

Achumawi-Atsugewi cognates: a triage

J.W. Powell proposed a 'Palihnihan' family comprising Achumawi and Atsugewi (more correctly, Atsuge). Demonstration of that proposal has not been straightforward. Olmsted (1964, hereafter *HPP*) reconstructs an implausible proto-language with 28 consonants and 16 vowels. This paper presents a triage of Olmsted's evidence and introduces some additional data for those engaged in comparative work.¹

Social and historical context. The Atsugewi people were outnumbered by the Achumawi ten to one (pre-contact about 3000 Achumawi and about 300 Atsugewi). The Atsugewi appear to have been sociologically subordinate as well—notably, the Atsugewi were commonly bilingual but the Achumawi were not.² Intermarriage was common. This unbalanced connection very probably existed before the two groups spread upriver into their current territories as Wintuan people came down from the north and displaced them from using the Sacramento River for fishing, estimated to have occurred as recently as 1300 YBP.³ Given this long intimacy, we may be confident that vocabulary was borrowed at different points in the historical development of these languages, with the imbalance of bilingualism favoring Achumawi loan words in Atsugewi. The obvious implications for comparative work have hitherto been ignored.

Sound-systemic context. Before surveying a triage of the data, a brief look at the phonology is in order.⁴ The segment inventory is almost identical in the two languages. Setting aside glottalization and aspiration for the moment, the consonant inventory is as follows:

Achumawi							Atsugewi						
<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	<i>q</i>		<i>ʔ</i>	Stops & affricate	<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	<i>q</i>	<i>ʔ</i>
<i>m</i>	<i>n</i>						Nasals	<i>m</i>	<i>n</i>				
	<i>l</i>						Lateral, Flap		<i>r</i>	<i>l</i>			
<i>w</i>	<i>y</i>						Glides	<i>w</i>		<i>y</i>			
		<i>s</i>			<i>h'</i>	<i>h</i>	Spirants			<i>s</i>			<i>h</i>

The only differences are that the flap *r* is exclusive to Atsugewi, and the epiglottal spirant *h'* is exclusive to Achumawi.⁵ *Pace* Olmsted, there is no *s*-*ʃ* contrast in either language.

In both languages, the plain stops *p*, *t*, *c*, *k*, *q* are voiceless-released before consonant or word boundary,⁶ and true aspirates *p^h*, *t^h*, *c^h*, *k^h*, *q^h* occur only prevocally in syllable onset. The origin of aspirates is sometimes transparent, e.g. Achumawi *it* “I” + -(ʔ)*u* possessive = *it^hú* “my”. In both languages, the stops, nasals, lateral or flap, and glides may be glottalized, represented by *p'*, etc. for Achumawi and in Talmy's Atsugewi and by *ʔp*, etc. by Olmsted.⁷

Both languages have five vowels *i*, *e*, *a*, *o*, *u*. The contrast of high and mid vowels is almost always neutralized in Atsugewi and often so in Achumawi. The mid vowels appear to be from vowel clusters, as Sapir and others have proposed for Yana. Centralized epenthetic vowels occur in both languages. Achumawi has contrastive high and low pitch, somewhat predictable (as though a stress pattern) in some classes of verbs, but Atsugewi has a stress system.

Length (*C*· and *V*·) is contrastive in both languages, and syllables are either light *CV* or heavy *CVC* or *CV*· (ignoring for simplicity word-initial onset clusters). In Achumawi, the mora of vowel length assimilates the laryngeal state of the following consonant, whence preaspiration and pre-laryngealization. Short vowels are centralized relative to their long counterparts (short *a* is raised to [Λ], *i*, *e*, *u* are lowered). Consequently phonetic height rather than duration distinguishes e.g. *V*·*C*·*V* from *V*·*C*·*V*. This appears to be true of Atsugewi as well, if we infer from Olmsted's statement of vowel allophones (Olmsted 1958:215-216) that his *V*ʔ*C* is in fact *V*·*C*·. However, Talmy (1972) says the opposite, that vowel length : lowers high and mid vowels (but length marked · does not).

Challenges of reconstruction. I have documented the phonological deficiencies of the de Angulo/Olmsted Achumawi data elsewhere (Nevin 1991, 1998). Similar vagaries are revealed by comparing Olmsted's Atsugewi with transcriptions by Harrington and Talmy.

Olmsted's methodology is characterized by naïve simplicity and his results by improbable complexity. A few truisms are pertinent and bear repeating. Comparative reconstruction depends upon regular, recurring sound correspondences, and that requires a substantial collection of cognate word-pairs. Correspondences that are inherited from a common ancestor language by parallel sound changes must be distinguished from those in loans., and when the subject speech communities have lived in interactive contact for a long time, as in this case, there are likely to be loans before and after many strata of sound changes.

Atsugewi has a stress system, and Achumawi has contrastive pitch which patterns like a stress system in many verbs (still to be worked out), but there is no obvious correspondence of Achumawi pitch to Atsugewi stress. For this and other reasons, where reductions have occurred by syncope, apocope, aphaeresis, metathesis, etc., they are likely to have been carried out in different ways in the two languages.

When a complex word is borrowed, it may be re-analyzed by analogy or taken as unanalyzable. For example (Harrington mf2r31:341), the Yana place name *'iwolhay kháyna*, 'under the rock' (*khayna* = Sapir's *kayna* 'rock') is the arbitrary, unanalyzable name *yolhayk^ha* in Achumawi. A word may have entered both languages from a non-Hokan language. This appears to be the case with e.g. *t^ha kilmási* : *t^ha qélmesi*, Yana *thákkalmesi* (Harrington mf2r31:295b) "bigfoot, gorilla". In all three languages this is an unanalyzable noun, and word-initial aspirates are relatively rare in both Achumawi and Atsugewi.

Olmsted sometimes inserts a hyphen to isolate that part of a word which he believes is cognate, with no synchronic morphological justification; ex. (83) "kingfisher" Ach. *jolo-wāmo* (= *čilwá ma*), Ats. *kiri-iš?iši*, from which he reconstructs the segments *jolo* : *kiri* as **jŪrŪ*. His dictionary (Olmsted 1984) has *kiriš?iši*. In both languages *is:i* = "saying, speaking". In Atsugewi more than in Achumawi, this participle is used to form onomatopoeic compound animal names: *kinir-?iši*, (Ach *kilí-lá*) "squirrel sp.", *j?ok?iši*, *šwek?iši* "yellowhammer, flicker" (Ach *coq*), *koro?isi* "blue crane", *ejéjisi*, *qai?qa?isi* "magpie", *mumumisi* "yellowjacket".

The data. For this presentation, I have carried out a triage of the 205 items in *HPP*, adding data from my Achumawi database and a few items from Talmy.⁸ Due to constraints of space and time, only representative extracts are included in this summary presentation. The complete set of tables can be downloaded from the SSILA website at <https://goo.gl/Lv2lyS/> as follows:⁹

HPP.pdf — Olmsted's sets, with additional data.

1.pdf — 35 pairs that are identical, or nearly so: Ex (Achumawi first): (181) *ha'píc* : *ha?pij* "turtle". These I take to be relatively recent loans.

2.pdf — 24 pairs with simple differences: (71) *láh* : *nāha* "head".

3.pdf — 69 pairs with more complex differences: (21) *t^hiyáw* "sibling of same sex" : *hayyaw* "younger brother".

4.pdf — 44 pairs with greater differences: (36) *čikiw*, *čiki wálu*, *čikit a wálu* "doctor" : *pijəkeyjar* "doctor".

X.pdf — 12 pairs too dubious to consider as cognates without support from internal reconstruction or regular sound-correspondences: (86) *čilahpi* : *kutára*, *kútara*, *rá?tan* "leaf".

Unattested.pdf — 22 pairs that I cannot well judge, because they are unattested in my data. (I may find corroboration in other archival material that I am currently working into the database.)

Discrimination between tables 2, 3, and 4 is subjective, imprecise, and arbitrary, but adequate for a triage. Where several lines appear in a table cell, as in the following example from 3.pdf, Olmsted's data are on the first line.

	Gloss	Olmsted Ach	Nevin Ach	Olmsted Ats (1964)	Olmsted (1984)	L. Talmy
99	mussel, little mussel, sea (in river) clam (+diminutive) pismo clam	aliʔwaqā	ili·ci·ká (JPH) sál (salí·cika, salí·waka) salí·ki	səliʔjika	səliʔjika (DV) jar	

The suffixes *-(i·)waka* and *-(i·)cika* are two forms of diminutive. Olmsted's *aliʔwaqā* is probably *salí·waka*, although Harrington recorded no initial *s* (and displaced the glottalization) in his *ili·cika*. The cognate pair here is *sal* : *jar*. Whether these are from a common ancestor or from an earlier stage of borrowing is not yet determined.

Setting aside **1.pdf**, **X.pdf**, and **Unattested.pdf** leaves 138 comparison sets. The correspondences in them are tabulated in **similar.pdf**. I have not considered vowel correspondences, only consonants. These are tabulated more clearly in **corresp.pdf**, where some forms are regularized based on information from Talmy (p.c.), as follows: plain stops are aspirated syllable-finally as in Achumawi (example: (8) *kaphwára* “fish basket” regularized to *kapwára*), and a single consonant is geminated intervocally under conditions common to both languages¹⁰ (example: (97) *áppu*, *apú* “mouth” > *ápu*, *apú*).

Olmsted's Correspondences. Here are listed 63 phoneme pairs proposed by Olmsted. For each is given the number of occurrences and (in parentheses) the item numbers in which it occurs.

p:p = 8 (2, 8, 97, 115, 157, 174, 176, 178); *p^h:p* = 4 (6, 16, 88, 140); *p̣:p* = 2 (52, 128); *p̣:p̣* = 1 (95); *p:ø* = 1 (110)

m:w = 2 (117, 171); *ṃ* = none

w:w = 5 (8, 22, 57, 61, 75); *ẉ:w* = 6 (26, 74, 138, 180, 185, 190); *w:p* = 1 (124); *ẉ:hw* = 1 (200)

t:t = 4 (27, 33, 115, 142); *t:k* = 4 (102, 115, 129, 185); *t:sk* = 1 (19); *t^h:k* = 1 (201); *t^h:h* = 1 (21); *ṭ:ṭ* = 4 (24, 129, 133, 186); *ṭ:t* = 1 (128)

n:n = 5 (2, 9, 64, 65, 142); *ṇ:ṇ* = 1 (153); *n:w* = 1 (57)

l:l = 3 (99, 110, 118); *l:n* = 7 (24, 28, 35, 132, 139, 149, 199); *l:r* = 5 (14, 35, 98, 108, 201); *ḷ:r* = 5 (8, 137, 139, 186, 190); *ḷ:l* = 1 (178)¹¹; *l:h* = 1 (177)

c:j = 5 (52, 53, 98, 198, 199); *c:ts* = 2 (19, 157); *c:t* = 2 (75,¹² 153); *c:s* = 1 (110 *sc:ss*); *c^h:j* = 2 (65, 199=*cc^h:j*); *c̣:ʔj* = 3 (99, 179, 203); *c̣:j* = 5 (2, 9, 55, 68, 204); *c̣:s* = 1 (124); *c̣:t* = 1 (6); *c̣:ø* = 1 (126)

s:s = 17 (2, 22, 35, 52, 74, 77, 90, 110 [*sc:ss*], 129, 130, 133, 134, 142, 149, 166, 184, 198); *s:ṣ* = 1 (95); *s:j* = 7 (16, 39, 141, 187, 191, 196, 202); *s:sj* = 1 (45); *s:ø* = 1 (132)

y:y = 2 (21, 130); *y:ø* = 1 (198); *ỵ:y* = 1 (92); *ỵ:w* = 1 (157); *ỵ:ʔ* = 1 (75)⁷

k:k = 5 (9, 57, 73, 90, 153); *k:t* = 1 (9); *k:x* = 1 (137); *k:j* = 1 (55); *k^h:k* = 2 (27, 33); *ḳ:k* = 2 (8, 26); *ḳ:q* = 1 (183)

q:q = 2 (40, 184); *q:k* = 7 (34, 64, 90, 94, 98, 139, 190); *q:k^h* = 1 (177); *q^h:k* = 1 (72);

q̣:q = 2 (22, 203); *q̣:k* = 2 (103, 159); *q̣:x* = 1 (96)

h:h = 5 (37, 40, 71, 92, 131); *h:ʔ* = 1 (77); *ḥ:ø* = 1 (55)

The evidence is not equally abundant for all of these 63 correspondences. The table below shows the 20 correspondences that are best supported. The *s:s* correspondence is supported by 17 examples, followed by the *p:p* correspondence with 8 examples; at the other extreme, the *l:l* and *c̣:ʔj* (= *c̣:c̣*) correspondences are each supported by just three examples.

s:s	17		ẉ:w	6		c:j	5		t:t	4
p:p	8		w:w	5		c̣:j	5		t:k	4
l:n	7		n:n	5		k:k	5		ṭ:ʔt	4
s:j	7		l:r	5		ḥ:k	5		l:l	3
q:k	7		ḷ:r	5		p ^h :p	4		c̣:ʔj	3

Of the remaining 43 proposed correspondences, 11 are supported by two examples, and 32 are supported by just one example. In other words, for more than two-thirds of the proposed correspondences it is not possible to say that they are regular and recurring. To say nothing of the environmental conditions for e.g. *s:s* vs. those for *s:j*, which show no obvious partition in the synchronic data.

Challenges and opportunities. The first point to be taken from this is that we need more data of better quality. Semantic issues, as with deictic “this” vs. “that” (170), depend on text material if not explicit glosses.

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Nevin Ach</i>	<i>Olmsted Ats (1964)</i>	<i>Olmsted (1984)</i>
170	this here that	qe·	piq ^h á pi qhé, q ^h ahé	qe·	qe, kuʔjehé, oskuriʔku kʔé, kʔe, qaʔqi, qaq ujtayji, kuʔja, kujʔé·

Confusion of ants vs. termites (2) perhaps reflects speakers' faded memory of childhood experience, and uncertainty about kinds of baskets (8) and kinds of nets (103) may be expectable with loss of cultural knowledge. Talmy's consultant Selena Lamarr was expert in these matters. (NID = not in Atsugewi Dictionary.)

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Nevin Ach</i>	<i>Olmsted Ats (1964)</i>	<i>Olmsted (1984)</i>
2	ant, black red ant larvae ant termite ant, big black ant, little black ant	jʔenapši·ta	çinápsí·ta wé·pupa	jina·pswitā	[NID] jina·pswitá jnápsitá, jewapsita [NID] we·pupa jinaksuwá puʔklaʔama·s
8	basket, seed seed-beating basket seed beater basket, fish seed basket	qàpwā·la	kápwála çapóhwa	kaphwāra kaphwāra	 kaphwára
103	net net, fish net, water game net, rabbit	yeqʔ elāw	iq·e·líwa, tiq·i·lóo iq·iláw iq·i·la (de A ms.)	ikiraw	[NID] ikiráw, ikiraw, ayhawyawne wirúmijás

The simplification of the Atsugewi terms for grandparents (64, 65) is not credible, given the long practice of intermarriage, and is almost certainly due to a failure to enquire.

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Nevin Ach</i>	<i>Olmsted Ats (1964)</i>	<i>Olmsted (1984)</i>
64	grandfather grandfather, maternal grandfather, paternal	aqunwi	waq ^h ·o·wí, waq ^h ·unwí, q ^h ún wap·u·wí, wapunwí, pún	akon	akon, a·khon, amu·n
65	grandmother grandmother, maternal grandmother, paternal	ajunwi	wac ^h ·u·wí, wac ^h ·unwí, c ^h ún wam·u·wí, wam·unwí, mún	ju·wa	juʔwa, ju·wa

In Achumawi, they are used reciprocally for grandchildren, e.g. “father's father” = “man's son's child”.

Similarly for (21), where the Achumawi *t^hiy·áw* is “same-sex sibling”, it may well be that the Atsugewi gloss “younger brother” for *hayyaw* is accurate as far as it goes but too specific within the domain of the word. In the 1984 Atsugewi dictionary, the set of terms for older and younger brother and sister is obviously incomplete.

older brother *puʔpa, popate·*
younger brother *hayyaw*

sister

roʔmike ni, roʔmiké ni, lo mikiʔni

The second point, almost as obvious, is that language-internal relations must be given greater account. For example the evident relation of Ats. *-pijak-* “dream” to *pijaki* “medicine-man”, *pijəkeyjar* “doctor”, and the lack of such relationship of Ach. *tó·sáqcamí* “dream” to *čikiw* (also *čiki wálu, čikit a wálu*) “doctor, medicine man” argues that the words in (36) are not cognate (though those in 38 may yet turn out to be cognate).

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Nevin Ach</i>	<i>Olmsted Ats (1964)</i>	<i>Olmsted (1984)</i>
36	doctor medicine man	jikiʔ-wā·lu	čikiw, čiki wálu, čikit a wálu	pijakey-jar	pijəkeyjar pijakí
38	dream, a dream, to	saq	tó·sáqcamí -ó·sáqcam-, -áwasáqcam-	pi·jak	pijaká -pi·jak-

Thirdly, the problem of layers of borrowing overrides all. The example of (99) was given earlier.

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Nevin Ach</i>	<i>Olmsted Ats (1964)</i>	<i>Olmsted (1984)</i>
99	mussel, little mussel, sea (in river) clam (+ diminutive) pismo clam	alɪʔwaqā	ili·čí·ká (JPH) sál (salí·čika, salí·waka) salí·ki	səlɪʔjika	səlɪʔjika (DV) jar

Here, *səlɪʔjika, səlɪʔjika* is an obvious borrowing of Ach. *sal-i·čika*, diminutive of *sál*, and *sál : jar* are probably cognate, reflecting sound changes before that borrowing.

In a kind of structural 'borrowing' or diffusion called *convergence*, neighboring languages that have no demonstrable genetic relationship can come to have like patterns of word-formation and syntax (Mithun 2008a), in which pronominal patterning and even morphology can be borrowed (Mithun 2008b). This probably facilitated (and was fostered by) the linguistic requisites for trade and intermarriage. To draw an analogy, the structure of a trade language can provide a familiar matrix into which a 'foreign' vocabulary can be integrated—for example Swahili, or its ancestor trade language, has been accounted the basis of Black English, Black French, etc. In like manner, convergent grammatical structures may support borrowing of morphemes within a common template for word formation. A salient question here is whether structural parallels between Achumawi and Atsugewi are inherited, or convergent because of their long intimacy?

Conversely, a lack of structural parallel where it might be expected argues against close genetic relationship. I discussed here two years ago (Nevin 2014) how Achumawi has a large class of verbs ending with *-ci*, many of them quite transparently constructed by incorporation, as for example *táwáh·á·ci* “make bread”, incorporating *wáh·ac* “bread”. In addition, some Achumawi instrumental prefixes appear to be reductions of the corresponding body part word (e.g. *čí-* “with the foot”, *čik·oh* “foot”), or of its ancestral form (*hi-* “with the head”, *lah* “head”). However, Talmy says (p.c.) that Atsugewi has no such relationships of incorporation and reduction. Is this a recent innovation, not yet borrowed by Atsugewi? The very large class of verbs in *-ci* argues against this.

Both Achumawi and Atsugewi deploy instrumental prefixes and adverbial suffixes around verb roots that are often of a classificatory sort, as indeed do many other languages of California (and the Americas). We might expect this shared template to serve as a matrix for borrowing and to look among these morphemes for cognates.

I have found two shape or shape-change morphemes that are identical:

-sčak- : *-sčak-* “sharp”

Seen in Achumawi *cusčá·ké* “fork” (and words for “arrow”, “pick one's teeth with a toothpick”, “spur”, “thorn”, and “sharp-pointed; sharp-faced (like Coyote)”), alongside Atsugewi *spʔusčakíw* “I got a thorn stuck in my finger” *s- ' - w- p- tu- sčak -im -a* (Talmy 1972:453).

-meq- “crumple, wrinkle”, *ti-li-mé·q-i* “tear (building) down” : *-miq-* “crush or break down house-like object”

Three instrumental prefixes are identical, or nearly so:

cu- “flow” : *cu-* “by water/liquid flowing”

p^hu- “by blowing” : *p^hu-* “by blowing, spitting” (also *pu-* “by mouth pressing, touching”).

ip^li “tongue”, *p^li-* “with the tongue/taste” : *pri-* with the mouth inward; by taste or smell.

I have found three more instrumental prefixes that are partially similar:

ma- “by fire” : *miw-* “by heat, fire”, *mu-* “by one applying heat, fire”

-(i)m “down to the ground” (rarely *-mí-ci*) : *-mič* “down onto ground”

-čh “into liquid” : *-ičt* “into liquid”

However, most of the several dozen affixes listed by Talmy (1972) do not resemble any corresponding affixes in Achumawi, as for example *či-* : *ma-* “with a foot or feet”. Further research may align these better.

Comparison of complex words and identification of cognate morphemes obviously cannot be done without basic morphological segmentation and morphophonemic analysis (internal reconstruction) in each language. The elementary step of identifying morphemes avoids many of Olmsted's false leads, as in (83):

	<i>Gloss</i>	<i>Olmsted Ach</i>	<i>Achumawi.db</i>	<i>Olmsted (1964)</i>	<i>Olmsted (1984)</i>
83	kingfisher	jolo-wā mo	čilwá má	kiri-išiši	kirišʔiši [is i = "saying"]

As I noted earlier, Ats *kiris-ʔisi* is clearly one of many onomatopoeic animal names, unrelated to Ach *čilwá má*.

Cognate sublexical morphemes may help to establish regular, recurrent sound-correspondences, and on that baseline loans may be distinguished from inherited developments.

In conclusion. To establish the genetic relationship of Achumawi and Atsugewi, we must

- Distinguish loans at different time depths
- Establish regular, recurrent sound-correspondences
- Recognize effects of areal convergence

But as Olmsted has demonstrated, it is very difficult to do any of that without good data. All of my Achumawi data (to which I am now adding archival data) are available for download at <http://zelligharris.org/achumawi-db.html>. The California Language Archive has made images of Len Talmy's field notes available to researchers on line. A corresponding Atsugewi database could be a good dissertation project.¹³ My focus (and grant obligation) is to make the Achumawi database as complete and reliable as possible. I hope that others will take up the comparison work, with my full assistance.

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- 1 This work was supported in part by NEH Grant PD-250041-16 under the joint NSF/NEH Documenting Endangered Languages Program, with administrative support from the Endangered Language Fund.
- 2 Voegelin (1946), Olmsted (1954).
- 3 Chase-Dunn et al. (1992, 1998), McCarthy et al. (1985), (Nevin 1998:4–6), Whistler (1977), Hinton (1994:89). Golla (2011:5, citing Moratto 1984) has proposed that the very limited dialect diversification over the long extent of the Pit River is due to this relatively recent occupation.
- 4 Olmsted depends upon de Angulo, whose difficulties with Achumawi I have documented elsewhere. Talmy's Atsugewi segment inventory appears in Good, McFarland, & Paster (2003), and he has provided me notes and discussion.
- 5 It is intriguing, but inconclusive, that Atsugewi plain *h* “raises adjacent vowels” and a rarely occurring morphophoneme *ḥ* does not. Articulation of Achumawi epiglottal *ḥ* raises *a* and lowers the other vowels, and *q* lowers all vowels.
- 6 In Achumawi, sonorants and vowel length are devoiced before consonant or word boundary so this is a general coda phenomenon. I do not know what happens in Atsugewi in this environment.
- 7 Olmsted's representation complicates description of clusters and is somewhat misleading because of prelaryngealization and because phonetically the glottal closure for continuants is at the syllable margin: *ḥám* “still, yet” = [ʔnAmʔ]
- 8 Instructions to obtain, install, and view the Achumawi database are at <http://zelligharris.org/achumawi-db.html>.
- 9 They are also stored at zelligharris.org (same file names). The following abbreviations occur in these tables: NID “not in dictionary,” GR “grammar” (de Angulo & Freeland 1930), DV “Dixie Valley” (the upriver dialect of Atsugewi), DR “downriver” and UR “upriver” where one of the slight dialect differences in Achumawi is relevant. The spreadsheet underlying these PDF files is available on request.
- 10 For Atsugewi, between V_1 and V_2 , and (if stressed) between V_3 and V_4 . For Achumawi, see Nevin (1998). Writing a geminate cluster implies that the first member is voiceless-released, liable to be heard as aspirated.
- 11 If *apli* is in fact *apri*, this is another example of *l:r*.
- 12 In (75) *té?ewa* may be cognate with Ach. *té'-wa* “in that way”.
- 13 Talmy is also looking for a phonology student to write up his grasp of Atsugewi phonology. That might also be a good dissertation topic.