Diversity in Morpheme Order in Several Alaskan Athabaskan Languages: Notes on the gh-qualifier
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Recent discussion of the verb in the Athabaskan languages has centered on the role of position class analyses of the verb complex. Studies such as Rice 1991, 1993 and Speas 1990 have sought to account for verb forms in terms of general morphosyntactic principles without recourse to a templatic statement of the verb complex. Rice (1991, 1993) states that among the reasons to abandon the position class model is that it is typologically aberrant, seemingly arbitrary, and theoretically weak. Rice has sought to show that 1) within the Athabaskan languages morpheme order of the verb prefixes is fairly congruent, and that 2) morpheme order in the prefix complex can be predicted by cross-linguistic scopal principles.

On the other hand, in recent papers I (1989, 1992) have expanded the role of the verb complex. I state that if consistent criteria are applied, the languages tend to have over twenty distinct prefix positions or zones with subpositions before the stem and three or so suffix positions after the stem. The model I call *stacking templatic word formation* requires that the morpheme order and the inventory of affixes in the verb complex be fully specified for each Athabaskan language. Underlying verb themes, which tend to be quite congruent in structure and meaning across the language family, are modified by string-like derivations. As the strings apply, they stack and interdigitate upon an inherited base structure. In this model a fully specified verb complex serves as a template that parses surface and underlying forms and filters the string-like derivations that apply to underlying verb themes.

Stacking templatic word formation must be based on an active research effort on the composition of the verb complex. In fact, this has been attempted only for a very few Athabaskan languages. In the Ahtna study (Kari 1990:37-38) I noted that at one point I had done seventeen drafts of the verb complex. The general and schematic verb complexes, such as those usually invoked for Navajo (e.g. Sapir and Hoijer 1967), will not suffice as a mechanism in the model of stacking templatic word formation.

In this paper I summarize some facts on ordering in the 'qualifier prefix zone' in several Alaskan Athabaskan languages. We find that there are some major differences in the verb complexes. The differences are most conspicuous in the languages of Western Alaska which, as a general trait, have more distinct positions and little or no drift toward levelling in the prefix complex. This is not to say that there is not merit in Rice's position regarding congruences and predictability. However, the similarities among the languages are general and are best captured at the 'zone level' (in the sense of Kari 1989).

One prefix that is particularly interesting is the one that Jules Jetté in 1906 termed 'the Ra[**gh**] qualifier' (Kari 1989:433). In Ahtna this **gh** prefix requires its own subposition as the rightmost prefix in the 'qualifier prefix zone' (Kari 1989:449-450; 1990:41, 202). This **gh** prefix is distinct from the **g h** progressive/future mode prefix. I also noted in Kari 1989:450 that in Koyukon this same '**gh** qualifier' is several positions further to the left, just to the right of the **uu** 'conative' prefix. Investigation of the **gh** qualifier is useful in several ways. The **gh** qualifier can clarify ordering relationships especially when combined with the **z/s** or **dh/th** negative prefix and other qualifier or mode prefixes. **Gh** qualifier verbs produce some interesting phonological rules. It is also a good test of my model to

see what happens with cognate forms in languages that may have **gh** in distinct postions or that may lack the **gh** qualifier entirely. Table 1 has cognate forms in Ahtna and Koyukon. The **gh** qualifier prefix is noted in boldface. Morphologically conditioned prefix vowels and epenthetic prefix vowels (other than schwas) are double underlined.[1]

Table 1. The **gh** qualifier in Ahtna and Koyukon

	Ahtna	*Koyukon*
a. 'it is frozen solid'		
	nghelten	gheneedltenh
	/n+**gh**%z+l+ten=0/	/**gh**+n%l+l+ten=0/
	qua+qua%prf+cls+stem=sf //	qua+qua%prf+cls+stem=sf
b. 'he will freeze it solid'		
	itnghaaɬti:ɬ	yeghiitenaaɬtenh
	/y+t+n+**gh**%gh+ɬ+ten=ɬ/	/y+**gh**+t+n%gh+ɬ+ten=0/
	obj+inc+qua+qua+mod+cls+stm=sf //	sbj+inc+qua+qua+mod+cls+stm=sf
c. 'I will freeze it solid'		
	tnghaaɬtiiɬ	ghiiteneeghtltenh
	/t+n+**gh**%gh+es+ɬ+ten=ɬ/	/**gh**+t+n%gh+es+ɬ+ten=0/
	inc+qua+qua%mod+1sg+cls+stem=sf //	qua+inc+qua%mod+1sg+cls+stem=sf
d. 'I won't freeze it solid'		
	'ele' tnghaaɬtiile	ghiitenleeghtltenee
	/'ele' t+n+z+**gh**%gh+es+ɬ+ten=ɬ+e/	/**gh**+t+n%l+gh+es+ɬ+ten=0+ee/
procl	inc+qua+qua%neg+mod+1sg+cls+stm=sf+sf / /	qua+inc+qua%neg+mod+1sg+cls+stem=sf+sf

The **gh** qualifier is the rightmost qualifier, as it is in Ahtna here, in most of the Alaskan languages. However the prefix is several positions further to the left in Koyukon, as well as in Holikachuk and in the Outer Inlet dialect of Dena'ina. Also note that a distinguishing feature of prefixes at the right-hand edge of the qualifier zone are various epenthetic or morphologically conditioned vowels, e.g. Koyukon **ee** in a, c, and d. I use the symbol % to mark the boundary between the qualifier zone and the inflectional zone to its right. Stem suffixes are distinguished here by the symbol =. Also note that the Koyukon forms retain all the prefixes on the surface whereas Ahtna, in d, has **gh** and **z** deletion rules in the future forms of verbs with the **gh** qualifier.

Lower Tanana, a language of the Fairbanks area, is a good language for surveying some of the functions of the **gh** qualifier. Lower Tanana and Upper Kuskokwim have, I would speculate, the most conservative verb prefix morphology and morphophonemics in the language family. Lower Tanana only occasionally alters **gh** via phonological rule. (Whereas Ahtna and the three other Tanana River languages have numerous rules that alter **gh**, or they have restructured paradigms with the **gh** mode prefix such as the future.) In Table 2 I show an array of cognate or parallel forms in Lower Tanana and in Upper Tanana, the latter of which lacks the **gh** qualifier. Only the **gh** qualifier is in bold. Other **gh** prefixes, e.g. in 1a and 1b, are the **gh** mode prefix.

Table 2. Some cognate verbs in Lower Tanana and Upper Tanana

	Lower Tanana	*Upper Tanana*
1. 'freeze O solid'		
a. I will freeze it	tenghaaghetltenh	tinaktänh
b. I won't freeze it	tendheghaaghetltenęę	k'aa tinaktän
2. 'to work'		
a. I am working	ghesdenaa	ishnah
b. I worked	ghaaghesdenaa'	ghįshna'
c. I will work	teghaaghesdenaał	tishnaał
d. I won't work	tedheghaaghesdenaalęę	k'aa tishnaal
3. themes referring to tethered or resistant subjects/objects		
a. he aimed sth.(at it)	niich'egheeniitaanh	niłaach'eniitąą
b. the clock stopped	niitaadegheeniighet	niłaaniixał
c. one end of rope fell	naanghaaghiideek	nałanįįdeek
d. a coiled rope fell	naanghiideek (no gh-qual)	nanįįdeek

In Lower Tanana the **gh** qualifier seems to be quite common and mutifunctional just like the other prefixes in the highly interesting 'qualifier prefix zone'. Sets of verbs such as these with congestion in the qualifier zone can establish the ordering in the qualifier zone quite definitively. Compare the verb forms in c. and d. In c. **gh** qualifier + **gh** mode trigger an **aa** epenthesis. Also this seems to be a rare case in which the **gh** qualifier is used similarly to **n** and **d** in gender agreement (**n** = 'rope-like', **gh** = 'tethered'). Note the levelling and simplification in Upper Tanana to one syllable before the stem as opposed to the several syllables in both Lower Tanana and Koyukon. The ordering is summarized in Table 3. Note that the uncommon qualifers such as **dh/z/l** in the themes 'kill' and 'listen' and **q/x** in 'talk' are not shown here but they are of importance to the model.

Table 3. The qualifier zones in Ahtna, Lower Tanana, Koyukon, and Upper Tanana

Ahtna	qo	u	t	d	n	z^2	**gh**
Lower Tanana	xu	uu	t	d	n	dh	**gh**
	area	*cona*	*incp*	*qual*	*qual*	*neg2*	*qual*
Koyukon	xu	uu	**gh**	d	t	n	l
	area	*cona*	*qual*	*qual*	*incp*	*qual*	*neg2*
Upper Tanana	hu	uu	t	d	n		
	area	*cona*	*incp*	*qual*	*qual*		

In Lower Tanana and also in Ahtna, the **dh/z** negative prefix is immediately to the left of the **gh** qualifier. In Koyukon, as can be seen in Table 1(d) the negative prefix **l**- (where **dh > l**) is the rightmost prefix in the zone and can occur as the onset consonant of a syllable with an epenthetic vowel. Also of note is the fact that

Koyukon and Lower Tanana differ in the ordering of the **t** inceptive and the **d** qualifier. Upper Tanana lacks both the **gh** qualifer and the **dh** negative positions.

The Dena'ina language of Cook Inlet seems to have a particularly productive **gh** qualifier. For years I have noted that it occurs in different positions and with differing morphophonemic alternations within the four dialects. Table 4 contains themes with **gh** qualifiers with dialect markings noted:

Table 4. Verbs with **gh** qualifer in Dena'ina dialects

no mark=all dialects, I=Inland, Il=Iliamna, U=Upper Inlet, O=Outer Inlet

1. 'make O (shavings), carve on, whittle O'

a.	he made shavings	yeghishak *(gh-durative) (no gh-qual)*
b.	he carved it into a shape	yed**gh**a̲shak *IUIl (z-conclusive)*
		yeg**h**d̲a̲shak *O*
c.	he carved it to a point	xeyedn**gh**a̲shak *IUIl (z-conclusive)*
		xeye**gh**dna̲shak *O*
2.	he loosened it (line)	xeyetden**gh**a̲ɬdatl' *IUIl*
		xeye**gh**denta̲ɬdatl' *O*

These examples suggest that the Dena'ina dialects may have at least two distinct prefix orderings. Preliminarily (without yet examining the negative), note the forms in 2, where there appears to be a reversal in the positioning of **gh** and **t** prefixes in the Outer Inlet dialect with respect to the other dialects. When we pursue the placement of the **z** negative prefix in verbs with the **gh** qualifier, such as 'to work', we find that there are even further differences within the dialects. Compare forms of the verb theme 'to work' in the Dena'ina dialects with those of LT and UT in Table 2.

Table 5. 'Work' in the Dena'ina dialects

a. I am working	**gh**eshtnu
b. I worked	**gh**i̲gheshtnu *I,Il*
	gha̲gheshtnu *U*
	ghgheshtnu *O*
c. I will work	t**gh**i̲gheshtnu *Ill*
	ta̲gheshtnu *U*
	ghetgheshtnu *O*
d. I won't work	nch'u tez**gh**i̲ghestnu *I*
	nch'u ezt**gh**i̲gheshtnu *Il*
	nch'uk'a eyta̲gheshtnu *U*
	k'usht'a ezg**h**e̲tgheshtnu *O*

Notice the varying placement of the negative prefix **z** (or **y** in U). Whereas the future positives are the same in I and Il, the negative forms are distinct. Of special note is that the Inland dialect is the only one which has an ordering for the **z** negative and **gh** qualifier akin to that of Lower Tanana and Ahtna. Also note the differences in surface phonology in the forms in b: **i** epenthesis, **a** epenthesis, and

when preceded by the **t** prefix. Table 6 summarizes the Dena'ina qualifier orderings.

Table 6. The qualifier zones in the Dena'ina dialects

1. *I*	q	i	t	d	n	z	**gh**
	area	*cona*	*incp*	*qual*	*qual*	*neg2*	*qual*
2. *Il,U*	q	i	z,y	t	d	n	**gh**
	area	*cona*	*neg2*	*incp*	*qual*	*qual*	*qual*
3. *O*	q	z	**gh**	i	d	n	t
	area	*neg2*	*qual*	*cona*	*qual*	*qual*	*incp*

Even though the Upper Inlet dialect has some **gh** deletion rules and a **z > y** rule, it seems that verb forms can be obtained with a verb complex like that of the Iliamna dialect. Now compare Outer Inlet Dena'ina and Koyukon in Table 3, the two languages with leftward positions for the **gh** qualifier. The Outer Inlet dialect of Dena'ina has the negative prefix placed out to the left of its leftward **gh** qualifier but in Koyukon the negative prefix is an inner prefix.

To illustrate the model of stacking templatic word formation, I present in Table 7 layered derivations of two examples for four languages from Tables 2 and 3: a) 'I will freeze it solid' and b) 'I won't freeze it solid'. See Kari 1992 for further details on the model.

I assume that the templates of the verb complexes are distinct in each language and are accessible at all levels. The basic root involved here is **ten** meaning 'ice'. An intransitive verb theme 'freeze solid' is formed from the root **ten** and a theme formation string that contains the **n** qualifier and the **l** classifier in all of the languages and the **gh** qualifier in three of the language (excluding Upper Tanana). The facts about the positioning of the qualifiers are in the templates of the verb complexes. Next, at level 3, the causative string applies yielding, at level 5, the fully specified verb theme.

The first inflectional string, at level 5, the 1sg future, with three prefixes and a suffix, interdigitates simultaneously with the other prefixes and the root of the verb theme. The four phonetic forms of a) are shown beneath the fully specified underlying forms.

At level 6 the negative strings apply. Note that the negatives are distinct: Lower Tanana and Koyukon have prefix + suffix, Ahtna has proclitic + prefix + suffix, and Upper Tanana has proclitic + suffix (voicing). Also note that the phonology is very different in each of these languages. Classic Athabaskan radical allomorphy is illustrated where the 1sg subject pronoun **/es(h) + ɬ/** classifier are realized as **-tl, ɬ**, and **k**. Note the differences between Lower Tanana with one epenthetic vowel: **aa**, and Koyukon with two: **ii** and **ee**.

In summary, the general similarities in the orderings of morphemes in Athabaskan languages are best stated at the 'zone level' (See Kari 1989). When looking in detail at the prefix complexes, we find differences in ordering of prefixes, e.g. as in the qualifier prefix zone in the Alaskan languages. These differences are not obviously predictable. It is particularly significant that at the level of the dialect or language, the orderings of the positions are consistently maintained, i.e. they are rigid. For example, many thousands of Koyukon verbs contain the prefix ordering shown in Table 3. Variant forms with different prefix orders are not found.

For an operational model of Athabaskan word formation, it appears that distinct

Table 7. Two derivations in four languages:
a) 'I will freeze it solid'
b) 'I won't freeze it solid'

	Lower Tanana	*Koyukon*	*Ahtna*	*Upper Tanana*
theme formation				
1. root 'ice'	ten	ten	ten	tän
2. theme formation string	n+gh+l	gh+n+l	n+gh+l	n+l
3. causative	O+ɬ	O+ɬ	O+ɬ	O+h
4. verb theme 'freeze O solid' *(conv)*	O+n+gh+ɬ+ten	O+gh+n+ɬ+ten	O+n+gh+ɬ+ten	O+n+h+tän
inflection				
5. 1sg future	t+gh+es=0	t+gh+es=ɬ	t+gh+es=ɬ	t+ih=0
a) underlying forms	/t+n+gh%gh+es+ɬ+ten=0/	/gh+t+n%gh+es+ɬ+ten=0/	/t+n+gh%gh+ɬ+ten=ɬ/	/t+n%ih+h+tän=0/
a) phonetic forms	tenghaaghetltenh	ghiiteneeghtltenh	tnghaaɬtiiɬ	tinaktänh
6. negative	dh+ =ęę	l+ =ee	'ele' z+ =e	k'aa =V
b) underlying forms	/t+n+dh+gh%gh+es+ɬ+ten=0+ęę/	/gh+t+n+l%gh+es+ɬ+ten=0+ee/	/'ele' t+n+z+gh%gh+ɬ+ten=ɬ+e/	/k'aa t+n%ih+h+tän=0+V/
b) phonetic forms	tendheghaaghetltenęę	ghiitenleeghtltenee	'ele' tnghaaɬtiile	k'aa tinak-tän

postion class models are involved. This seems preferable to rules that reorder or switch affixes. In fact, the position-class models reflect a natural property of Athabaskan: that ordering relationships among strings of morphemes are consistent at deep lexical levels, at intermediate levels, as well as surface levels.

A fully specified position class model that orchestrates interdigitation is more than a heuristic device. Nevertheless, it is only one component in the word formation process in the Athabaskan languages. The significant congruencies in the languages are in the underlying structures of verbs (theme formation and transitivity patterns), in affix orderings at the zone level, and in the general properties of string-like derivations. On the other hand, the significant disparities in the languages are in the language-specific details of the verb complexes, the batteries of string-like derivations, and, analogously, in the wide variety of radical morphophonemic alternations.

Notes

1. The orthographies in this paper are presented with maximal congruence. Cardinal vowel qualities are **ii** (high front), **ee** (low front), **uu** (high back), and **aa** (low back). Long or full vowels are doubled; **e** is schwa in most of the languages, except for Upper Tanana where schwa is **ä**.

2. I have been vacillating on the placement of the **z** negative in Ahtna. The model in Kari 1990:37-38 treated **z** negative in a single position identical with the **z** perfective position. While this works most of the time, it now seems that in the other languages we must consider the **z** negative to be separate from the **z** perfective. Thus this table refers to a 'negative2' position in Ahtna.

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