Pit River Languages Project

Summary of work during December 2024

You can download the current Achumawi backup from

- http://zelligharris.org/Achumawi/achumawi-db.html

I have updated the automatically generated Achumawi webonary at

- https://www.webonary.org/odissi/

During December I recognized how the ‘internal syntax’ within the verb and the ‘external syntax’ can be developed in a unified way.

The sections in this report are

1. Syntactic analysis
2. ’Acẇuké· database project
3. Acúmmá ’ó tiṡi íímaċci’

As usual, the last two sections are from Paul Cason and Lisa Craig, reporting their work. This and all prior monthly summaries are archived at

- https://zelligharris.org/Achumawi/achumawi-db.html

---

1. Syntactic analysis

I can now see how the grammar might be organized to describe the ‘internal syntax’ of complex words and the ‘external syntax’ of sentences comprehensively in a unified way.

So far, the focus has been on the analysis of words into dependencies among roots, and the analysis of multi-word constructions into dependencies among words. Operator grammar shifts perspective from analysis to synthesis, the entry of roots into the construction of sentences. Each root is an operator with an argument requirement, the noun(s), root(s), or combination thereof which must be present with it. The operator or its argument may take a reduced shape according as its informational contribution is reduced because it is expressed by other means in the context of the construction. The reductions are no more than the extension of morphophonemics to a wider domain. As with the morphophonemic alternants that are familiar in descriptive linguistics, the reductions may result in pairings which are not phonemically similar (as e.g. *go* and *went* in English) and even in reduction of phonemes to zero, and this is true also in historical and comparative linguistics (see e.g. Hoenigswald 1959).

The reductions produce all the apparent complexity of grammar, such as morphological paradigms, but conversely they reduce the apparent complexity of sentences, that is, sentences without them would

be greatly lengthened with cumbersome repetition. The value of identifying the dependencies of roots and their arguments and making them explicit (by undoing the reductions) is that this explicit form is the information that is transmitted from speaker to hearer. What is sought is a 'least grammar' with a minimum of grammatical apparatus, letting the language speak for itself.

The reductions are not ordered, except insofar as they are carried out as the conditions for them are created by the entry of an operator on its argument words. (The roots are at this level considered as words, and indeed in the database many have occurrences as free-standing words.) A derivation showing the construction (or analysis) of a sentence has the appearance of a series of temporal events, requiring the presence of argument words before an operator over them can enter, but this is a descriptive order only. One could as easily produce the operator (with generic or indefinite arguments implicit) and then search to make its arguments more explicit.

Harris made discoveries about language as a mathematical object. He did not concern himself with the psychological reality of this grammar of word dependencies and reductions. This has been my interest. For this, it is better to think of the alternative forms as simultaneously available from a non-linear network of word dependencies which can be linearized in various ways in discourse as successive sentences and sentence-fragments. I made a first essay at this (Nevin 1970) just before embarking on fieldwork in the Pit River community. Computationally, something like this is now seen in the word and 'subword' vectors generated by large language models (LLMs, so-called AI).

Operator grammar has been demonstrated in depth for English,[1] less thoroughly in a restatement of Sapir's grammar of Takelma,[2] and tested with many other languages. In an operator grammar of Achumawi, the construction of a complex verb stem begins with the main root and its external arguments, if any. Every additional root either enters in a conjoined sentence which is reduced to an adjunct, or as an operator with the main root in its argument (e.g. for *n* 'transition, change state' in the left periphery, with the sense of iteration or intensification, and for auxiliaries like *waci* in or after the right periphery). The reductions of phonemic shape are an extension of the morphophonemic alternations that have long been familiar to linguists within a word. In this extended morphophonemics, the very simple source sentences are often rather artificial and awkward precisely because the function of the reductions is to produce a more compact expression by reducing low-information and zero-information (repeated) elements with conventionally represented relations of prominence and subordination, and this is also often true of intermediate stages that may be posited for a derivation. The important thing is that the dependencies among words and morphemes are preserved

I have described a tripartite stem template for a large class of verbs with a CVC root as the main root, preceded and followed by a CV root. A given CV root may occur either before or after the main CVC root. The meanings of the CV roots differ systematically, depending upon their position. This difference in meaning is a clue about the correspondingly different derivational sources which are reduced to adjoined roots.

---

1 Harris 1986 Bampton Lectures; 1988 *Language and Information*; 1991 *A Theory of Language and Information*.

2 Kendall (1977).

A root to the left of the main root is reduced from a conjoined sentence asserting something about the subject or agent of the verb. The conjoined sentence has a noun in its argument which is metalinguistically affirmed the same as the subject or agent noun in the argument of the main root. For example, starting with *lul* 'roll, form a ball' and in its argument a morpheme designating the speaker (of the current sentence), one could say *it salúúli*.

it salúúli	I roll it, I 'ball' it.

By itself in a gerund, *lul* describes turning, rotation, and roundness, e.g. ball, boring a hole, and even a spherical conception of the rotating heavens in *alúúli ú iqqús* 'milky way', the 'backbone' of the heavens. However, if motion is intended we have to say how and where. To say 'how', we can postulate a conjoined sentence *it sac̓íici*,

it sac̓íici ma it salúúli	I surmount it and I roll it

An intermediate reduction to an adjunct *ic̓í ka*

ic̓í ka, it salúúli	while it I roll it

is reduced to *c̓i* before the main root

it sac̓iilúúli	I roll it with my feet

In the same sort of tripartite stem, a root on the right of the main root is reduced from an adverb on the sentence as so far constructed ('sentence' here meaning one sentential verb and its noun arguments). Speculating loosely, a gerund plus stative *y̓* might be appropriate for an adverbial phrase or a gerund with *akey̓*, as in the following (LR: Pumice-Stone Man (Obsidian-Polisher 20.14):

amqʰá palá' iic̓íímáké' ckúúwí.	that already was down in [sacks] atop [other things]

So, beginning as above with *it salúúli*:

it salúúli; qa ilúúli is̓s̓áákey̓ ac̓íiciy̓ y̓uwí	I roll it; said rolling is on top
it salúúli; amqʰá wac̓íiciy̓ y̓uwí	I roll it, which is on top
it salúúlc̓ici	I roll it on top

Similarly for *kac ú súúw̓a ckwacasqʰéqc̓icáké* 'she tore her basket cap from her head' the *qʰéq* 'tearing' (where *s* 'indefinite' may here signify a figurative sense) is *c̓i* 'on top of' her head, and in *tilupc̓ici* 'sunset' the *lup* 'stack up, pile' is *c̓i* 'atop' the mountains.

The iterative or intensive meanings of the root *n* at the beginning of the stem seems to be an adverbial assertion about the subject repeating or 'going at' whatever the main verb stem describes. On the right side of the main stem we find a much richer collection of adverbial expressions, including what I have called auxiliary verbs.

Other morphemes in the periphery of the verb do not (apparently) also occur as roots. Sorting out the various pronominal prefixes and their combinations remains a challenge. There is ample evidence that the individual components are more freely combinable than is suggested by de Ángulo's manifestly incomplete presentation of self-contained paradigms. Once the semantic distinctions are

more clearly specified, they can be made explicit in contextual and metalinguistic operators or conjoined sentences, much as e.g. the English tenses are reductions under *before* or *after* as conjoining operators (Harris 1982:265-279). In the examples with *it salúúli*, etc. above, I assume that *it..s-* is a discontiguous morpheme with the meaning 'speaker'. The discontiguity is evident in the possibility of e.g. *it ká salúúli*. The *it* is usually zeroed. Correspondingly, *m̓i..k-* 'hearer'. The *w̓-* and *y̓-* may actually turn out to be occurrences of the stative *w̓* and *y̓* roots seen elsewhere, but with a dependency on the subject or agent noun (e.g. N..*w̓-*, N..*y̓-*).

In the right periphery, the directionals *m* 'thither' and do not occur as the main root. We might propose as sources something like *pʰíw̓a wáy̓tu* 'from here' or *húky̓e tántan* 'toward yonder' for *m* 'thither', and conversely *pʰíw̓a tántan* 'toward here' (but not *húky̓e wáy̓tu* 'from there') for *k* hither.

Many stems are such sequences of roots followed by *c* in 3rd person *waci* or (rarely) *yaci*. There is a large class[3] of verb stems ending in *c*, which is perhaps reduced from the gerund *ici*. This has the appearance of having a verb-making function.

Stems without *c*:

1. Stems ending with a directional *m* 'thither', *k* 'hither', *t* 'toward' (e.g. *tikuut̓áq̓ta* 'stick it on the wall', *sánmaat̓áq̓tí* '(spark) stuck to me').
2. Simple stems with a single root, e.g. *ammi* 'eat', *étw̓i* 'kill', *úúc̓i* 'topple', *uum̓ááti* 'sleep', *álééq̓i* 'cover'. Even *anááwaatóóq̓i* 'dust off', since the stem proper is onomatopoeic *toq̓* preceded by *n* 'iterative' and *w* 'stative'. (But see *m* 'down to/into', below, as an exception to this generalization.)
3. Perhaps stems with roots beyond the tripartite template. Examples:
   - *ímasl̓íícatáq̓i* 'play smudge' *ma* 'heat' *s* 'indefinite' *l̓i* 'extend power' *ca* 'in air' *táq̓* 'stick to'
   - *ínámmac̓q̓áti* 'understand' *ná* 'change state' *ma* 'see, find' *c̓* 'upon' *q̓át* 'press against, compress'
   - *il̓úúm̓iitéq̓ti* 'run as fast as possible' *l̓u* 'pull, pulled' *m̓i* 'thither' *ti* 'toward' *q̓t* 'press against'

   In the first two, the final root (*táq̓*, *q̓át*) occurs after a root of directed motion (*ca*, *c̓i* reduced to *c̓*). I am not fully confident of the analysis of *il̓úúm̓iitéq̓ti*.

Stems with *c* have no directional affix and are not among the exceptions (2) and (3) above.

4. Stems ending with *m* 'onto/into' idiomatically requires *c*. This confirms the distinction between this root *m* and the directional *-m* 'thither'. A possible source is seen in e.g. *cum cum wámííci* 'it drips', but functioning as an auxiliary like *waci*, etc. and reduced to *m̓íci* after consonant and *m̓ci* after vowel. Examples: *yánwac̓óh̓m̓íci* 'is dripping', *wacustínmíci* 'is sinking', *tuuc̓ímci* 'precipitate', *tisúmci* 'copulate'.
5. Similarly, the semantics of *c̓i* 'atop, upon' and *c̓u* 'rise, lift; go along with' could be considered directional, but like *m* in (4) each can occur as the main root and each may be combined with *c*

3 The subject of a very preliminary report in (Nevin 2014).

at the end of the stem.

6. Obviously all verbs with *waci*, *kúci*, and *íwci* are examples, but they need to be looked at in closer detail.

7. There are exceptions to generalization (2), simple stems with *c*. It may be that the 'auxiliary' or 'verb-making' *c* is idiomatically associated with particular roots when they occur at the end of the stem. A concordance on final *ci* turns up the following root morphs: *ċo* (=*ċu*), *ha*, *ḣpa*, *láq*, *lu*, *ma*, *maq*, *muċ*, *mum*, *pʰa*, *pḣa*, *pṫa* (+ *s*), *q̇a*, *sam*, *sóq*, *tu*, *ṫuẏ*. A next step will be to look for occurrences of these with no following *c*. There may be other roots to be found before *ca*, *có*, *ce* which happen not to occur before *ci*.

As always, the devil is in the details, but this analysis brings the details into relation with each other, and although many of the proposed sources are unattested in the corpus, their forms and etymologies are plausible and semantically illuminating. As a closing illustration, consider some examples with the root *ma* 'look, see, find'.

- *simááci* 'I see'

The stem-initial in 'transition, change state' is the main root in innáái 'growing, flourishing', e.g. in placenames such as *taḷaḣ ínnáácí* '(where) hemp grows'. Assume this can be in a conjoined assertion about the seeing.

- *simáái; sinnáái qa qʰé qa timáái wa.* 'I see; I change with that seeing.'

Sááná 'I go, traverse, change station' etc. is a more usual form; *sinnáái* is something like 'I do changing'. A form that could be glossed 'I undergo changing' might be more precise. This may be reduced to a gerundive adjunct:

- *simáái, innáái.* 'I see, changing.'

The gerund is reduced to an adjunct on *ma*:

- *sinímmáái* 'I see, I find.'

This reduction might be directly from the assertion with *sinnáái*, to be determined by more general considerations as the grammar develops.

Conjoin an assertion about the sentence so far (under semicolon pause, a conjunction):

- *sinímmáái; iċííci qa iṡáké tinímmáái*. 'I find; said finding is surmounting something'

Instead of the indefinite 'something' that which is 'surmounted' or 'brought under (control)' may be explicitly stated. Further reduction yields

- *sinímmáċci* 'I learn how' (also: *sinámmáċci*)

Three forms are all glossed 'learn how': *timáċci*, *tinímmáċci*, and *tinámmáċci*, demonstrating that it is the *ċi* adjunction on the right which adjoins this nuance of meaning to the central *ma* root. One further

example circumscribes this nuance a bit. Without the *n* ‘change condition’ root on the left, *má* + *ċ*(*i*) asserts only attention and apprehension of something present:

- *tímmaċċámé·y· ’kam ckwáátʰasẇaci.* ‘She continued pounding without noticing him’

The roots in the first word here are *ma* + *ċ*(*i*) + *c* + *ámé* + *y·*. The *ámé* ‘without, lacking’ appears to be an auxiliary use of *mi* ‘thither’ in gerund form, plus the stative *y·* which commonly follows a participle used as an adjunct (adjective or adverb). (In the story, *Céémul* was annoyed because *Kwan*’s magical sunbeam-woman paid no attention to him.)

These verb stems, *ímáái*, *inímmáái*, *imááċci*, *inímmááċci*, all have the auxiliary *c* ‘do, be’ in the right periphery. This is not present in *iníímaċq·áti*, as in this text fragment:

ċé suwí tiníímaċq·áti ċimmu wiH·H·éélucan ckiši. ‘ “I don’t understand” said Wolf the chief.’
ckwámmaaċasẇací. ‘He was (continuously) looking up.’[4]
áẇ· sinímmáái. ‘I looked for wood.’
ċé suwí tinímmáái. ‘I can’t find any.’

When *qat* ‘compress, press against’ is added to *inímmáċci*, the learning is compacted to understanding.

References

Harris, Zellig S. (1988). *Language and Information*. NY: Columbia U. Press.

Harris, Zellig S. (1991). *A Theory of Language and Information: A Mathematical Approach*. Oxford & New York: Oxford U. Press/Clarendon Press.

Hoenigswald, Henry M. (1959). Some Uses of Nothing. *Language* 35: 409-20.

Kendall, Daythal. (1977). *A Syntactic Analysis of Takelma Texts*. Ph.D. dissertation, U. Pennsylvania.

Nevin, Bruce. (1970). Ethnographic Description of Discourse: A Model and Extensions. Master's Thesis, U. Penn.

Nevin, Bruce. (1984). Review: Z. Harris, *A Grammar of English on Mathematical Principles*. *Computational Linguistics* 10.3-4:203-211.

Nevin, Bruce. (2014). Achumawi *-ci*. Presentation to SSILA.

4 As in prayer. Without *s*, *ckwámmaaċaaẇací* says he’s looking at something specific.

2. ’Acw̓uké· database project

(Paul Cason)

December and the end of 2024 shows the following statistics for the Atsugewi FLEx database:

1369 unique words (types)
1866 word occurrences (tokens)
1334 sentences or ‘segments’ (database entries)

I have been working with files archiving L. Talmy’s field notes and analysis notes

Talmy.002.001.pdf
Talmy.001.001.pdf
Talmy.001.002.pdf
Talmy.002.003.pdf

Correlating the information in these has sped the process of making database entries for roots, glossing them (including additional glosses from his analysis), and separating the roots and other morphemes in examples.

Of considerable help has been Talmy’s dissertation circa 1972 on semantic structures in English and Atsuge. His analysis has unlocked the mystery of the unique working parts of this language that I was struggling to pin down while entering lexical glosses. Of interest is his mention of articles published since the dissertation. A wish for the future would be that these articles mentioned on page i of his dissertation be obtained.

3. Acúmmá ’ó ti̓si íímac̓ci’

(Paul Cason and Lisa Craig)

The last two Achumawi language classes of the year were successfully conducted, incorporating valuable input from community members about their preferred topics for learning in the coming year. Participants highlighted the need for additional resources in digital formats to enhance the existing curriculum and facilitate easier access to learning materials. Furthermore, they expressed interest in organizing a summer language camp that would provide immersive learning experiences for participants of all ages.

As a result of a yearlong participation, the community can look forward to another full year of engaging language classes aimed at preserving and promoting the Achumawi language and culture among the Pit River people. These classes will not only serve to educate but also strengthen community bonds around their shared heritage.