay or stay of time’. While these may well be related to each other (if the verb basically refers to some special situation in a ball game, as suggested by Whorf), the ultimate origin of these forms is obscure. I see no good reason to assume, with Whorf, that there is any connection with *tlako-tl* ‘staff, stick, switch’, since there is no basis for positing such an alternation between /a/ and /e/.

There are also, as noted at the outset, three cases of Nahuatl /tl/ before /o/. Of these, *tlolololtin* ‘gathering, group’ is clearly, as noted by Whorf, following Siméon (1885:643), a (late) contraction of *tla-olololtin*. The other two examples seem to work much the same way as the /tle/ sequences analyzed above.

Specifically, when discussing Nahuatl *tloh-tli* ‘(sparrow) hawk’, Campbell and Langacker (1978:207) suggest that this comes from a proto-form like **tawi-*, referring to Miller (1967:40) for the comparative data, where forms like Mayo *taawe*, Tarahumara *rawiwi*, and Guarijio *tahi?iwe* are given. Campbell and Langacker’s scenario is, in the relevant part, **tawi* → **tlawi* → **tlowi* → **tlow* → **tloh*. To be sure, there is room for disagreement about the precise proto-form, given the striking discrepancies among the cognates, and also about the exact sequence of steps from the proto-form to the form found in Nahuatl (especially with regard to the idea that the *h* in *tloh-tli* reflects simply a “syllable-final **w*,” which is also assumed by Whorf 1937:271, but cf. Manaster Ramer 1995). However, there is no question that Campbell and Langacker are right to suppose that at the time of Whorf’s Law, this word had

a sequence beginning with */a/ (such as */awi/ or perhaps */ahiwī/), which only later became /o/.⁸

The remaining example of the /tlo/ sequence is *tlok* 'near', and it is perhaps not unreasonable to hypothesize that in this case, too, we might ultimately be dealing with a proto-form like **taHVkV*.⁹ The available evidence seems to support such an analysis. First, as noted by Sapir (1913:398), there is language-internal evidence that allows us to derive *tlok* from **tlo-ko*. This is shown by the reverential form *tlo-cin-ko*, where *-cin* is the reverential suffix and *-k(o)* is a common locative suffix. Second, we observe that there is in Aztecan a fairly widespread pattern of transforming various body-part terms followed by *-k(o)* into locative postpositions, e.g., *ih-te-k* 'inside' (cf. *ih-te-tl* 'stomach') and *ik-pak* 'on top of' (cf. *ik-pa-tl* 'thread', originally obviously 'hair, top of the head', reflecting a widely distributed Uto-Aztecan etymon something like **kupa*). In order for *tlo-k* to fit this pattern, all we need to assume is that *tlo-* is a reflex of PUA **tawiC* 'chest' (Cahita *tawwi*, Cora *tabih*, Tarahumara *rawi*, Cahuilla *-taw*). Finally, in order to make sure that the semantic shift from 'at the chest' to 'near' is reasonable, we note that words meaning 'chest' are the source of adpositions expressing proximity in several languages (e.g., Finnish, Hungarian, and apparently Yucatec).¹⁰ The only possible difficulty is that this etymology depends on assuming that the sequence */awi/ would yield /o/ in Nahuatl (under some conditions), something which is far from certain in the present state of knowledge (although it is paralleled rather closely by the derivation of *tloh-tli*). Still, I believe

⁸ Whorf's (1937:271) proposed proto-form **tohawo* is much less well supported (the only cognate he cites is Eudeve *tohawo*) and does not, as he himself appeared to realize, directly account for *tloh-tli* anyway (**/oha/* would not normally yield /o/).

⁹ Whorf (1937:271) noted the Milta Alpa dialect form *tlakw* and assumed that the classical form *tlok* was either a mere mishearing by "a Spanish scribe" or a dialect form with a secondary rounding of /a/ before /kw/. Both these suggestions seem quite arbitrary. As to the first, there is absolutely no basis for assuming that the "Spanish scribes" failed us in this one instance, when we rely on them so completely in general to tell us about the phonology of Classical Nahuatl. As for the second, we can just as easily assume that it is the Milta Alpa form that is secondary. In fact, unless we start with *tlok*, it is impossible to explain the reverential form *tlo-cin-ko* (which Whorf does not discuss). The other attested derivative of this word is the first part of *Tlokeh Naawakeh* 'the universal and all-pervading deity'. Whorf's reinterpretation of this as (in my transliteration) *Tlakweh* seems to be a desperate measure indeed.

¹⁰ In Finnish the noun *rinta* (oblique stem *rinna-*) 'chest; thorax' in its oblique cases yields postpositions meaning 'close; by one's side', e.g., adessive *rinnalla* (Wuole 1986:307–8). Hungarian has a similar group of postpositions, e.g., *mellett* 'next to', derived from the noun *mell* 'chest, bosom, breast' (Rédei 1986:267). Frances Karttunen (personal communication) suggests that all the senses of Yucatec *tan* 'pecho', 'en frente', 'delante de alguna cosa', 'delante, ante', 'presencia' are etymologically connected.

that the etymology proposed is the only realistic one, and the sound laws can be worked out.

Thus, all cases of /tle/ and /tlo/ can probably be explained by assuming that these vowels are derived from sequences which began with */a/ at the time of Whorf's Law.

However, in the case of /tli/, there is no way to invoke this explanation. Until recently the only example which was widely known was *tliil-li* 'black ink, soot' (Pochutec *til*). This is traditionally regarded as being related to various UA forms which begin with */tu/ and whose meanings have something to do with darkness. However, since the connections have never been made rigorous (e.g., Miller 1967:set no. 45a and Campbell and Langacker 1978:271), Whorf (1937:271) was able to suggest that the proto-form was **tīla* with an overshort */t̥/ which then assimilated to the following */a/. However, if we pay attention to phonological correspondences and semantic congruence, then we find that *tliil-li* is a perfect match for Oodham *čuud-* 'embers of wood; charcoal', with another likely cognate being Tarahumara *туру-бу́ча-ме* 'pinto de blanco y negro' ('mottled white and black'), where *-бу́ча* is derived from the verb meaning 'enturbiarse un color' ('for a color to get mixed, muddied'), suggesting 'black' or rather 'black dye' as the basic meaning of *туру-*.

The Oodham and Tarahumara forms, together with Nahuatl *tliil-li*, form a semantically and phonologically regular set which implies a PSUA (or PUA) etymon **tuV* (or possibly **tuulV*). It is noteworthy that the final vowel is not known for sure (it might well have been */u/), and, more to the point, the first vowel must have been long in Proto-Aztecan, regularly reflecting either a PUA long vowel or a PUA short stressed vowel in an open syllable (Manaster Ramer 1993; forthcoming c). All this means that Whorf's explanation can no longer be accepted. Rather, the only reasonable conclusion would be that in Nahuatl PUA */t/ gave /tl/ not only before */a/ (as discovered by Whorf) but also before */u/. This might seem to be a daring proposition, based as it is on a single example, but Clayton (n.d.) points out another generally forgotten example of /tl/ before /i/, one which was missed by Whorf as well as by me: *tlahtliil-li* 'wedge used for splitting wood' (missing from many modern sources but found in Molina 1571 and Siméon 1885).

This form seems to settle the issue. Although there is no direct evidence on this point, I would analyze it into *tlah-tliil-li*, because otherwise we would have to assume a trisyllabic root (**tatVtV-* or the like) in UA, which is a rarity at best, and because the /h/, for which Clayton provides detailed textual evidence, must reflect a cluster which is much more likely to have occurred at a boundary than morpheme-internally. If so, then the hypothetical

stem **-tlil-* has a perfect match in Oodham *chuul* ‘corner; hip joint’.¹¹ The semantic connection between ‘corner’ and ‘wedge’ is a very natural one: both meanings are expressed by the same word in French, for example: *coin* (used in Siméon’s gloss of the Nahuatl word, in fact).

To be sure, this cannot be the whole story, because of the form *tesi* (Pochutec *toso*) ‘to grind something like cornmeal’ < PUA **tusV* ‘to grind’ (compare Guarijio *tusu-* ‘to grind grain or kernels’). Now, an investigation of words with PUA **tu* (based on Miller 1967; 1988) reveals that there are no other clear examples in Nahuatl besides *tlil-li*, *tlah-tlil-li*, and *tesi*.¹² Thus, we have one example of **/tu/ > /te/* and two of **/tu/ > /tli(i)/*.

Of course, the reflex of **/u/* is different in each case, and we would like to connect the differences in the reflexes of **/t/* to that in the outcomes of **/u/*. Unfortunately, the sad fact is that we do not know in full detail what happened to PUA **/u/* in Nahuatl (or Aztec generally). Sapir (1913:396–401; 1915 [1919:443–44]) and Kroeber (1934:4) took the regular reflex to be */o/*, Whorf (1935a:607; 1935b:344) and Voegelin, Voegelin, and Hale (1962:60–62) list */i/* and */e/* in Nahuatl without accounting for their distribution (and */o/* in Pochutec), Miller (1967:7) gives */i/*, and Campbell and Langacker (1978:98–99, 198) take the “expected” reflex to be Proto-Aztec **/i/*, which should yield Nahuatl */i/* (and Pochutec */o/*), but also list other reflexes, including */e/* and */o/*, without being able to account fully for their distribution. Things get even more difficult with Bartholomew’s (1980) and Dakin’s (1983) arguments, which I basically accept, against Whorf’s and Campbell and Langacker’s theory of a distinct */o/* reflex of PUA **/u/* in Pochutec.¹³

¹¹ One qualification is in order: Clayton does not provide any evidence bearing on the length of the vowel, so we could just as easily write *tlha-tlil-li*. The length in the Oodham form does not help, since at present the origin of vowel lengths in this language is unknown.

¹² There may, of course, be other relevant examples, but none seems clear. An especially tantalizing case is *tikatla* ‘midnight’, which is also generally absent from modern sources but is found in the Molina and Siméon dictionaries, assuming that this consists of **tika-* < PUA **tuka-* ‘night’ and **-tla* < PUA **ta-* ‘day’. Unless and until we determine if this is the correct analysis and, even more important, what the vowel lengths are/were in the Nahuatl form and whether it has/had a variant **tekatla*, this form cannot tell us anything.

¹³ Although many of Sapir’s examples of */o/* are invalid, we do find some examples where PUA **/u/* is definitely realized as */o/* in Nahuatl itself (none of the examples seems to be attested in Pochutec), e.g., *ihkopi* ‘to wink, blink, close the eyes’ (compare Luiseño *kup-* ‘to sleep’), the locative postposition *-ko* (compare Tarahumara *-gu* [‘sufijo] locativo), and perhaps the first syllable of *komooni*, glossed by Molina (1570) as ‘encenderse y echar llama el fuego’ [‘to catch fire, for fire to send out flames’] (compare Tubatulabal *ku-t* ‘fire’, Hopi *ko-ho* ‘wood, stick, firewood’, etc.), bearing in mind that we would need to find a plausible etymology for the *-mooni* part before we could draw any definite conclusions. But it seems quite possible that */o/* is the regular treatment of short **/u/* after */k/*. The only apparent counterexample I know of is *kikisi* ‘to whistle, to hiss’, so given by Karttunen, although she also reports that there is evidence for *kikiisi*, which would explain the treatment of the stem vowel as */ii/* rather than */o/*.

At present we know only that PUA */u/ can be reflected as /i/ in all Aztec dialects, including Pochutec (e.g., *iiš-tli* 'face'), as /o/ in Pochutec and /i/ elsewhere (e.g., *miki* 'to die'), as /o/ in Pochutec and /e/ elsewhere (e.g., *keč-tli* 'neck'), or as /o/ in Pochutec but as /i/ ~ /e/ varying across the other dialects (e.g., *tesi* ~ *tisi* 'to grind', *sen-tli* ~ *sin-tli* 'dired ear of maize').

If we were, on the basis of the slender evidence before us, to argue that */t/ went to /tl/ before /ii/ < */u/ but not before /e/ < */u/, this might seem entirely speculative. Fortunately, there is independent evidence which shows that this hypothesis is on the right track, and at the same time allows us to refine and extend it. Manaster Ramer (forthcoming *a*) shows that Nahuatl palatalizes */s/ to /š/ before Proto-Aztec long */uu/ (from PUA stressed */ú/ in an open syllable) and */uw/ (from PUA */uH/, where /H/ is a glide) but not before short */u/ before consonants other than Proto-Aztec */w/. As a result, if there is a connection between the change of */t/ to /tl/ and the palatalization of */s/, then we would expect /tl/ before */uw/ < */uH/ as well. To see whether this prediction is borne out, we need some background.

We begin with Dakin's (1989) discovery that in some cases PUA */ta/ gives Nahuatl /il/, e.g., *ilwi-tl* 'day' from a proto-form which is not fully reconstructed but which I would assume was PUA */taw/ (compare Hopi *taala* 'light, day', with the regular change of */w/ to /l/ next to a low vowel). In these forms, */t/ first went to /tl/, but subsequently the first vowel syncope (as is usual in Nahuatl), yielding a */tlw/ cluster that apparently simplified regularly to *lw*, which then acquired a prothetic /i/ in the same way as other word-initial clusters in Nahuatl (Campbell and Langacker 1978:203 and Manaster Ramer, forthcoming *b*).

Now, I believe that there are also two cases where original PUA */tuw/ gives /ilw/:

(i) Nahuatl (*i*)*lwi=aa* 'to take counsel with oneself, to make a complaint; to say something to someone, to reveal something to someone'; compare Guarijio *tui-* 'to tell; accuse', *tue-* 'to teach, advise, say to someone', and the corresponding Tarahumara forms *ru-* 'decir', *ru-e* 'decirle, avisar'.

(ii) Nahuatl *ilwi=aa* 'to grow in strength, violence (as with a storm or epidemic)', *ilwi=s* 'much more, especially'; compare Mayo *tu?u-*, *tu?i-* 'bueno, bien', *tu?u-si*, *tui-si* (*tu?i-si*) 'mucho, muy' and perhaps Tubatula-bal *tuwu=bil* 'fast; very'.

and would be consistent with the reconstruction of PUA */kusV/, under the rules of Manaster Ramer (1993). As for the vowel of the reduplicated (first) syllable, there is no reason to assume that the reduplication itself is of PUA vintage, hence it can be assumed to have arisen after the change of long */uu/ to /ii/. I hope to devote a special study to this topic.

In each case, we are presumably dealing, for the earliest recoverable stages of Aztecán, with a form like **tuwi-*, although even earlier there might have been different glides involved. The development from **tu/* to */il/* would be the same as that assumed by Dakin for the change from **ta/* to */il/*. On the basis of these two examples, we can conclude that **t/* did go to */tl/* before Proto-Aztecán **uw/* < PUA **uH/*.

To be sure, the small number of examples for the extension of Whorf's Law to **t/* before **u/*, and the complications with *tesi* < **tusV*, might seem to indicate that this is a very uncertain hypothesis. However, an additional argument for this hypothesis, which also will help explain *tesi*, is that it leads to a new understanding of the hitherto rather mysterious phonetic motivation of the change of **t/* to */tl/*.

Adapting to my purposes a proposal made by Campbell and Langacker (1978:90–91, 198–99), I assume that at some point in the prehistory of Aztecán PUA **u/* became **i/* (i.e., a high back unrounded vowel). Thus, at the time that **t/* went to */tl/*, the Aztecán reflexes of PUA **ú/* in an open syllable and of */uH/* were not **uu/* and **uw/* but rather **iĩ/* and **iŵ/*. The change of **t/* to */tl/* can now be seen as having occurred before the two back unrounded (i.e., velar) vowels (**a/* and **i/*). We may then hope to explain this change as the assimilation of **t/* to such a vowel, in other words, as velarization. Thus, **t/* did not go to */tl/* directly but rather via an intermediate stage of **tx/* (or rather **[tx]*, since presumably at the time this was just an allophone of **t/*). The step from **tx/* to */tl/* needs itself to be explained, but intuition suggests that this might be a more natural change than a direct jump from **t/* to */tl/*. The palatalization of **s/* to **š/* would have occurred later, when **i/* had already changed further to */i/*. Of course, in order to explain why */t/* does not go to */tl/* (and **s/* to */š/*) before other tokens of PUA **u/*, we would assume that in those cases **u/* (or rather **i/*) had been reduced to schwa, which, as per Campbell and Langacker (1978: 94), will then give Pochutec */o/* but */e/* in Nahuatl.

There are a number of open problems, such as the exact statement of the */u/-reduction* rule (cf. Canger and Dakin 1985), its relationship (if there is one) to the seemingly analogous process that reduces **a/* to schwa (Whorf 1937 and Campbell and Langacker 1978:202) under conditions which themselves remain to be worked out in full,¹⁴ and above all the relative chronol-

¹⁴ For example, while Campbell and Langacker (1978) state */a/-reduction* as applying before **t/* or **s/*, as in *metla-tl* 'grinding stone' (Pochutec *-mot*) < **mataC* (compare, e.g., Hopi *mata*) and *neš-tli* 'ashes' (Pochutec *noš-t*) < **nasi* (compare Huichol and Cora *nasi*), this is much too restrictive, as seen from the following examples: *seki* 'to toast something' < **saki* (compare Tubatulabal *saagi-*), *mec-tli* 'thigh, leg' < **macaC* (compare Cahita *macca-m*), *ne=lwa-tl* 'root' < **naC-* (compare Mayo *naa=wa*, Guarijio *na=wa*, Hopi *ŋa-hi*), etc. Indeed, until now the major restriction on the rule was that, as noted by Whorf (1937), the rule does

ogies of the various rules. For example, Campbell and Langacker (1978: 202, 206–8) and Dakin (1982:22–25) order the reduction **/a/* to schwa before the change of **/t/* to */tl/*, but they do not cite any crucial examples. Although I once thought I had found some examples, I now believe the relevant etymologies were probably erroneous,¹⁵ and I tentatively adopt the opposite ordering: Whorf's Law (**/t/ > /tl/*) before the */a/-*reduction. An important consideration here is that */a/-*reduction seems not to have applied after */tl/*, e.g., *tlatla* 'to burn; to burn someone, something', *tlatlasi* 'have a cough', etc. This suggests that */a/-*reduction took place after the change of **/t/* to */tl/* (or to *[tx]*), whereas the fate of *tesi* would seem to imply that the reduction of **/u/* to schwa had already occurred earlier. However, all these questions require further investigation.

At present, all I would claim is that all cases of */tle/* and */tlo/* arise from sequences starting with **/ta/*, that the change of **/t/* to */tl/* (Whorf's Law) applied regularly not just before PUA **/a/* but also before some tokens of PUA **/u/*, and that the etymologies of *tlehko*, *tlok*, and *tliil-li* are (at least in their essentials) as I have proposed. But I would hope that these results, especially the etymologies, help demonstrate the fruitfulness of trying to account fully for the phonological developments of the forms found in individual Uto-Aztecan languages and to reconstruct precisely their ancestral shapes.¹⁶

REFERENCES

- BARTHOLOMEW, DORIS. 1980. Otomanguean influence on Pochutla Aztec. *IJAL* 46:106–16.
 BOAS, FRANZ. 1917. El dialecto mexicano de Pochutla, Oaxaca. *IJAL* 1:9–44.
 CAMPBELL, LYLE, AND RONALD W. LANGACKER. 1978. Proto-Aztecan vowels. *IJAL* 44:85–102, 197–210, 262–79.
 CANGER, UNA, AND KAREN DAKIN. 1985. An inconspicuous basic split in Nahuatl. *IJAL* 51:358–61.
 CLAYTON, MARY L. n.d. Three questions of Nahuatl morphology: 'wedge', 'helmet', 'plaster'. Ms.

not apply after */k/* or before */k/* (to be precise, before a */k/* itself followed by */a/*, in other words a *[q]*). Thus, reduction was the normal fate of short, unstressed **/a/* in the first syllable (as also suggested by Dakin 1982:47), whereas retention of */a/* occurred only under some special circumstances, such as next to *[q]*.

¹⁵ The best seems to be the first part of *teliksa* 'to kick somebody, something'. Comparison with *iksa* 'to step on or trample something' suggests that *tel-* is a separate morpheme, and it would make sense to analyze this as an incorporated body-part term (so common in Uto-Aztecan languages) and specifically as a reflex of **tala* 'foot' (compare, e.g., Guarijio *tala* 'sole of the foot', Oodham *tad* 'foot of a person or animal, or of measure').

¹⁶ For additional recent Nahuatl etymologies, see Manaster Ramer (forthcoming *a*; forthcoming *b*); for a discussion of some methodological questions that arise in such work, see Manaster Ramer (1992; 1996; forthcoming *d*); for a survey of the relevant work on comparative Uto-Aztecan, see Manaster Ramer (forthcoming *a*); and for a sketch of proposed revisions to the reconstruction of PUA, see Manaster Ramer (1993; forthcoming *c*).

- DAKIN, KAREN. 1982. La evolución fonológica del protonáhuatl. Mexico City: Universidad Nacional Autónoma de México.
- _____. 1983. Proto-Aztecan vowels and Pochutec: an alternative analysis. *IJAL* 49:196–203.
- _____. 1989. Sugerencias acerca del origen yutoazteca de *il-en náhuatl. *Estudios de cultura náhuatl* 19:347–59.
- _____. 1990. El origen de la tl en náhuatl: reconsideraciones. Paper presented at II Coloquio Swadesh, Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México, México, D.F., October 2–9.
- KARTTUNEN, FRANCES. 1983. *An Analytical Dictionary of Nahuatl*. Austin: University of Texas Press.
- KROEBER, A. L. 1934. *Uto-Aztecan Languages of Mexico*. Ibero-Americana, vol. 8. Berkeley: University of California Press.
- LIONNET, ANDRÉS. 1972. *Los elementos de la lengua tarahumara*. Mexico City: Universidad Nacional Autónoma de México.
- _____. 1977. *Los elementos de la lengua cahita*. Mexico City: Universidad Nacional Autónoma de México.
- MANASTER RAMER, ALEXIS. 1992. Tubatulabal /k/ before low vowels. *Folia Linguistica Historica* 11, nos. 1/2:183–86.
- _____. 1993. Blood, tears, and murder. *Historical Linguistics 1991: Papers from the Tenth International Conference on Historical Linguistics*, Amsterdam, August 12–16, 1991, ed. Jaap van Marle, pp. 199–209. Amsterdam and Philadelphia: John Benjamins.
- _____. 1995. The search for the sources of the Nahuatl saltillo. *Anthropological Linguistics* 37:1–15.
- _____. 1996. Lautgesetzlichkeit and Uto-Aztecan */w/- in Southern Paiute. *Folia Linguistica Historica* 16:137–41.
- _____. Forthcoming *a*. The distribution of */s/ vs. /š/ and related issues in Proto-Aztecan phonology and etymology. *Acta Linguistica Hafniensia*.
- _____. Forthcoming *b*. /ih/-, /ah/-: the joys of Nahuatl historical phonology.
- _____. Forthcoming *c*. Long vowels in Proto-Uto-Aztecan. *Anthropological Linguistics*.
- _____. Forthcoming *d*. A word to the wise: Tubatulabal *ooli-* 'to rise'. [A collection of papers in memory of Wick R. Miller], ed. Gene Casad. Salt Lake City: University of Utah Press.
- MASON, J. ALDEN. 1923. A preliminary sketch of the Yaqui language. *University of California Publications in American Archaeology and Ethnology* 20:195–212.
- MCINTOSH, JUAN B., AND JOSÉ GRIMES. 1954. *Niuqui 'iquisicayari*. Vocabulario Huichol–castellano Castellano–huichol. Mexico City: Instituto Lingüístico de Verano.
- MCMAHON, AMBROSIO, AND MARIA AITON MCMAHON. 1959. *Cora y español*. Mexico City: Instituto Lingüístico de Verano.
- MILLER, WICK R. 1967. *Uto-Aztecan Cognate Sets*. UCPL 48. Berkeley and Los Angeles: University of California Press.
- _____. 1984. *Guarijio working dictionary*. Ms.
- _____. 1988. *Computerized data base for Uto-Aztecan cognate sets*. Ms.
- _____. n.d. *Gramática guarijio*. Ms.
- MOLINA, FRAY ALONSO DE. 1571. *Vocabulario en lengua castellana y mexicana*. Mexico City: En Casa de Antonio de Spinosa. [Reprint ed., Mexico City: Editorial Porrúa, S.A., 1944 and 1970.]
- PENNINGTON, CAMPBELL, ed. 1981. *Arte y vocabulario de la lengua dohema, heve o eudeva*. Mexico City: Universidad Autónoma de México.
- RÉDEI, KAROLY. 1988. *Uralisches etymologisches Wörterbuch*. Wiesbaden: Otto Harrassowitz.
- SAPIR, EDWARD. 1913. Southern Paiute and Nahuatl, a study in Uto-Aztecan. *Journal de la Société des Américanistes de Paris* 10:379–415.

- _____. 1915. Southern Paiute and Nahuatl, a study in Uto-Aztecan: part II (consonants). *American Anthropologist* 17:98–120, 306–28. [Reprinted in *Journal de la Société des Américanistes de Paris* 11 (1919): 443–88.]
- SAXTON, DEAN; LUCILLE SAXTON; AND SUSIE ENOS. 1983. Dictionary Papago & Pima to English, English to Papago & Pima. 2d ed., ed. R. L. Cherry. Tucson: University of Arizona Press.
- SIMÉON, RÉMI. 1885. Dictionnaire de la langue nahuatl ou mexicaine. Paris: Imprimerie nationale. [Reprint ed., Graz, Austria: Akademische Druck- u. Verlagsanstalt, 1963.]
- VOEGELIN, CHARLES F. 1958. Working dictionary of Tübatulabal. *IJAL* 24:221–28.
- VOEGELIN, CHARLES F.; FLORENCE M. VOEGELIN; AND KENNETH L. HALE. 1962. Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). *IJAL* Memoir 17.
- WHORF, BENJAMIN L. 1935*a*. The comparative linguistics of Uto-Aztecan. *American Anthropologist* 37:600–608.
- _____. 1935*b*. Review of Uto-Aztecan Languages of Mexico by Alfred Kroeber. *American Anthropologist* 37:343–45.
- _____. 1937. The origin of Aztec *tl*. *American Anthropologist* 39:265–74.
- _____. 1946. The Milta Alpa dialect of Aztec with notes on the Classical and the Tepoztlán dialects. *Linguistic Structures of Native America*, ed. Harry Hoijer et al., pp. 367–97. Viking Fund Publications in Anthropology, no. 6. New York: Viking Fund.
- WUOLE, AINO. 1986. The Standard Finnish–English English–Finnish Dictionary. Eastbourne, N.Y.: Holt, Rinehart & Winston; Helsinki: Werner Söderström Osakeyhtiö.