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The phonology and morphology of Tahltan (Northern Athabaskan)

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in collaboration with:

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The Tahltan language

Native pronunciation: [taɬtan]

Affiliation: Athapaskan,
Northern Athapaskan

Related languages: Kaska (vocabulary, grammar), Sekani, Tagish

The land: Northwest British Columbia, Iskut, Dease Lake, Telegraph Creek

Speakers and viability: 50 fluent speakers in population of 1,377; 19% of larger population identify as semi-fluent, 18% as learners (2010, Tahltan and Iskut health authorities)

Varieties/dialects: considerable variation in consonant system, selected lexical items, various automatic and non-automatic alternations

Linguistic research

Consonant phonology

Alderete, John, Amber Blenkiron, Judith C. Thompson (Edōsdi). 2014. Notes of the development of affricates and stem phonology in Tahltan. Ms., Simon Fraser University and Northwest Community College.

Tone and vowel length

Alderete, John D. 2005. On tone and length in Tahltan (Northern Athabaskan). In Sharon Hargus & Keren Rice (eds.), Athabaskan prosody, pp. 185-207. Amsterdam: John Benjamins.

Stress, and morphological influences on stress

Alderete, John D. and Tanya Bob. 2005. A corpus-based approach to Tahltan stress. In Sharon Hargus & Keren Rice (eds.), Athabaskan prosody, pp. 369-391. Amsterdam: John Benjamins.

Text transcription and and analysis

- Alderete, John D. 2007. Transcription of Old Woman and Rabbit Blanket Story, as told by Rose Dennis. Unpublished manuscript, Simon Fraser University.
- Alderete, John D. 2007. 'Daily dialogues': short Tahltan dialogue designs for language learning. Ms., Simon Fraser University.

Cataloging and bibliographies

- Alderete, John D. and Thomas McIlwraith. 2008. An annotated bibliography of Tahltan language materials. Northwest Journal of Linguistics 2: 1-26.
- Alderete, John D. and Thomas McIlwraith. 2007. A catalogue of the Tahltan Stories of Rose Dennis. Unpublished manuscript, Simon Fraser University and Douglas College.
- Alderete, John D. 2008. A catalogue of the Tahltan Stories of Charles Quock. Unpublished manuscript, Simon Fraser University.

Community-based research

Linguistic documentation

- Alderete, John and Thomas McIlwraith. 2008. Tahltan place names. [Transcription of approx. 50 Tahltan Nation interviews documenting historical ties to the land and identification of Tahltan place names]
- Alderete, John. 2007. Tahltan Language and Culture CD Series. 23 CDs and associated manuscripts of linguistic questionnaire data, Tahltan folklore, and ethnographic accounts]

Work appearing in museums

- Alderete, John and Judy Thompson (of the CMC). 2008. James Teit census annotations. Canadian Museum of Civilization, Archives, Ethnology, VI-O-2M, box 173, file 3.
- Alderete, John. 2003. Production of bilingual presentation of Raven Creation Story for Museum of Anthropology exhibit (UBC, Vancouver, Canada), 'Mehodih: Well-known traditions of the Tahltan people'.

Service to band governments

- 2005-2008. Member of two subcommittees on language documentation and grant funding, providing linguistic advice on language documentation projects and finding grant funds to support these projects.
- 2013-present. Co-investigator on major SSHRC partnership grant, (PI: Marianne Ignace), combining linguistic research and community-based linguistic documentation and curriculum development.

Advising of Tahltan linguists

- 1998-1999, Tanya Bob, M.A. thesis, Tahltan laryngeal phenomena, Linguistics, University of British Columbia. [Committee member]
- 1999-2000. Oscar Dennis, UBC-UNBC internship, Analysis and translation of Tahltan texts, Anthropology, University of Northern British Columbia [Principal advisor]
- 2014-2015. Judy Thompson (Edōsdi), post-doctoral fellowship. The first year of dictionary making of the Tahltan language. [Principal advisor]

Current research focus

Capacity building

- Assist with linguistic training of language practitioners and Tahltan linguists and provide support for linguistic documentation activities; e.g., databases, phonetic transcription, morphological analysis, apps development
- Recent strong resurgence of language programs and language revitalization: Master-apprentice programs, drop-in and language immersion programs for adults, language nests, linguistic documentation with Tahltan Revitalization Team

Dictionary making

- With the Tahltan Revitalization Team in Iskut (www.didenekeh.com), including Oscar Dennis, and new SFU postdoc Judy Thompson, starting work on a significant dictionary.

Analysis and documentation of verb words

- Bottle-neck: most work (texts, dictionary, linguistic analysis) depends on a better understanding of verb words and paradigms, but we only have the beginnings of a picture of the structure of verb words.
- 101 Tahltan verbs: paradigm lists and non-technical explanation of rules
- Analysis of verbs: better understanding of verbs can contribute to the understanding of inflection classes in general

Background: consonant phonology

Consonant inventory

b						d	t	t’						g	k	k’	q	q’	ʔ
														g^w	k^w				
		dð	tθ	tθ’		dz	ʦ	ʦ’		dž	tš	tš’							
						dl	tɬ	tɬ’											
		θ				s		ɬ		š				x	x^w		χ		h
		ð				z		l		ž				ɣ	$ɣ^w$				
m						n	n̥	n’	n̥’										
w										y									

Observations:

- Note not IPA: e.g., *t*/*d* and *k*/*g*, differ in aspiration, not voicing
- Stops and fricatives have different laryngeal contrasts: voicing in fricatives, but plain/aspirated/ejective in stops and affricates (except *b*, which is a voiced stop)
- Laterals: plain voiced [l] patterns with obstruents, e.g., coda devoicing
- Rare segments: uvulars and rounded velars are only heard in loans and in the speech of older speakers, historically merged with velars; *š* and *ž* are doubtful as phononemes

Consonant phonology: shifts and series mergers

Obstruent shifts and mergers in Athabaskan historical linguistics

- Advancement of affricates, velars and uvulars is a standard way of classifying languages.
- Supports a 'wave model' rather than standard tree-based taxonomic models of classification, because of rich intergroup communication and areal influences.

Proto-Athabaskan obstruents

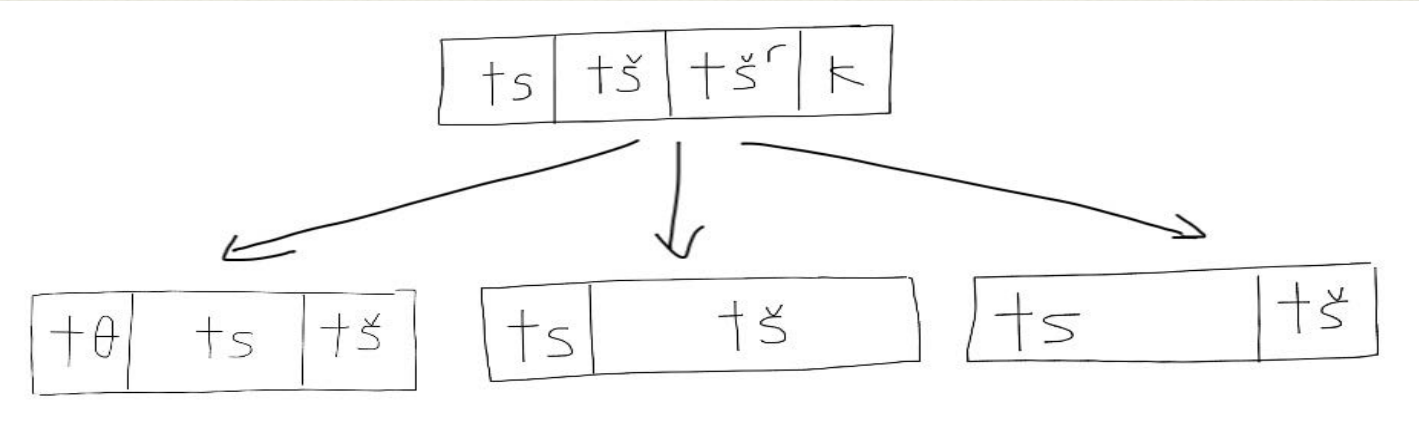
dental	lateral	alveolar	palatal	retro-pal	velar	uvular	glottal
d	dl	dz	dž	dž^{r}	g	G	ʔ
t	tɬ	ts	tš	tš^{r}	k	q	
t’	tɬ’	ts’	tš’	tš’^{r}	k’	q’	
	ɬ	s	š	š^{r}	x	χ	h
	l	z	ž	ž^{r}	ɣ	ʀ	

*ts	*tš	*tš^{r}	*k	
ts		pf	tš	Tsetsaut
tθ	ts		tš	Kaska
ts	tš			Tahltan
ts			ts^{y}	Tagish

Claim: The Tahltan/Tagish/Kaska language complex used as evidence for superficial nature of shifts: nearly identical in grammar and lexicon, but have different obstruents systems (Krauss & Golla 1981)

Series mergers in Tahltan

Question: what is the range of variation in the development of obstruents? (8 speakers)



Proto-Athabaskan	**Tahltan Standard, cf. Kaska**	**Variant I**	**Variant II, cf. Tagish**
*ts *tseː ‘stone’	tθeː	tseː	tseː
*tš *tšaʔ ‘beaver’	tsaʔ	tšaʔ	tsaʔ
*k *kaːn ‘rain’	tša:	tša:	tša:

Finding: three different obstruent systems are found, two of which relate to neighboring languages. Even within Tahltan subdialects, series mergers are superficial.

Alderete, John, Amber Blenkiron, Judy Thompson. 2014. Notes on Tahltan stem phonology and the development of affricates. Ms., Simon Fraser University and Northwest Community College.

Consonant phonology: regular phonological rules

Syllables and neutralization rules
(Hardwick 1984, Nater 1989, Shaw 1991, Bob 1999)

Illustrations and examples

Syllable structure: CV(C)

*#CC, *CC#, *CCC

'Stem syllable'
Usually the last syllable of the word, stem-initial C is always an onset, supports more contrast than codas and prefix syllables.

nadest<u>ɬ'it</u> 'I'm spilling (object)'
eθi<u>k'aː</u> 'We're gutting fish'

Coda neutralization
Stops are neutralized to plain stops, and fricatives are devoiced in codas, voiced *b* never in coda

beː[s] 'knife', cf. **es-beː[z]-e** (1.sg POSS)
ða[θ] 'whetstone', cf. **eθ-ða[ð]-e**

Stem-initial fricative voicing
Voiced/voiceless contrast in stem-initial fricatives neutralized by regular morpho-phonemic voicing in certain collocations.

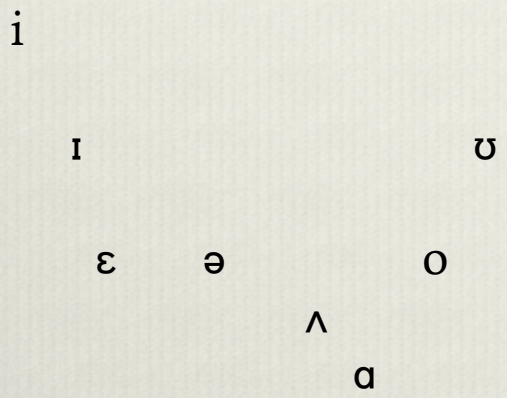
es-[l]ed-e 'my smoke', cf. **[ɬ]et**
es-[ɣ]ɯn-e 'my song', cf. **[x]ɯn**

Coronal harmony
Coronal affricates (not *t d* and laterals) agree in coronal place (interdental, alveolar, palatal).

e[θ]-ðað-e 'my belt'
e[s]-non-e 'my medicine'
e[š]-tš'aːš-e 'my nightline'

Background: vowels

Tahltan vowels (Hardwick 1984, Nater 1989, Alderete 2005)



Observations

- /a/ and /ɛ/ both have long/short contrasts as the result of mergers from Proto-Athabaskan long/reduced vowels, and probably /i u/ as well
- Length also developed in vowels with low-marked tone, e.g., though the short:long ratio is much smaller 1:1.3, cf. 1:1.8 for reduced/full contrast
- Diphthongs *oɪ* and *aʊ* is found in a handful of words

Suprasegmentals: tone

Athapaskan tonogenesis (Krauss 1979, Leer 1979, 1999; see Hargus & Rice 2005)
Pre-Proto-Athabaskan syllables ending in ʔ, glottalized stops, and glottalized sonorants developed into 'vowel constriction' in PA, a reconstructed laryngeal structure hypothesized to give rise to tone in Athabaskan languages, either low-marked tone or high-marked tone.

- Low-marked tone in Tahltan, while vestigal in some speakers, developed in the contexts predicted by Athabaskan tonogenesis.
- Acoustically: approx. 30 Hz lower than unmarked syllables, flatter pitch profile, 1.3 duration of corresponding vowel

Tone	*CV'ʔ	*Cv'R'	*CV'·R'	*Cv'C'	*CV'·C'
	yàʔ 'louse'	kòn', kon' 'fire'	tsà·ʔ 'excrement'	xɪ̀θ, xɪθ 'knoll'	xè·ɬ, xe·ɬ 'trap'
	-làʔ 'hand'	θɔ̀n', θɔn' 'star'	*cf.*, -t'a·n(e) 'leaf'	*cf.*, -ðet 'liver'	bà·h 'war'
No tone	*CV·	*CvR	*CV·R	*CvC	*CV·C
	ya· 'sky'	-ts'ene 'bone'	tša· 'rain'	xɪθ 'puss'	xe·ɬ 'pack'
	tθe· 'stone'	ten̥ 'ice'	dðeneθ 'day'	beθ 'riverbank'	be·s 'knife'

*V'/v' = Proto-Athabaskan vowel constriction (full/reduce), R'/C' = glottalized sonorant/ obstruent.

Alderete, John. 2005. On tone and length in Tahltan (Northern Athabaskan). In Sharon Hargus & Keren Rice (eds.), Athabaskan prosody, pp. 185-207. Amsterdam: John Benjamins.

Suprasegmentals: stress

Stress in Tahltan

- Main stress falls on the 'stem syllable' (underlined), the canonical CVC syllable that is generally the final syllable, but exceptionally the penult.
- Secondary stress falls on alternating syllables, counting backward from the main stress.
- There must always a stress on a pre-stem syllable, which can lead to stress clash.
- Acoustic correlates: higher f0, intensity, and longer duration

Illustrations

ò ó
mèlá? 'His/her hand'
kà:ts'ét 'I scratched it out"

ò ó o
kànzéla 'Did you (sg) holler?'
ʔèsθóne 'My star'

ò o ó
ʔùdesʔú:t 'I whistled'
mèdetɬ'óy 'His/her pelts'

ò o ó o
ʔùdiɲʔú:da 'Did you (sg) whistle?'
mèʔe-k'áhe 'His/her fat'

o ò o ó
ʔedʒìda-dáɬ 's/he's going hunting'
ʔudè θ i:dlét 'We (dual) melted it'

Alderete, John and Tanya Bob. 2005. A corpus-based approach to Tahltan stress. In Sharon Hargus & Keren Rice (eds.), Athabaskan prosody, pp. 369-391. Amsterdam: John Benjamins.

Stress, cont'd

Metrical parameters

- **Foot type is trochaic (x .) foot**: stress assigned on alternating syllables with initial prominence
- **Foot binarity at the level of the syllable**: syllable type (CVC, CVV vs. CV) does not affect stress, so foot are binary groupings of syllables
- **Directionality**: feet built from right-to-left (aligned with stem)
- **Degenerate feet**: possible only to parse a lone pre-stem syllable
- **Main stress foot**: final

Alignment of morphological and prosodic units

[$_{Stem}$ must coincide with [$_{PrWd}$. Consequence: every stem receives a stress.

Strict succession of pre-stem syllables: Pre-stem syllables must be parsed at same prosodic level as the stem. Consequence: prosodic compound structure, requiring pre-stem stress.

Illustration of prosodic compound

Prosody:	{ x }$_{PrWd}$
	{ }{ x }$_{PrWd}$
	(x .)(x .)$_{Ft}$
	mèʔe-k'áhe
Morphology	[[ ]$_{Stem}$]

Generalizations:

- The alignment of stem structure with prosodic structure explains obligatory stem stress; relates Tahltan to many other morphological induced stress effects (Australian, Oceanic languages)
- Recursive compound also explains obligatory pre-stem stress: every PrWd has a stress.

Background: morphology

Problem: to give a complete analysis of the phonological processes, need a detailed understanding of the morphology, and vice versa.

Stem-initial fricative voicing

es-[l]ed-e, *cf.* ɬet 'smoke' [$es_{1.sg}$ + [+voice] [ɬed]$_{stem}$+e]

→ Possessed nouns come with a [+voice] prefix, so need to know the morphology

Alternations in verbs

	conj. + mode + subj + classifer + stem	
sihtsan	θe + [+high] + s + h + tsan	'I smelled (object)'
sin̥tsan	θe + [+high] + n + h + tsan	'You (sg) smelled (object)'
sahtsan	θe + [+high] + ah + h + tsan	'You (pl) smelled (object)'

Morpho-phonology action:

Coronal harmony: *θ* to *s* in conjugation marker

Morphological raising: marker of perfective [+high] causes e → i

s → ∅ (in perfective 1.sg morpheme is deleted, but only with h- and ∅ classifer)

n + h produces a voiceless nasal (not deletion, not aspiration on stem-initial)

V1V2 → V2 explains the loss of conjugation vowel in 2.pl forms

Background: template morphology in verbs

Template morphology: a frame for the prefix positions in Athabaskan verbs.

Conjunct prefixes 6-12, more like functional items

Disjunct prefixes 1-6: more like lexical items

Obl. Obj.	PostP	Adverb	Distr.	Inc. Stem	Dir. Obj.	Subj. 2	Deriv.	Conj.	Mode	Subj. 1	Classifier
1	2	3	4	5	6	7	8	9	10	11	12
es (1.sg) en (2) me (3) ye (3.sg) hi (3.pl) dah (1.pl) dah (2.pl) hu (3.pl) ho (areal) ʔe (unspec)	k'e k'a ɣa tš'a ka na kah ga	k'e 'out/down' tɬ'an(e) 'around' tan 'back to' ti 'away' (ne-P) te 'into water' ɬe 'into pieces' (θe) k'a (unidirect-ional motion) ni 'across' (θe) tša 'sleep' da 'up/above' (θe) te ta 'to shore' (θe) na na…ne su 'good' ga la kiθ	da		se (1.sg) ne (2) 3.sg/Subj: ∅ /non3rd ye /3.sg he/hi /3.pl hwe (1.pl) hwe (2.pl) hu (3.pl) ʔe (unspec) ʔede (refl.) ɬe (recip.)	he (3.du/ pl human) ts'e (unspec)	u de ne i	ye θe ne ∅	∅ (imperf.) [+high] (perf.)	s (1.sg) n (2.sg) ∅ (3.sg) θiD (1.pl) ah (2.pl) ∅ (3.pl) (cf. 7)	h ∅ [+voice] [-cont] (refl.)

Remark

Template morphology is useful to keeping track of morphological marks and for comparative/historical analysis, but it obscures the complexities of the morpho-phonology. Need to examine in detail how morphological categories are realized.

Verbs: categories and marks

Inflectional categories

Person/number: subjects and objects are marked for person and number in canonical positions on the template, subjects: 11, objects: 6, but 3.pl subjects are discontinuously marked in 7 and 11.

Tense/aspect: tense/aspect are bound up together, both in the conjugation/mode slots (9+10) and stem suppletion. Aspect is also marked in more subtle ways through aspectual classification of verbs, conceptualized as a mapping from abstract roots to stem-sets. If you believe in inflections, then person/number is bound up with tense/aspect in the conjugation+mode markings, and also number-based stem splits.

Illustration

Conj.	Subject	Stem	
ye	θ	tθe:t	**yeθ-tθe:t** 'I ate'
ye-Perf	1.sg	Perf stem	cf. ***-tθetθ*** (impf stem)

Other (derivational) categories: distributive, reciprocal, reflexive, …

Background: Navajo verb structure

roots:	GHAAL			500-600
stem-sets:	-ghaaɬ	-ghaɬ	Imperfective	
	-ghaal	-ghaal	Perfective	
	-ghal	-ghaɬ	Future	
	-ghaɬ	-ghaɬ	Iterative	
	-ghaaɬ	-ghaɬ	Optative	
gloss:	'to club s.o./s.t.'	'to give s.o. a beating with a club'		
stem-aspect:	"momentaneous"	"repetitive"		approx. 6
classifiers:	ɬ	…		4
imperfective conjugation:	long-vowel-Imperf	2-4 conjugation patterns per mode, patterns are independent		
perfective conjugation:	y-Perf			
future conjugation:	regular	actually only 8 mode/conjug-ation patterns		
iterative conjugation:	long-vowel-Imperf			
optative conjugation:	long-vowel-Imperf			

Illustration (Faltz 1998, 1999)

nídiiɬhaaɬ 'You (sg) (are about to) club him/her'

ná + ∅ + d + ii + ɬ + ghaaɬ
der. + 3.sg +der + 2.sg.imperf + class + $stem_{Imperf}$

Verb properties for 'to club s.o/s.t.'

Stem-set: ghaaɬ, ghaal, ghal, ghaɬ, ghaaɬ
Classifier: ɬ
Stem-aspect: momentaneous
Root: GHAAL
Conjugation patterns: long vowel-Imperf, y-Perf, regular, long-vowel-Imperf, long-vowel-Imperf
Prefixes: ná-, d-

Tahltan verbs: state of the documentation

Prior research

- Hardwick 1984: competent account of morphology and phonology of classifiers and the beginnings of an account of mode; 45 partial paradigms explored.
- Nater 2006: documents many verb triplets, with a focus on describing the results of historical processes from Proto-Athabaskan stem phonology
- Fieldnotes and stemlist: with Judy Thompson and Amber Blenkiron, we've assembled a stem list of approx. 200 verbs, but many partial paradigms.

Classifiers and associated non-automatic processes

- Four classifier prefixes /h- 0- l- d-/ that are expected historically have been documented by Hardwick 1984 and explored further in Bob 1999.
- D-effect, morphological voicing, and various deletion rules are reasonably well understood.

Stem sets, conjugation patterns, and roots

- Prior work has really only focused on perfective and imperfectives, so mode is not fully explored
- Hardwick posits eight distinct conjugation patterns for perfective and imperfective stems, but really only explores two patterns; patterns for other modes unexplored.
- Roots and stem-aspect hasn't been explored; simply do not have enough data to see derivational relationships across verb bases.

Verbs: classifiers and non-automatic phonology

Morpho-phonology of classifiers (Hardwick 1984, Bob 1999): lexically idiosyncratic prefixes, immediate left of stem, that may trigger non-automatic alternations.

Classifier	Realization	Other facts	Breakdown	Word	Gloss
h-	[h] in 3.sg/pl, $n_{2.sg}$ + h → [n̥]	$-es_{1.sg.pf}$ → ∅	∅ + h + k'aː	**ehk'aː**	'he's gutting fish'
∅-	unimpeded voice assimilation	$-es_{1.sg.pf}$ → ∅	de_8 + s + ∅ + seh de_8 + in + ∅ + seh	**desseh** **dinzeh**	'I'm spitting' 'You're spitting'
l-	[voice], or stem-initial voicing		ka_3 + s + l + seɬ	**kaszeɬ**	'I hollered (pf)'
d-	[-cont], 'D-effect' (reflexives)		s + d + çi	**esdži**	'I'm singing'

Questions for future research:

- Classifiers useful for historical-comparative point of view, but it might be possible to reduce the system of the verb classification by just registering the effects of *l-* and *d-* on the stem-initials and lexicalizing the absence of non-automatic morphology e.g., (*-es* deletion).
- What are the semantic functions of these morphemes, beyond the d- as a marker of reflexives?

Verbs: conjugation, mode, and subject markers

Hardwick 1984: 4 conjugation patterns for both the perfective and imperfective.

Conjug.	**Mode**	**Subject markers**
ye-	∅- (imperf)	s-
θe-	e→i (perf) (i?)	(i)n-
ne-		∅-
∅-		θiD-
		ah-
		∅-

	ye-perf	**θe-perf**	**ne-perf**	**∅-perf**
1	yihk'a:	sesda	ninanešdžʌ	dizeh
2 Sg	yiṇk'a:	θinda	ninandžʌ	dinzeh
3	yihk'a:	θeda		dizeh
1	θik'a:	θike	ninaneθidetɬ	desidzeh
2 Pl	yahk'a:	θahke	ninahdetɬ	dahseh
	'gut fish'	*'sit'*	*'move camp'*	*'spit'*
			(ni_3, na_3)	(de_8)

Verbs: ‘gut fish’, morpheme breakdown

			Breakdown	*Processes*
			Conj.+mode+subj.+cl+stem	
Imperf	1	**esk’aː**	∅ + ∅ + s + h + k’aː	e, h→∅
	sg 2	**eŋ̊k’aː**	∅ + ∅ + n + h + k’aː	e, n+h→ŋ̊
	3	**ehk’aː**	∅ + ∅ + ∅ + h + k’aː	e
	1	**eθik’aː**	∅ + ∅ + θiD + h + k’aː	e, D+h→∅
	pl 3	**hehk’aː**	he ∅ + ∅ + ∅ + h + k’aː	
Perf	1	**yihk’aː**	ye + i + s + h + k’aː	e+i→i, s-→∅
	sg 2	**yiŋ̊k’aː**	ye + i + n + h + k’aː	e+i→i, n+h→ŋ̊
	3	**yihk’aː**	ye + i + ∅ + h + k’aː	e+i→i
	1	**θik’aː**	ye + i + θiD + h + k’aː	ye+i→∅, D→∅
	pl 2	**yahk’aː**	ye + i + ah + h + k’aː	e+i+a→a,h+h→h

Verb base:

Stem set: k’aː, k’aː, …
Classifier: h-
Conjugation patterns: ∅-Imperfective, ye-perfective
Prefixes: None

Verbs: non-automatic rules for conjunct and classifier prefixes

Rules affecting classifier prefixes

N-H Coalescence. When the 2.sg prefix /n-/ occurs right before the /h-/ classifier, they merge into a voiceless nasal [n̥].

H Coda Deletion. The /h-/ classifier is deleted when it occurs after the following subject markers /s-, θiD-, ah-/. (See syllable structure template for motivation.)

D-Effect. When the /d-/ classifier prefix is selected by a stem, or the 1.pl subject marker /θiD-/ is used, the stem-initial consonant undergoes a set of changes that are consistent with inserting a [-continuant] feature (i.e., turns the consonant into a stop).

d + ɬ → dl
d + θ → dð
d + s →dz
d +ç →dš
d + x → g
d + ʔ → tʾ

Fricative Voicing. Stem-initial fricatives in stems that select the /l-/ classifier are always voiced.

Voice assimilation. Stem-initial fricatives in stems that select the /∅-/ classifier assimilate in voicing with the preceding sound.

Rules affecting conjunct prefixes

1.sg Deletion. In words with stems that select the /h-/ and /∅-/ classifier prefixes, the /-s/ subject marker is deleted in the perfective.

VV resolution. Delete the first of a sequence of two vowels, i.e., V1V2 → V2.

***e*-Epenthesis**. ∅ → e /#___C

Perfective Raising. Conjugation prefixes /θe-, ye-, ne-/ have their vowel raised in the perfective, resulting in /θi-, yi-, ni-/.

θe-perfective Deletion. The /θe + i/ sequence is deleted in all 1.pl positions. It is reduced to /θ/ in 3.sg and 3.pl when it follows other conjunct prefixes. The /θe + i/ sequence is deleted in 1 and 2 person positions following derivation prefixes in position 7, but not after the direct object prefixes.

Verbs: sequences of prefixes or inflections?

Question: could some of the non-overt morphological structure and non-automatic phonology be reduced by recognizing inflections? Faltz 1998 on Navajo: cong.+mode+subj. = inflection (but still lots of rules)

Template: … conj. + mode + subject + classifier

Inflection class: yihX, yi̥X, yiɦX, θiX, yahX

Template	**Inflections**	**Word**	*gut fish*
ye + i + s + h + k'a:	yih-k'a:	yihk'a:	1.sg.perf
ye + i + n + h + k'a:	yi̥-k'a:	yi̥k'a:	2.sg.perf
ye + i + ∅ + h + k'a:	yiɦ-k'a:	yiɦk'a:	3.sg.perf
ye + i + θiD + h + k'a:	θi-k'a:	θik'a:	1.pl.perf
ye + i + ah + h + k'a:	yah-k'a:	yahk'a:	2.sg.perf

Conjecture

- Absorption of conjugation and mode is likely possible and desirable
- Conj+Mode plus Subject markers likely possible too, though not without problems
- Absorption of the classifiers will require some real work, but still a plausible hypothesis. Really only three stem classes required by classifier analysis; presence of [h] and other non-automatic phonology could be incorporated into inflections. Might require a large number of paradigm rules, but even this is tractable with global rules and lexical specification.

Verbs: θe-perfective as an inflection class

Hypothesis: assume that perfective and imperfective inflection classes are formalized as paradigm rules.

		See	*Sit down*	*Smell*
		∅+ʔun̥	d+da/ke	h+tsan
1		θiʔun̥	sesda	sihtsan
2	Sg	θinʔun̥	θinda	sin̥tsan
3			θeda	
1		θit'un̥	θike	sitsan
2	Pl	θahʔun̥	θahke	sahtsan

Paradigm Rules (before classifier phonology, coronal harmony, etc.)

1		θisX	θesX	θisX
2	Sg	θinX	θinX	θinX
3			θeX	θiX
1		θiDX	θiDX	θiDX
2	Pl	θahX	θahX	θahX

Verbs: θe-perfectives, cont'd

Some potential benefits of paradigm rules:

- Eliminates the abstractness of conjugation + mode markings ('palatal n' for fronting the conjugation marker vowel).
- Obviates the need to stipulate deletion of θe + [+high] in 1.pl; directly stated in paradigm rule.
- Eliminates the need for much of the vowel elision rules; abstract vowels never posited.

Benefit to second language learning

It seems more straightfoward to list a set of paradigm rules and associate verbs with these rules than to memorize the morphemes of three separate positions, and the (rather non-trivial) non-automatic phonological rules. Cf. Navajo.

Further evidence to look for:

- Syncretism among cells in the paradigm, e.g, 1.sg and 1.pl (though difficult)
- Historical evidence that the canonical shapes in the paradigm rules motivate morphological change

Verbs: θe-perfectives, cont'd

Problem: while the inflection class approach seems promising, it's not possible reduce all θe-perfective verbs to a single paradigm rule. 'Derivational' prefixes in 8 muddle the picture considerably.

		Comb	***Turn around***	***Cut refl.***	***Be Full***
		∅+tšɪɬ	l+ʔaʔ	de_{8+}d+t'ʌθ	ne_8+d+dan
1		meɣaʔešitšɪɬ	tɬ'anesesʔaʔ	ʔededeθt'ʌθ	ʔenesdan
2	Sg	meɣaʔešintšɪɬ	tɬ'anθinʔaʔ	ʔededint'ʌθ	ʔenindan
3		yeɣaʔeštšɪɬ	tɬ'anθeʔaʔ	ʔededeθt'ʌθ	ʔeneθdan
1		meɣaʔešitšɪɬ	tɬ'anθiʔaʔ	ʔededeθit'ʌθ	ʔeneθidan
2	Pl	meɣaʔešahtšɪɬ	tɬ'anθahʔaʔ	ʔededaht'ʌθ	ʔenahdan
Paradigm rules:					
1		θisX	θesX	(de)sX	(ne)sX
2	Sg	θinX	θinX	(d)inX	(n)inX
3		θiX*	θeX	(de)θX	(ne)θX
1		θiDX	θiDX	(de)θiDX	(ne)θiD
2	Pl	θahX	θahX	(d)ahX	(n)ahX

Verbs: next steps with possible future projects

101 verbs of Tahltan
Compilation of a large number of verb paradigms, analyzed as verb bases and a set of non-automatic rules. Uses: resource for linguists and scholars alike.

Formal analysis of Tahltan with paradigm rules
Should the conjugation patterns and subject markers be treated as separate morphemes, or as inflections? Theoretical implications: might require large number of paradigm rules, but often these systems can be shown to be constrained by general principles of morphology (see e.g., Baerman 2012 *Language* on Nuer nominal inflection)

Classifiers and semantic function
Are classifiers, especially *h-* and *l-* involved in the valence morphology, or are there deeper verb classes associated with the lexical selection of these classifiers?

Classificatory verbs in Tahltan
Is there evidence for classification of the shape and nature of objects (e.g., multiple verbs for 'give'); (answer: yes) what are these classes?

Other topics
The 'lexical items' of verbs (adverbs, postpositions, etc.), oblique arguments, distributives, iteratives, stem incorporation.

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