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Stress in Stoney

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ABSTRACT

The following analysis provides a brief summary of Stoney (Assiniboine) grammar and a study of the innovative stress patterns in Alexis Stoney. Dakota languages characteristically realize stress on the second syllable and do not generate secondary stress. In Stoney, however, primary stress is predominantly realized on the penultimate syllable and secondary stress exhibits an alternating pattern applying from right to left. Lexically marked morphemes obstruct the predictable pattern of Stoney stress by suspending the alternating pattern and averting the realization of penultimate stress to the final syllable. Additionally, Stoney has a number of affixes that do not bear stress. These affixes cause further variation in the realization of stress and make developing a unified acount of Stoney stress a complicated task. Within a Metrical Phonology framework (Idsardi 1992) the variability of Alexis Stoney stress is predictably generated by the construction of a metrical grid.

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LIST OF ABBREVIATIONS

pre	thematic prefix
subj	subject
obj	object
1	first person
2	second person
3	third person
sg	singular
pl	plural
decl	declarative
neg	negative
dim	diminutive
nom	nominative
instr	instrumental
pot	potential
refl	reflexive
poss	possessive
redup	reduplicated string
stem form	stem formative vowel
act.	active
stat.	stative

INTRODUCTION

Siouan is represented in Alberta by three Stoney-speaking communities. The largest of the three communities is the Morley reserve which is made up of three politically distinct groups; Chiniki, Bearspaw and Wesley bands. The three Morley bands are located within close proximity to each other at the base of the Rocky Mountains, 80 km west of Calgary. Morley has a population of approximately 3,400[1] inhabitants, a large number of whom speak Stoney as a first language. In fact they have the enviable position, not shared by many native communities, to claim that many of their children speak Stoney as a first language.

The other two communities, the Alexis Band and Paul Band, are located 350 km north of the Morley Reserve. The Alexis Band is located on the west end of Lac Ste. Anne, which is approximately 100 km northwest of Edmonton. Alexis is significantly smaller than Morley, supporting a population of about 1100 people. For those in their late 20's and older Stoney is their first language but English has replaced Stoney as the dominant language in Alexis, such that Stoney is only occasionally used in the home and in the community. Because of the drastic decline in the use of Stoney those generations under the age of 25 are not learning Stoney, not even as a second language.

About 30 km south of Lac Ste. Anne the Paul Band resides on the shores of Lake Wabamun. Paul Band is the smallest of the three Stoney communities with only 600 inhabitants. Local oral accounts tell of the leaders of Alexis and Paul bands being brothers who at one time lived together as one large group at Lac Ste. Anne. Government reports confirm that the two bands lived together until the 1880's when the Paul Band separated from Alexis and relocated at Wabamun Lake (Andersen 1970). Although I have had no direct contact with the Paul community I understand from members of the community that the state of language loss at Paul Band is similar to that of Alexis. That is, those who are approximately 25 years and younger have not acquired Stoney as either a first or a second language.

The mechanism for passing on a language is no longer effective in the Paul and Alexis communities. Children do not learn the language in the home and individual attempts to learn the language are often met with ridicule by those who are proficient in the language. If the current trend of language loss continues, Stoney will be virtually extinct on the Alexis reserve within 50 years when the youngest speakers have passed on. Recent concern over the language situation at the Alexis Reserve triggered efforts to revive Stoney in the community. In 1990 the Alexis leadership initiated the development of a Stoney language curriculum. The intent is to teach Stoney to the young people in an attempt to reverse the cycle of language loss. The program is still in the developmental stages and has not yet been implemented so its effects remain to be seen.

Siouan languages are commonly divided into three subgroups based on where each was thought to originate geographically: Missouri River, Ohio Valley (also referred to as Southeastern) and Mississippi Valley. Dakota, which branches off from Mississippi Valley, is by far the largest group of Siouan languages. There are three distinct language groups within the Dakota branch which are characteristically distinguished by the phonetic variation of one phoneme. The Dakota, Lakota, and Nakota subgroups correspond with a sound shift from [d] to [l] to [nd] and finally to [n], respectively. In addition to the [d-l-n] classification there is a whole complex of divergent grammatical features between the three language groups.

The Nakota branch consists of the Assiniboine languages which predominantly populate the Canadian prairies, spanning from southwestern Manitoba to the Rocky Mountains. In Alberta the Assiniboine people refer to themselves and to their language as Stoney. The name 'Stoney' presumably refers to the 'people who cook with stones' because of the way they cooked soup using hot stones (Hungry Wolf and Hungry Wolf 1989).

All of the Stoney groups in Alberta are commonly assumed to share the same history, language, and lifestyle. However, historical and linguistic evidence brings these assumptions into question. Andersen (1970) reanalyzes historical reports of the Hudson's Bay Company, missionaries, and explorers from which he asserts a historical and cultural distinction between the southern Stoney bands (the Morley bands) and the northern bands (Alexis and Paul bands).

According to Andersen, two separate groups of Assiniboine migrated westward after a split from the Yanktonai Dakota in the 16th century. One group traveled northwest along the forest edge of the Canadian plains. The members of the northwestern migration are assumed to be the ancestors of the Alexis and Paul bands. The second group headed in a southwesterly direction. Early reports identify the Chiniki and Bearspaw bands as having arrived in Alberta through Montana which corresponds with a southwesterly migration.

Further evidence to maintain a distinction between the north and south Stoney bands is the diversity of lifestyle. Before the buffalo were annihilated from the Plains in the 19th century, plains Indians lived a nomadic lifestyle; hunting buffalo and traveling on horseback. While the southern Stoney bands adapted to this lifestyle the northern bands were reported to hunt forest animals, to have few horses, and to use dogs for travel. The northern bands did not share the nomadic lifestyle nor the means required to support that lifestyle. Contrary to popular belief there is significant diversity in the origins and lifestyles of the north and south bands.

A close genetic affinity has always been assumed for the three dialects of the Stoney language. According to a comparative phonological analysis between Alexis Stoney, Morley Stoney and Assiniboine conducted by Cook and Owens (1991) Alexis Stoney and Morley Stoney are not as closely related as has been assumed. The relationship between Alexis Stoney and Morley Stoney is not as simple as identifying a conservative dialect and an innovative dialect since both demonstrate independent innovations and share different conservative features with Assiniboine.

The consonant inventory shared by Alexis Stoney and Assiniboine is consistent with other Dakota languages. Both Alexis Stoney and Assiniboine have maintained a three-way contrast for stops including a plain (lenis) series, an ejective series, and an aspirated series. Morley Stoney has lost the distinctiveness of aspiration and glottalization in stops, which are considered conservative by Cook and Owens. As a result the contrast between stops in Morley Stoney has been simplified to a two-way voicing contrast. The fricative inventory shared by Alexis Stoney and Assiniboine has undergone a forward shift in Morley Stoney (Shaw 1980). Anterior fricatives realized as alveolar and inter-dental in Morley Stoney are phonetically realized as alveo-palatal and alveolar, respectively, in both Alexis Stoney and Assiniboine. Shaw interprets the Morley Stoney fricatives as innovative.

While Morley Stoney is innovative in the consonant inventory Alexis Stoney demonstrates some innovations in the vowel inventory. The vowel inventory for Alexis Stoney is significantly larger than the conservative inventories of Assiniboine and Morley Stoney. Alexis Stoney has developed a length contrast for each of the five oral vowels. In numerous cases the long vowels in Alexis Stoney correspond to a vowel-glide-vowel sequence in other Dakota languages. A productive glide deletion rule in Alexis Stoney has lead to the long vowel being phonemicized.

Neither Stoney dialect can be classified as the innovative or conservative dialect. Both dialects show innovative and conservative features, such that one dialect has not systematically developed from the other. The nature of the innovations demonstrated by each dialect suggests that the two are as closely related to each other as they are to Assiniboine (Cook and Owens). Andersen's assertion that the north and south Stoney bands are distinct is further supported by linguistic evidence.

Previous linguistic works on Stoney (Shaw 1985a, 1985b, Harbeck 1980, Bellam 1975) are based on data collected from the Morley Reserve. More recently research has been conducted on the Alexis dialect (Cook 1996, 1990, Cook and Owens 1991). The initial works on Morley Stoney were based on the assumption that all of the Stoney dialects share a close genetic relationship. In light of Cook and Owens comparative analysis it becomes clear that each dialect needs to be analyzed in further depth before generalizations about Stoney grammar can be made.

The data presented in this thesis was collected from the Alexis Reserve over a period of two and a half years. From September 1994 to December 1995 I met, on a number of occasions, with a group of five elders over the age of 60 years and a few Stoney teachers aged 30-40 years. From March 1996 to June 1997 I have been working at the Alexis Reserve on the Stoney language curriculum where I am able to consult with various Stoney speakers on a regular basis.

A brief overview of Alexis Stoney grammar is discussed in Chapter 1 to add to the scarce existing Stoney literature and to provide background understanding of the noun and verb for the following analysis. The analysis will be developed with the Metrical Phonology framework developed by Idsardi (1992) and Idsardi and Halle (1995). The metrical framework will be outlined in Chapter 2. Stoney has a very systematic stress system with stress realized on the every other syllable and primary stress realized on the penultimate syllable in verbs. However, lexical stress may be realized in any position in a word obscuring the predictable stress patterns. A detailed account of the various interdependent stress patterns in Alexis Stoney are discussed in Chapter 3. To account for the incongruity in stress in Alexis Stoney a highly constrained metrical representation, based on the principles of Metrical Phonology, is developed and explained in Chapter 4.

NOTES

[1] The population numbers for Morley, Alexis, and Paul Bands were acquired from the Department of Indian and Northern Affairs, Membership Department, Edmonton, Alberta.

CHAPTER 1

ASPECTS OF STONEY GRAMMAR

Linguistic research of the Stoney language is limited. The most quoted works on Stoney are Shaw's papers (1985a, 1985b) on Stoney stress patterns. Bellam's thesis (1975) provides a sketch of the grammar of Stoney including phonological and morphological patterns. Harbeck's thesis (1980) explores syntactic agreement patterns in verbs. All three of these works focus on Morley Stoney.

Chapter 1 is a grammatical sketch of Alexis Stoney to contribute to the scarce works on Stoney grammar. Section 1.1 will outline Alexis Stoney phonology including the phonemic inventory and basic phonological patterns. Section 1.2 will outline the grammar discussing each of the grammatical categories with a focus on the morphological patterns of the verb. The phonological, morphological, and syntactic patterns described herein are based primarily on my fieldwork at the Alexis community from September 1994 to May 1997, as well as from Cook (1996) and Cook and Owens (1991).

1.1 PHONOLOGY

1.1.1 Phonemic Inventory. The consonant inventory for Stoney is provided in Figure I and the vowel inventory is provided in Figure II. The characters used to represent the phonemes in the consonant and vowel inventories make up the practical orthography developed by Cook (1990) for Stoney. Note that the notation used in the inventories is a representation of phonemes so that phonetic variation is not represented.

FIGURE I: Consonants

		Labial	Dental	Alveopalatal	Velar	Glottal
Stops:	Plain	b	d	j	g	
	Aspirated	p	t	c	k	
	Glottalized	p'	t'	c'	k'	?
Fricatives:	Voiced		z	zh	r	
	Voiceless		s	sh	x	
Sonorants:	Nasals	m	n			
	Glides			y	w	h

1.1.2 CONSONANTS. Alexis Stoney has three series of stops (Cook and Owens 1991, Cook 1992) which are articulated at the labial, dental, alveopalatal and velar positions. The plain series of stops, (b, d, j, g), are voiceless, lenis stops which become voiced inter-vocalically. The second series of stops is an aspirated (voiceless) series (p, t, c, k), and the third series is a glottalized (voiceless) series (p', t', c', k'). Note that the alveopalatals, (c', c, j) are affricates. Stoney also has a voiceless glottal stop (?).

(1)	Plain		Aspirated		Glottalized	
a) labial	*bóra*	'to blow'	*pora* ́	'nose'	*p'ó*	'steam'
b) dental	*dáca*	'what'	*tá*	'big'	*t'á*	'dead'
c) alveopalatal	*jizhín*	'boogieman'	*gicí*	'with'	*mic'íísh*	'my son'
d) velar	*gúúni*	'to spoil'	*kuná*	'friend'	*k'ú*	'give'
e) glottal	*?a?án*	'crow'				

Notice in the representation of stress that primary stress is represented by ´, that secondary stress is represented by `, and that stressless syllables are left unmarked. A long vowel is orthographically represented by two identical vowels. Both of these vowels are marked for stress since neither one is more prominent than the other.

Fricatives in Stoney contrast voice at three points of articulation: alveolar (s, z), alveopalatal (sh, zh), and velar (x, r).

(2)		Voiced		Voiceless	
a)	Alveolar:	*zi*	'yellow'	*sizá*	'squirrel'
b)	Alveopalatal:	*wazhí*	'one'	*washí*	'fat'
c)	Velar:	*mará*	'goose'	*xáxa*	'to flow out'

Phonemically there are only two nasals in Stoney although there is a phonetic velar variant which is found between a nasal vowel and a velar stop (3c).

(3) a)	*mará*		'goose'
b)	*naré*		'belly'
c)	*shṹga*	[shũ^{ŋ}ga]	'dog'

Glides are subject to a variety of phonological changes predominantly in intervocalic positions. One phonological process that accentuates the semi-vowel status of glides in Stoney is nasal spreading. Nasalization in Stoney spreads from a nasal segment outwards onto surrounding segments. Each consecutive vowel segment moving away from the original nasal segment becomes nasalized. Obstruents block nasal spreading and prevent the nasalization from affecting any subsequent segments. Glides, however, permit nasalization to spread across onto adjacent segments.[1] The glide itself carries a nasal quality when the vowels on either side are nasal.

(4) a)	/wĩya/	[wĩyã]	'woman'
b)	/nabjõwag/	[napčõwã^{ŋ}k]	'nine'
c)	/o-gẽha-d/	[okẽhã^{n}t]	'he/she followed it'
d)	/cĩga/	[čĩ^{ŋ}ga]	'to want'

In (4a-c) the nasal feature is permitted to spread rightwards across the glide and continue spreading until it reaches an obstruent or the end of the word. In (4d) the obstruent following the nasal vowel prevents the spreading of nasalization onto the final vowel. Notice that a phonetic homorganic nasal is realized preceding the obstruent.

1.1.2.1 COARTICULATED SEGMENTS. Both Alexis Stoney and Morley Stoney have an interesting coarticulation of a nasal consonant preceded by a homorganic plain stop. The nasal is the most prominent of the two segments and the stop adds a somewhat tense quality to the nasal. The forms in (5) provide examples from Alexis Stoney and Morley Stoney (Bellam 1975:5).

(5)	Alexis			Morley		
a)	[ga^{b}mṹmũ]	'drum'		d)	[hí:^{d}nč]	'He came back'
b)	[mi^{d}nṍn]	'older brother' (female speaker)		e)	[eyágu^{b}m]	'Take it!'
c)	[ská^{d}n]	'white'				

Bellam suggests that the stop is epenthetic where a nasal consonant is preceded by an oral vowel.[2] The epenthesis of the stop prevents nasalization from spreading leftward onto the oral vowel. Notice in (5b) that the final nasal consonant is not coarticulated with a stop. A coarticulated stop is superfluous for the final nasal in (5b) since the preceding vowel is nasalized. The preceding vowel becomes nasalized by the rightward spreading of a nasal consonant.

1.1.2.2 CONSONANT CLUSTERS. Sequences of consonants are restricted to two segments both word initially and word internally. According to Cook (1996) there are three types of consonant clusters in Stoney: (i) obstruent clusters (CC), (ii) sonorant clusters (NN), (iii) mixed (obstruent-sonorant) clusters (CN). These clusters are demonstrated in (6) for both initial and medial positions.

(6) (a) CC: *ògabdábi* 'ladle'

bdén 'short'

(b) NN: *yámni* 'three'

mné 'lake'

(c) CN: *gaxnábi* 'rattle'

xnó 'to growl'

According to Cook (1996, 1995), the obstruents which occur in consonant clusters are restricted to plain stops and voiceless fricatives. In consonant clusters and in word final position the three series of stops are neutralized and fricatives are restricted to the voiceless series.

Cook (1996) argues that only consonants which are laryngeally unmarked are permitted in consonant clusters and word finally in Stoney. 'Laryngeally unmarked' refers to segments which lack the specification of the privative [spread glottis] or [constricted glottis] (i.e. aspirated or glottalized, respectively) features or which lack the specification of [voice] where [+voice] is redundant and unmarked for nasals and [-voice] is redundant and unmarked for obstruents.

(7) **Cook's Laryngeal Constraint** (Cook 1996:4):

Only consonants that are laryngeally unmarked may occur in clusters and in syllable final position.

The segments which are characterized as laryngeally unmarked in Stoney are /b, d, g, s, sh, x, h, m, n/.

Word final position does not permit consonant clusters. Only single consonants occur in final position and these consonants are restricted to the laryngeally unmarked segments as specified by Cook's laryngeal constraint.

One other type of cluster which is unique to Alexis Stoney is a tense stop. The tense stop is not as tense as an ejective and yet not lax or aspirated. It is interpreted as a geminate *(dd)*. Primarily, this stop appears in the potential morpheme, *-dda,* although it can be found in other words.

(8) a) (i) *wahní-dda-d* 'I am going to go home'

(ii) *wahníd* 'I went home'

b) (i) *wabàdidá-dda-d* 'I will push it'

(ii) *wǎbadídad* 'I pushed it'

The alveolar geminate of the potential morpheme in Alexis Stoney corresponds with a voiceless velar - voiceless alveolar consonant cluster in Teton Dakota (Buechel 1983:34) and Morley Stoney. The following forms, taken from Shaw (1985) and Bellam (1975), provide cognates for the potential morpheme in Morley Stoney.

(9)	Alexis	Morley	
a)	*yawá-dda-d*	*yawá-kta-č* [3]	'he/she will count it'
b)	*àkidá-dda-d*	*akidá-kta-č* [4]	'he/she will look at it'

Based on the correspondence between the cognates of the potential morpheme it appears that [kt] has undergone gemination in Alexis Stoney. Gemination does apply elsewhere in the Alexis Stoney grammar. It occurs in selected cases of velar-alveolar stop clusters, /gd/, as can be seen by the variation in articulation in each of the following forms:

(10) a) *igdúmi* ⟶ *iddúmi* 'the trickster'

b) *kogdá* ⟶ *koddá* 'great' (as in 'great grandmother')

There is interspeaker variation in (10) between /gd/ and its geminate /dd/. Since gemination is a synchronic rule in the Alexis Stoney grammar it provides tentative evidence that the /-kta / /-dda / correspondence in (9) could possibly be the result of a shift from /-gda/⟶ /-dda/ in Stoney.

1.1.3 VOWELS. The Stoney vowel system bears a strong resemblance to other Dakota languages. The oral - nasal contrast found in Alexis Stoney is evident in languages such as Teton (Rood and Taylor 1996, Carter 1974, Buechel 1939, Boaz and Deloria 1932) and Assiniboine (Hollow 1970). The length contrast, however, is an innovation in Alexis Stoney which has developed diachronically from an underlying vowel-glide-vowel sequence.

FIGURE II: Vowels

Oral	Long	Nasal
i u	ii uu	ī ū
e o	ee oo	ē ō
a	aa	ā

1.1.3.1 LONG VOWELS. Oral vowels have a distinct contrast in length which is not reported for other Dakota languages. There are two types of long vowels in Alexis Stoney: derived and underlying. Derived long vowels develop when the concatenation of morphemes forms a vowel-glide-vowel sequence. A phonological rule deletes the intervocalic glide and the resulting vowel-vowel sequence is articulated as a long vowel.

(11)	a)	*tapád*	/ta-Ø-pa-d/
		'He/she chased'	/pre-3subj-chase-decl/
	b)	*tààpád*	/ta-ya-pa-d/
		'You chased'	/pre-2subj-chase-decl/

The subject marker in (11) is located between the root and a prefix. In (11b) the concatenation of the second person subject marker results in a vowel-glide-vowel sequence. The intervocalic glide is deleted and the remaining two vowels are articulated as a long vowel. The glide deletion rule is discussed further in section 1.1.4.2.

Phonemic long vowels are distinctive in length.

(12)

	Long			**Short**	
a)	*wanù̱ù̱sá*	'falcon'	f)	*tu̱sá*	'four'
b)	*cì̱ì̱zí*	'tongue'	g)	*gicí̱za*	'to fight'
c)	*ìwacé̱é̱*	'I want to find'	h)	*úce̱*	'to copy'
d)	*tò̱ò̱bá*	'door'	i)	*co̱bá*	'spruce tree'
e)	*capá̱á̱*	'chokecherries'	j)	*cápa̱*	'to stab'

Phonemic long vowels are an innovation in Alexis Stoney which have developed as a result of a productive phonological process. Compare the long vowels in the following Stoney words with cognates from Morley Stoney and Teton.

(13)

	Morley Stoney		Alexis Stoney	
	isní̱ye̱s	(Bellam 1975)	*ishní̱í̱sh*	'thank you'
	ce̱ya̱	(Harbeck 1980)[5]	*cé̱é̱*	'to cry'
	igi̱ye̱bi	(Harbeck 1980)	*ī̱gí̱í̱bi*	'we (pl)' [6]
		Teton		
	thi̱yópa	(Rood and Taylor 1996)	*tò̱ò̱bá*	'door'

The long vowel in Alexis Stoney corresponds to a vowel-glide-vowel sequence in the Dakota cognates. This is the same conditioning environment required to trigger the glide deletion rule which produces derived long vowels. The presence of a glide deletion rule in the Stoney grammar provides a phonological link between the vowel-glide-vowel sequences in the Dakota dialects and the phonemic long vowels in Alexis Stoney.

The phonemic long vowel in Alexis Stoney has developed as a result of a diachronic glide deletion rule. The differences between the output of the diachronic and synchronic glide deletion rules are: 1) that Alexis Stoney speakers do not recognize an underlying vowel-glide-vowel sequence for diachronically derived long vowels; and 2) that diachronically derived long vowels have been phonemicized.

1.1.3.2 NASAL VOWELS. Of the five oral vowels in Stoney the two high vowels and the low vowel contrast with a nasal counterpart. There are cases of mid nasal vowels but they are extremely rare.

There is no length contrast in nasal vowels although there are cases of long nasal vowels in Stoney.

(14) [maštḗ:] 'rabbit'

Long nasal vowels can be explained along with derived long vowels. Underlyingly, the long vowel in *mashdḗ* is a vowel-glide-vowel sequence. The intervocalic glide triggers glide deletion.

(15) /mashdĩya/ ⟶ /mashdĩa/ ⟶ [maštẽ:]

glide deletion rule *coalescence*

The remaining adjacent vowels are not identical; one is a high vowel and one is a low vowel. The two vowels coalesce to a mid vowel and the resulting coalesced vowel is articulated as a long nasal vowel. Vowel length in nasal vowels is not represented in the orthography because it is not contrastive.

Nasal vowels are phonetically articulated as a nasal vowel followed by a transitional nasal consonant, if the nasal vowel is followed by a stop.

(16) a) *cĩ́gad* [čĩᵑgat] 'he/she wants it'

b) *ãbá* [ãᵐba][7] 'day'

c) *shõ̀tá̃* [šõⁿtʰã] 'horse'

The prominence of the homorganic nasal varies among speakers; for some it is clearly articulated and for others it is quite weak.

1.1.4 MORPHOPHONEMIC CHANGES. The pronunciation of words in slow isolated speech differs significantly from that in fast integrated speech. In Stoney the verb is heavily marked with both grammatical and lexical affixes. Because the verb is subject to such a large amount of morphological concatenation it is also subject to numerous phonological changes. There is morphological concatenation and compounding in other grammatical categories which will produce triggering environments for the following phonological changes as well. Because the majority of phonological change occurs in verbs the focus in the following section will be on verbs.

1.1.4.1 COALESCENCE. Glides which occur intervocalically as a result of concatenation are pronounced weakly if at all. When [w] occurs intervocalically following [a] it produces a coalesced vowel phonetically articulated as [ɔ]. Coalescence is most commonly seen when the first person nominative morpheme, *wa-*, is concatenated between the root and a prefix. If the prefix ends in [a] (as most of them do) the intervocalic glide coalesces with a preceding vowel to produce [ɔ]. Orthographically [ɔ] is represented as a diphthong, *au*, but it is not a diphthong in the traditional sense of a vowel followed by an off-glide [aw].

(17) a) *wàùgícid* /wa-wa-gici-d/ 'I danced' [cf. *wagícid* 'he danced']
pre-1subj-dance-decl

b) *àùkídad* /a-wa-kida-d/ 'I looked at it' [cf. *akídad* 'he looked at it']
pre-1subj-look-decl

The vowel which follows the glide underlyingly is phonetically articulated as a very weak schwa and occasionally, it is completely deleted. The schwa is not represented in the writing system.

1.1.4.2 DELETION. Intervocalic position is a conditioning environment for glide weakening. Where labiovelar glides coalesce with a preceding vowel, palatal glides undergo deletion.

The concatenation of the second person nominative morpheme /ya-/ to a discontinuous stem results in a /aya/ sequence. The intervocalic glide is deleted resulting in a long vowel, [aa].

(18) a)	*wààgícid*	/wa-ya-gici-d/	'You danced'
		pre-2subj-dance-decl	
b)	*ààkídad*	/a-ya-kida-d/	'You looked at it'
		pre-2subj-look-decl	

If the resulting adjacent vowels are not identical then they assimilate and are articulated as a long vowel. There are a group of Alexis Stoney stems ending in a phonetic long vowel which are articulated as a vowel-glide-vowel in slow speech.

	Fast speech	Slow speech	
(19) a)	*mashbéé*	*mashbiya* [8]	'to have an itch'
b)	*gashgéé*	*gashgiya*	'to scrape'
c)	*pashgéé*	*pashgiya*	'to scrub'

The vowels on either side of the glide are not identical so when the glide is deleted they coalesce to a mid vowel.

Intervocalic glides are only subject to glide weakening in derived structures. Glides which occur intervocalically in underlying structures are maintained.

(20) a)	*yáwa*	'to count'
b)	*ahíya*	'to sing'

The dual person prefix, /ìgi-/, is prone to a high degree of phonological variation. Most commonly the final vowel and the velar stop are deleted. The triggering environment for the deletion of the final vowel is not clear since its presence is more rare than its absence. However, the presence of the final vowel is more common when the dual prefix appears word internally, between the root and a prefix.

(21) *agìhiyábid* /a-ìgi-hiya-bi-d/ 'We sang'

The velar undergoes deletion when the dual prefix precedes a consonant.

(22) a) *ı̄hnı́bid* /ı̄gi-hni-bi-d/ 'We (plural) got home'
dual-get home-pl-decl

b) *wı̄gı́cid* /wa-ı̄gi-gici-d/ 'We danced'
pre-dual-dance-decl

A sequence of two adjacent vowels resulting from concatenation is rare considering that almost all Stoney affixes are of the form CV-. However, with vowel initial prefixes, such as the dual person prefix, sequences of adjacent vowels do result. In such a case the first vowel in the sequence is deleted. The vowel of the prefix in (22b) is deleted because it directly precedes another vowel. Some additional examples of vowel deletion are provided below.

(23) a) *mı̨̀c'ic'úd* /ma-ic'i-k'u-d/ 'I gave it to myself'

b) *nı̨̀c'ihnùzhazhábı̨g* /ni-ic'i-hnuzhazha-bi-ig/ 'Don't wash yourselves'

In (23a) the concatenation of the first person marker, *ma-*, to the reflexive morpheme, *ic'i-*, creates a sequence of two adjacent vowels. The first vowel in the sequence is deleted. In (23b), concatenation creates two sequences of adjacent vowels where each sequence deletes a vowel. In none of these cases does a long vowel result from sequences of adjacent vowels; one of the two vowels is always deleted.

1.1.4.3 VOWEL ALTERNATION. Stem final [a] on verbs regularly alternates with [e]. The negative suffix, *-shi* (negative) is the primary trigger for vowel alternation. There are other nonproductive cases of vowel alternation as well.

(24) a) *yuhę́shid* /yuhe-shi-d/ 'He doesn't have it' [c.f. *yúhąd* 'He has it']

b) *gsabę́shid* /gsabe-shi-d/ 'He isn't wise' [c.f. *gsábąd* 'He is wise']

c) *àkidę́shid* /a-kide-shi-d/ 'He didn't look' [c.f. *akídąd* 'He looked']

Vowel alternation is very common among the Dakota languages (Boaz and Deloria 1932, Carter 1974, Chambers 1978, Shaw 1980, Rood and Taylor 1996). Chambers (1978) and Carter (1974) identify a group of bisyllabic roots whose final vowel regularly undergoes vowel alternation. This group corresponds with the a-stems identified by Boaz and Deloria (1932). The a-stems are a group of monosyllabic roots which end in a consonant. All consonant final monosyllabic roots are affixed with an epenthetic vowel and it is this vowel which undergoes vowel alternation. The stem formative vowel in the following verbal and nominal examples is realized as [e]:

(25) (a) *gsábe* /gsab-A/ 'to be smart'

(b) *hnébe* /hneb-A/ 'to vomit'

(c) *anígde* /anigd-A/ 'offspring'

The stem formative vowel is identified as *-A* to distinguish it from lexical *-a*.

Chambers provides compounding, incorporation, and reduplicative evidence to prove that the stem formative vowel is epenthetic and not part of the root. Corresponding compounding and reduplicative evidence can be found in Alexis Stoney. For example, when a consonant-final root is reduplicated or forms part of a compound the stem formative vowel is absent. The Alexis forms in (26) provide examples of compounding and reduplication of stem formative roots where the stem formative vowel is absent.

(26) (a) *cabdi* /cab + ti/[9] [cf. *caba* 'beaver']

'beaver lodge' 'beaver' + 'dwelling'

(b) *boxboran* /bor + bor + A + n/ [cf. *bora* 'to blow']

'something that blows' 'blow' + redup + stem form + dim

When the root *cab* 'beaver' is compounded with *ti* 'dwelling' the stem formative *-A* does not appear following the root final consonant. In (26b), the stem formative only appears after the reduplicated root and not after the initial root. Presumably the stem formative vowel does not reduplicate but is applied after reduplication.

The roots in (24) are stem formative roots and are subject to vowel alternation. The underlying form for the stems in (24) are demonstrated in (27).

(27) a) /yuh-A/

b) /gsab-A/

c) /a-kid-A/

Ablaut of the stem formative vowel rarely occurs in nouns but it commonly occurs in verbs when followed by certain suffixes or at the end of a sentence (Carter 1974). According to Carter ablaut is lexically marked on the root since it is not otherwise predictable.

Certain affixes are subject to vowel alternation. The morpheme *-nasde* 'to want' undergoes vowel alternation of the final [e] before *-shi* (negative) and *-ni* (interrogative).

(28) a)	*yàgdenásdi̱ni*	/ya-gde-nasde̱-ni/	'Do you want to kill it?'
b)	*wagdènasdí̱shid*	/wa-gde-nasde̱-shi-d/	'I don't want to kill it'
c)	*wagdènásde̱d*	/wa-gde-nasde̱-d/	'I want to kill it'

1.1.4.4 VELAR PALATALIZATION. In the Dakota languages (Rood and Taylor 1996, Shaw 1980, Chambers 1978, Carter 1974) and in Morley Stoney (Bellam 1975) velar stops /k', k, g/ are palatalized intervocalically following mid and high front vowels. The following examples demonstrate velar palatalization in Morley Stoney (Bellam 1975:9).

(29) a) [agičidač] /a-gi-kida-č/ 'He looks at his own'

pre-poss-look-decl

b) [eǰiyač] /e-giya-č/ 'He says to him'

pre-say-decl

c) [ĭčičuwač] /iči-kuwa-č/ 'He is involved with himself'

/refl-involve-decl/

Velar palatalization is not a productive process in Alexis Stoney. Velar stops of all three series are maintained intervocalically following mid or high front vowels in Alexis Stoney, as seen in (30).

(30) a) Ejective Series

i) *ci-k̲'ú-d* 'You gave it to me'

ii) *ni-k̲'áda-ni* 'Are you hot?'

b) Plain Series

i) *yuhèè-shí-g̲a* 'He/she never has it'

ii) *wà-gicí-g̲a-d* 'He/she is dancing (progressive)'

c) Aspirated Series

i) *à-ci-k̲ída-d* 'I look at you'

ii) *dukék̲a* 'why'

There are a few cases of velar palatalization in some older speakers.

(31) Velar Palatalization

a) *a-k̲ída-d* 'he looks at it' *à-gi-c̲ída-d* 'he looks at his own'

b) *ma-k̲'ú* 'Give it to me' *mìc'i-c̲'ú-d* 'I gave it to myself'

The same speakers who produce the forms in (31) do not productively palatalize in all palatalizing environments. The palatalization rule which applies productively in Morley Stoney and Teton has a very restricted application in Alexis Stoney.

1.2 SYNTACTIC CATEGORIES

1.2.1 Syntactic Structure. Word order in Stoney is subject-object-verb. The verb is the only obligatory element in the syntactic structure, such that the minimal syntactic structure is simply a verb. All other syntactic categories, including nouns, are optional regardless of the number of arguments required by the verb. Further details of nouns and other syntactic categories will be discussed in the remainder of section 1.2 by looking at each category individually.

1.2.2 Conjunctions. Conjunctions function to connect two sentences.

(32) a) *Í àgdahéna shahą́ mí máúnid.* 'He ran and I walked'
him he-ran and me I-walked

b) *Wàginíha zhǫhną́ àmubsééd.* 'I jumped because I was scared'
I-scared because I-jumped

c) *Màdasáʔad ésh shiná ca mohééshid.* 'I was cold but I didn't have a blanket'
I-cold-past but blanket a I-have-neg-past

The conjunction is an optional element in conjoined sentences. If a conjoined sentence is used in the middle of a discourse the conjunction is optional since the meaning can be derived from the context of the discourse. All of the sentences in (32) can also be stated without a conjunction.

(33) a) *Í àgdahéna mí máúnid.* 'He ran (and) I walked'

b) *Wàginíha àmubsééd.* 'I jumped (because) I was scared'

c) *Màdasáʔad shiná ca mohééshid.* 'I was cold (but) I didn't have a blanket'

1.2.3 Nouns. Nominal arguments which are required by the verb are obligatorily realized as pronominal prefixes on the verb. Separate referential nouns may additionally be realized to provide emphasis or additional semantic information but they are not syntactically required.

1.2.3.1 PLURALITY. An independent noun is inflected for number. Plurality is expressed through a number of different means depending on three different classes of noun: human (animate), animate, and inanimate. Human nouns are marked by a plural suffix.

(34) a) *wicá* 'man' *wicá<u>bi</u>* 'men'

b) *wìcashdá* 'person' *wìcashdá<u>bi</u>* 'people'

The plural morpheme undergoes a phonological change in a nasalizing environment. The bilabial stop of the plural morpheme becomes nasalized when it is preceded by a nasal.

(35) *wī́ya* 'woman' *wīyámi* /wīya-<u>bi</u>/ 'women'

Nasal spreading triggers the nasalization of the stop in the plural morpheme. Nasalization spreads from the nasal vowel rightwards across the glide, affecting the final root vowel and both segments of the plural morpheme. Nasalization is usually blocked by an obstruent but the bilabial stop in the plural morpheme not only fails to block the spreading but becomes nasalized itself. The phonetic representation of *wīyámi* is provided below to demonstrate the nasal spreading.

(36) [wīyãmĩ]

The initial vowel is lexically marked with a nasal feature and all subsequent nasal segments are the result of nasal spreading. The nasalization of the stop in the plural marker allows nasal spreading to affect the plural marker vowel as well.

Inanimate nouns express plurality through reduplication.

(37) Reduplication

a) *mné* 'lake' *mne<u>mné</u>* 'lakes'

b) *waxbé* 'leaf' *wàxbe<u>xbé</u>* 'several leaves'

The final syllable of the noun is reduplicated and affixed to the right margin of the word.

Non-human animate nouns have no process of plural formation; they express plurality through the use of quantifiers.

(38) a)	*xorá*	'fish (sg)'	b)	*cá*	'tree'
	xorá núm	'two fish'		*cá yámni*	'three trees'
	xorá óda	'lots of fish'		*cá wída*	'lots of trees'

The change in quantity can only be expressed by the quantifier. The affixation of the plural morpheme on this class of nouns is ungrammatical.

(39)	**xorabi*	'fish (pl)'	**cabi*	'trees'

1.2.3.2 DIMINUTIVE. Nouns can be modified to indicate that an object is smaller than normal. By adding the final suffix *-n* the noun takes on a diminutive meaning.

(40) a)	*wicá*	'man'	*wicá<u>n</u>*	'boy'
b)	*wabdá*	'river'	*wabdá<u>n</u>*	'stream' [lit. 'little river']

The diminutive suffix is very productive and can be affixed to virtually any noun semantically capable of carrying a diminutive meaning.

1.2.3.3 NOMINALIZER. Nouns can be derived from verbs by the affixation of a nominalizing suffix.

(41) (a)	*ìdugábi*	/iduga-bi/	'cigarette'
		'to smoke'-nom	
(b)	*sàgudábi*	/saga+yuda-bi/	'turnip'
		'raw'+'eat'-nom	
(c)	*ògabdábi*	/o-gabda-bi/	'ladle'
		pre-'to scoop out' -nom	

The *-bi* morpheme has two distinct functions in nominal morphology. The nominaling *-bi* morpheme is homophonous with the plural *-bi* morpheme.

1.2.3.4 DETERMINERS. Determiners are an optional class of morphemes which mark the end of a noun phrase in Stoney. They are nominal enclitics which are not capable of bearing stress. Below is a list of determiners found in Stoney.

(42) a) *ca* -indefinite article *cába ca* 'a beaver'

b) *ga* -definite article *cába ga* 'the beaver'

c) *ne* -demonstrative *cába ne* 'this beaver'

d) *she* -demonstrative *cába she* 'that beaver over there'

Determiners are subject to vowel alternation; specifically, the /a/ in *ga* alternates with [e].

1.2.3.5 PRONOUNS. Pronouns are used in addition to the pronominal prefixes on a verb. The use of pronouns is primarily for emphasis since the arguments are marked on the verb.

(43) Personal Pronouns

	Singular		Dual		Plural	
1	*mi*	*'me'*	*ĩgi*	*'we(dual)'*	*ĩgibi*	*'we (pl)'*
2	*ni*	*'you'*			*nibi*	*'you(pl)'*
3	*I*	*'him/her'*			*ibi*	*'they'*

Stoney has a dual person distinction which refers to two people and must include the speaker. The duoplural (dual person + plural) distinguishes the speaker and more than one other person. The dual person only applies to the first person; there are no second or third person dual forms.

1.2.4 VERBS. Verbal morphology in Stoney consists of an extensive set of ordered suffixes and prefixes. Inflectional, derivational, and syntactic categories are marked on the verb with affixes.

1.2.4.1 PERSON. Arguments required by the verb are obligatorily realized as pronominal prefixes and optionally as separate nouns or noun phrases. There are two sets of pronominal prefixes which distinguish between two types of verbs: active and stative. An active verb describes an activity over which the subject has volition. Depending on the type of activity the active verb may require one argument (agent) which is the subject of the sentence or two arguments (agent and patient). The pronominal prefixes for the subject of an active verb are provided in (44).

(44) Active Verbs - Subject Prefixes

1. first person singular: *wa-*
2. second person singular: *ya-*
3. third person singular: *Ø-*

There is no overt person marker for third person. The absence of a pronominal prefix indicates the third person.

Active verbs may require one, two, or three arguments. Active verbs that require a single argument are intransitive verbs. The following examples demonstrate the conjugation of an intransitive verb with the subject prefixes from (44):

(45) Active Subject

a) *wa-hnébad* 'I vomited'

b) *ya-hnébad* 'You vomited'

c) *Ø-hnébad* 'He/she vomited'

The subject of any active verb, regardless of the number of arguments it requires, takes the subject prefixes shown in (44).

Active verbs which require a subject and an object are transitive verbs. The object of a transitive verb is marked by a different set of pronominal prefixes than for subjects.

(46) Active Verbs - Object Prefixes

1. first person singular: *ma-*
2. second person singular: *ni-*
3. third person singular: Ø-

The following example shows the conjugation of the object of a transitive verb. The initial /u-/ is a prefix which co-occurs with the root.

(47) Active Object

a) *ù-ma-gééd* 'He/she helped me'

b) *ù-ni-gééd* 'He/she helped you'

c) *ù-Ø-gééd* 'He/she helped him/her'

When both the subject and the object appear on the verb the subject occurs closest to the verb root.

(48) *wìzhamáánad* /wizha-ma-ya-na-d/ 'You believed me'

pre-1obj-2subj-'to believe'-decl

There is a portmanteau morpheme, *ci-*, which represents both the first person subject and second person object.

(49) *wìzhicínad* /wizha-ci-na-d/ 'I believed you'

pre-2obj/1subj-'to believe'-decl

Stative verbs describe a state or condition. Only one argument is required by a stative verb. The subject of a stative verb uses the same pronominal prefixes as the object of a transitive verb. Observe the pronominal prefixes in the following stative verb:

(50) Stative Subject

i) *ma-cúúdad* 'I'm cold'

ii) *ni-cúúni* 'Are you cold?'

iii) *Ø-cúúdad* 'He/she's cold'

A third type of verb, in addition to active and stative verbs, is the impersonal verb. Rood and Taylor (1997) describe impersonal verbs as verbs which report on natural states, such as weather.

(51) a) *ósnid* 'It's cold' b) *wápad* 'It's snowing'

Impersonal verbs do not take any arguments but they must be affixed by the declarative morpheme, *-d*.

1.2.4.2 NUMBER. The subject and object of a verb are marked for number by a plural suffix, *-bi*, on the verb. In other Dakota languages the plural marker is classified as an enclitic but in Stoney it is classified as a suffix because it is capable of bearing stress. There are three numbers in Stoney: singular, dual, and plural. The dual person includes the speaker and one other person.

Singular is marked by a person marker and the absence of any number marking (i.e. plural or dual marker). Dual is marked with a dual prefix, *ĩgi-*. Plural is marked with a person prefix and the plural suffix. The combination of the dual prefix and the plural marker creates a duoplural which includes the speaker and more than one other person.

(52) a)	Singular:	*yagdéd*	/ya-gde-d/	'you killed it'
b)	Plural:	*yagdébid*	/ya-gde-bi-d/	'you (pl) killed it'
c)	Dual:	*ĩgdéd*	/ĩgi-gde-d/	'we killed it'
d)	Duoplural:	*ĩgdébid*	/ĩgi-gde-bi-d/	'we (pl) killed it'

The bilabial stop of the plural marker is [redacted]
nouns. That is, the bilabial stop becomes nasal[redacted]

(56) a) *manímid* [mãnĩmĩ^{n}t]

b) *wàshbā̃yámid* [washbãyãmĩ[redacted]

In (56a) nasalization is triggered by the nasal [redacted]
triggered by the nasal vowel. Nasality spreads
glide affecting every segment except the word [redacted]

There are some exceptional cases whe[redacted]
nasal trigger.

(57) a) *nazhímid* /nazhi-bi-d/

b) *anàrobdámid* /anarobda-bi-d[redacted]

Both forms in (57) have nasal consonants near
there are consonants that block nasal spreadin[redacted]
additional nasal segment following the obstrue[redacted]
nasalization. Interestingly, the cognate in Teto[redacted]
nasal vowel.

(58) anaġopta^{n} 'to listen'

The stem final nasal in the Teton Dakota langu[redacted]
in Stoney. The underlying nasal would be the
and consequent denasalization in Stoney wo[redacted]
would not be surprising to find a similar patter[redacted]

1.2.4.3 Mood, Aspect, Mode. In additio[redacted]
inflected for mood and aspect. Each of these i[redacted]
a suffix. Mode is a derivational category w

reported Sioux languages these categories are classified as enclitics but in Stoney each of these categories is capable of bearing stress so they are classified as suffixes.

Various expressions of mood, including declarative, imperative, and interrogative, are expressed by the affixation of suffixes. The declarative mood is represented by the affixation of -d at the end of a statement.

(59) *wa-gdé-d* 'I killed'

wa-gdé-shi-d 'I didn't kill'

wa-gdè-nasdí-shi-d 'I don't want to kill'

All statements are affixed by the declarative marker.

Imperatives make a distinction between a positive command and a negative command. A positive command is expressed by the lack of a declarative marker for a singular subject and by the affixation of a plural allomorph [-m] for a plural subject. A negative command ends with the suffix *-ig*.

(60) a) *àmakídig* /a-ma-kida-ig/ 'Don't look at me!'

b) *àmakída* /a-ma-kida-Ø/ 'Look at me!' (sg subject)

c) *àmakída* /a-ma-kida-m/ 'Look at me!' (pl subject)

Interrogative statements are formed by the affixation of a question marker. The question marker, *-ni*, is an enclitic which does not bear stress.

(61) a) *ìyadúkene* /i-ya-duka-ni/ 'Do you smoke?'

b) *coyááni* /co-ya-ya-ni 'Do you know?'

Interrogative morphemes are subject to vowel alternation. In (a) the interrogative vowel alternates from /i/ to [e].

There are a variety of aspectual distinctions in Stoney which specify whether an action is complete, incomplete, or continuous. Each of these distinctions are marked by a suffix. There is a fundamental aspectual distinction in Stoney distinguishing between the perfective and imperfective aspects.

(62) a)	*wahnín*	/wa-hni-n̲/	'I got home (perfective)'
b)	*wahníd*	/wa-hni-d̲/	'I got home (imperfective)'

The imperfective is an aspectual category having nothing to do with tense but the gloss for the imperfective may indicate either present or past.

(63) *mánid* 'He walks' OR 'He walked'

The *-d* marker is a portmanteau morpheme with two functions. It functions as a declarative marker, which is affixed to all declarative statements, and it functions as an imperfective aspect marker.

The perfective is the only type of statement which is not affixed by the declarative morpheme. However, analyzing the historical form of the perfective morpheme leads to the realization that the perfective is affixed with the declarative marker. In Teton, the perfective morpheme is a nasalized vowel; *-ũ* [12] (Beuchel 1983). The cooccurence of the declarative morpheme with a perfective morpheme, similar to the Teton form, would trigger the shift from a nasal vowel to a nasal consonant, historically. In Stoney, nasal vowels have a homorganic nasal variant when followed by an obstruent. The concatenation of the morpheme with a nasal feature [N] (i.e. the perfective morpheme) followed by the declarative morpheme creates the conditioning environment for the allophonic variation. The nasal feature is linked to a vowel and then spreads if possible.

(64) /CV-[N]-d/ ⟶ [C$\tilde{V}^{n}$t]

perf-decl

The nasal vowel followed by a stop produces a homorganic nasal, [n], preceding the stop. The presence of the declarative morpheme is required to trigger the realization of the homorganic nasal. The historical form of the perfective vowel, if it existed, in Stoney is unknown but the nasal feature is the critical element in generating the homorganic nasal. [13]

The perfective forms in [redacted]

coarticulation of the perfective [redacted]

(65) /akida - bi - n - č/

'to look'-pl-perf-decl

In Alexis Stoney the [redacted]

perfective morpheme. The coda [redacted]

the deletion of the final declarative [redacted]

Transitive verbs which [redacted]

distinction as to whether the [redacted]

verb is suffixed by *-zhig* and a [redacted]

(66) a) *sigdán ca nàùxóz*[redacted]

b) *nàùxozhán*

There are two suffixes to [redacted]

-ga represent a progressive action [redacted]

the two morphemes.

(67) a) *wacèèmíced* /[redacted]

b) *makúgad* /[redacted]

There is an extensive set [redacted]

will be discussed here. [redacted]

one of two modal markers: *-dda* if

statement refers to a distributive [redacted]

(68) a) *camóddad* / [redacted]

b) *camóhad* / [redacted]

Statements with the potential [redacted]

A speaker can express [redacted]

suffix *-nasde* indicates the speaker[redacted]

(69) a) i) *wahnèbad* /wa-hneba-d/ 'I vomited'

ii) *wahnèbanásded* /wa-hneba-nasde-d/ 'I want to vomit'

iii) *wàhnebànasdíshid* /wa-hneba-nasde-shi-d/ 'I don't want to vomit'

b) i) *gdébid* /gde-bi-d/ 'They killed it'

ii) *gdèbinásded* /gde-bi-nasde-d/ 'They want to kill it'

iii) *gdèbìnasdíshid* /gde-bi-nasde-shi-d/ 'They don't want to kill it'

An action that has been started but not necessarily completed is suffixed by the dubitative *-win.* [14]

(70) a) *yùhawín* /yuh-A-win/ 'He did have it (might not now)'

b) *hnawín* /hna-win/ 'He was on his way home'

If a speaker is not sure of the factual correctness of their statement he/she can indicate that their statement is a conjecture. Subjunctive statements are expressed by adding the suffix *-ce.*

(71) a) *yuhééshid* /yuhee-shi-d/ 'He/she doesn't have it'

b) *yuhèèshíced* /yuhee-shi-ce-d/ 'I don't think he/she has it'

Negation can be expressed on any verb by the suffix *-shi.*

(72) a) *cowáád* /co-wa-ya-d/ 'I know'

b) *cowááshid* /co-wa-ya-shi-d/ 'I don't know'

c) *cowàànasdíshid* /co-wa-ya-nasde-shi-d/ 'I don't want to know'

The negative suffix can co-occur with any other aspectual, mode, or mood markers regardless of the complexity or number of suffixes added to the root.

The various aspects, moods and modes discussed here do not represent an exhaustive list by any means. There are numerous other markers in Stoney that have not been mentioned.

1.2.4.4 STEM DERIVATION. The meaning of a root can be changed or modified by the addition of a prefix or an incorporated noun. For example, the stem *ibúza* 'to be thirsty' is derived from the root for 'dry' along with an incorporated noun, *i* 'mouth'. The concatenation of the two elements translates literally to mean 'to have a dry mouth.'

(73) a) *ìbúzad* 'He/she is thirsty' (lit. 'has a dry mouth')

í 'mouth' + *búzad* 'It's dry'

b) *nagsád* 'He/she broke it with the foot'

na- (use of foot) *gsad* 'He/she broke it'

In (73b) the meaning of the root *gsa* 'to break' is modified by the instrumental prefix *na-* meaning 'with the foot.'

Certain verbs can take on a derived meaning with the affixation of instrumental prefixes. These prefixes modify the meaning of the root to specify an object used or a manner in which an act is carried out. Below are the set of instrumental prefixes for Stoney:

(74) *ba-* an action performed moving the hands away from the body.

ga- an action performed using a force or a striking motion.

yu- an action performed moving the hands towards the body.

ya- an action performed using the mouth or the teeth.

na- an action performed using the foot.

mo- an action performed using a pointed instrument or a 'poking' manner.

ma- an action performed using a blade or sharp knife.

Some examples of these instrumental prefixes are provided below:

(75) a) *ba-gsád* 'He broke it (with the body)'

b) *ga-gsád* 'He chopped it (with an axe)'

c) *yu-gsád* 'He broke it (in the hands)'

d) *ya-xdárad* 'He bit it'

e) *na-gsád* 'He broke it (with the feet)'

f) *mo-xdárad* 'He poked it'

g) *ma-gìzhi-gsád* 'He cut it for him'

Instrumental prefixes are limited to a certain set of verbs which can semantically accommodate the additional meaning contributed by the prefixes.

In some cases the meaning of the prefix is difficult to isolate. In these cases the combination of the prefix and the root contrives a meaning that is not contributed by either morpheme in isolation. In the following examples the prefix and the root are underlined.

(76) a) *máúnid* /ma-wa-ni-d/ 'I walked' [c.f. *manid* 'He walked']
pre-1subj-walk-decl

b) *táúpad* /ta-wa-pa-d/ 'I chased' [c.f. *tapad* 'He chased']
pre-1subj-chase-decl

c) *cowáád* /co-wa-ya-d/ 'I know' [c.f. *coyad* 'He knows']
pre-1subj-know-decl

In none of these examples is there a known isolated meaning for the root without the prefix. At one time there may have been a separate meaning but the combination of the root and the prefix has become lexicalized. Prefixes with no isolated meaning but contribute to the meaning of the stem are called thematic prefixes.[15]

1.2.4.5 VERB TEMPLATE. The Stoney verb consists of a root and a set of ordered suffixes and prefixes which are either optional or obligatory. The prefixes predominantly mark person; subject and object, as well as instrumental. The suffixes mark number, negation, mode, aspect, and mood. The verb template shown in Figure III is provided to demonstrate the positions of the verbal morphology that have been described. Not all positions of the verb need to be filled at one time when deriving a verb but the affixes must occur in a prespecified order. The affixes listed in each column are mutually exclusive and do not co-occur.

FIGURE III: Alexis Stoney Verb

V	IV	III	II		I	**Verb**	I	II	III	IV	V
pre	dual	obj	subj		instr	**Root**	pl	mode	neg	asp / mode	mood/ asp
			act.	stat.							
a-		ma-	wa-	ma-	ba-					-ha	-n
co-		ni-	ya-	ni-	ga-					-dda	-d
wa-	ˀigi-	Ø-	Ø-	Ø-	yu-	**ROOT**	-bi	-nasde	-shi	-mice	-ig
ma-		ci-			ya-					-zhig	-Ø
ta-		wica-			na-					-zhan	
					mo-					-win	
					ma-					-ce	

The affixes listed in Figure III are not exhaustive. There are a number of additional affixes, particularly aspectual affixes, that require further attention and analysis but are outside the scope fo this thesis.

NOTES

1 Phonetic features which are generated from a productive rule, such as nasalization, will not be represented in the notation, for example [w̃iyã] will be represented as *wĩya*.

2 The data provided here is taken from Bellam (1975). The epenthetic stop is not observed in Shaw's data (1985a, 1985b) so the stop epenthesis rule may be an optional rule.

3 Taken from Bellam (1975:9).

4 Taken from Shaw (1985a:7).

5 Harbeck (1980) does not record stress in his thesis so his data will be provided primarily to demonstrate grammatical patterns not directly related to stress.

6 The long vowel in *ishnĩ́ĩ́sh* and *ĩgṹṹbi* is articulated by older speakers but in younger speakers this vowel is articulated as a short vowel. There may be some variation in the representation of long and short vowels due to the difference in articulation between young and old speakers.

7 The nasalization in the word *ãba* is only noted in the speech of older speakers. In younger speakers the nasalization is lost.

8 In Dakota there is a *-ya* suffix which makes a verb take on a causative meaning (Taylor and Rood 1996:464). Although these roots cannot be broken down further by Stoney speakers (ex. **mashbi, *gashgi, *pashgi)* it is very likely that it is the concatenation of such a /-ya/ morpheme that triggers glide deletion.

9 Notice that the voiceless aspirated stop in *ti* 'dwelling' becomes a plain stop when preceded by another consonant, as mentioned in section 1.1.1.2 on consonant clusters.

10 For further details on the phonological rules which apply in Morley Stoney see Bellam (1975).

11 The nasal feature in the dual person marker, *ĩgi-*, is not realized in this form nor the duo-plural form.

12 The perfective morpheme in Teton has an alternate pronunciation; *-kũ*.

13 I would like to thank Eung-Do Cook for pointing out that the nasal consonant of the perfective marker was actually a phonetic variant of a nasal vowel.

14 The final [n] in *-win* and *-zhan* could possibly be the perfective marker, *-n*.

15 'Stem' is used to refer to the smallest unit of meaning carried by a lexical item. The stem can be made up of a root or a root plus a thematic affix.

CHAPTER 2
METRICAL THEORY OF PROSODY

Up until the mid 1970's studies of prosody assumed that stress was a phonetic feature of a phonological segment. Liberman's dissertation on stress (1975) revealed that prosody is the result of relative prominence within metrical groupings of syllables. Consider Liberman's groupings in the following words.

(1) a) auto / bio / graphic

b) ono / mato / poeia

c) super / cali / fragi / listic / expi / alo / docious

By dividing the string of syllables into binary groupings in (1), an alternating stress pattern emerges. The left-most syllable in each grouping is clearly more prominent than the right. This creates an alternating series of stress - nonstress across the whole string of syllables. Liberman's groupings were significant in determining that stress is systematic, not necessarily idiosyncratic, and that it can be generated independently from the phonemes.

2.1 THE METRICAL TIER

To account for the independent nature of prosody Metrical Theory, as developed in William Idsardi's dissertation (1992), computes stress on an autosegmental tier separate from the string of phonemes. The version of Metrical Theory outlined in this chapter is based primarily on Idsardi (1992), although aspects of Idsardi and Halle (1995) and Halle (1997) are incorporated to promote clarity or simplicity in the representation.

The separate tier generated within Metrical Theory is called the metrical tier. Although the metrical tier is independent from the phoneme tier the two tiers do interact, much like other autosegmental tiers interact with the phoneme tier. The metrical tier can only accommodate information which contributes to the computation of stress so information from the phoneme tier that is relevant to stress is shared with the metrical tier. For example, only certain elements from the phoneme tier are capable of bearing stress; these phonemes, and only these phonemes, are 'projected' onto the metrical tier where they are represented by an abstract mark (i.e. *)[1]. Consider the following example which demonstrates projection of stress bearing elements in Warao (Idsardi 1992).

```
(2)          *   *   *   *  *   *   *   *      Line 0
             |   |   |   |  |   |   |   |
            y à p u r ù k i t à n e h á s e
```

The string of abstract marks generated by projection make up Line 0. The metrical tier is constructed of multiple levels which are organized into a metrical grid. Line 0 is the first level of the metrical grid.

2.2 ALTERNATING STRESS

Prosodic groupings, such as those demonstrated in (1), are computed metrically from the string of elements on Line 0. These groupings, called constituents, are delimited by parenthesis.

In Warao, for example, stress falls on even-numbered syllables counting from the end of the word. Alternating stress patterns are generated by grouping the elements into binary constituents.

```
(3)        (*  * (*  * (*  * ( *  *      Line 0
            |  |  |  |  |  |   |  |
           yàpurùkitàneháse
```

Each constituent in (3) is delimited by a left parenthesis. Idsardi's theory (1992) requires a single parenthesis to delimit a constituent. A left parenthesis groups all of the elements to its right. The other edge of the constituent is identified either by the next parenthesis or the end of the string. In contrast, a right parenthesis would group all elements to its left.

The mechanism that recursively delimits binary constituents is Iterative Constituent Construction (Idsardi and Halle 1995:418). Iterative Constituent Construction (ICC) is a directional rule which counts from the edge of the string marking a closing boundary after every second element.

(4) **Iterative Constituent Construction:**

Insert a left / right boundary for each pair of elements.

If ICC applies from the left margin of the string then it marks a right boundary closing off each constituent as it is counted; ICC: R. If ICC applies from the right margin then a left boundary is marked; ICC: L.

(5) ICC: R → * *) * *) *

ICC: L → * (* * (* *

The direction of application is inalterably linked to the direction of the boundary. The ICC: R setting assumes a left to right application and a ICC: L setting assumes a right to left application. No other combinations are permitted by the ICC.

For Warao ICC is set to mark left boundaries and count from the right margin of the word. The ICC setting for Line 0 is ICC: L.

```
(6) ICC: L      *  *  *  *  *  * ( *  *        Line 0
                |  |  |  |  |  |   |  |
                yàpurùkitànehá se

    ICC: L      *  *  *  * (*  * ( *  *        Line 0
                |  |  |  |  |  |   |  |
                yàpurùkitànehá se

    ICC: L      *  * (*  * (*  * ( *  *        Line 0
                |  |  |  |  |  |   |  |
                yàpurùkitànehá se

    ICC: L     (*  * (*  * (*  * ( *  *        Line 0
                |  |  |  |  |  |   |  |
                yàpurùkitànehá se
```

Each application of ICC builds on the structure created by the previous application. For example, the second application of ICC starts counting from the parenthesis assigned by the first application. In (6) four applications of ICC are required to reach the end of the string. The last application is the culmination of the series of applications of ICC.

Within each constituent on Line 0 one element is more prominent than the rest. This element is located at either edge of the constituent and is marked on the next higher line. The Head Location Parameter (Idsardi and Halle 1995:408) projects the right or left terminal element of each constituent for a given line.

(7) **Head Location Parameter**:

Project the left / right -most element of each constituent onto the next line of the grid.

In Warao the Head Location Parameter (HLP) projects the left-most element of each constituent onto Line 1. The Line 0 HLP setting is Head: L. Consider the grid in (8) which is constructed from these Line 0 parameter settings.

```
(8) Head: L          *    *    *    *          Line 1

                   (*  * (*  * (*  * ( *  *    Line 0
                    |  |  |  |  |  |   |  |
                    yàpurùkitànehàse
```

The string of heads projected from Line 0 constitute Line 1 of the metrical grid. Phonetically, these heads are realized as stress in that they are more prominent than their neighbors.

Of this string on Line 1 one head is most prominent and will be projected onto, yet, the next higher line. Since unmetrified elements cannot project a head, Line 1 must invoke a parameter which will construct a constituent. The Edge Marking Parameter (EMP) marks a parenthesis next to the right or left-most element in the string. There are three parametric settings for EMP: 1) the location of the parenthesis is next to the left or right-most element in the string; 2) the parenthesis is placed to the left or right of the terminal element; and 3) the parenthesis that is inserted is either a left parenthesis or a right parenthesis.

(9) **Edge Marking Parameter**

Place a left / right parenthesis to the left / right of the left / right -most element in the string.

In Warao, EMP marks a right parenthesis to the right of the right-most element. The EMP setting for Line 1 is Edge: RRR.

```
(10) Edge: RRR       *    *    *    *)         Line 1

                   (*  * (*  * (*  * ( *  *    Line 0
                    |  |  |  |  |  |   |  |
                    yàpurùkitànehàse
```

Essentially EMP marks a boundary to include all of the elements in the string.

Main stress in Warao is on the penultimate syllable. Within the metrical grid the penultimate syllable corresponds with the final element in the Line 1 constituent. To project the final element HLP is set to project right heads on Line 1; Head: R.

```
(11)  Head: R                        *            Line 2

                      *    *    *    *)           Line 1

                     (*  * (*  * (*  * ( *  *     Line 0
                      |  |  |  | |   |  |   |
                      y à p u r ù k i t à n e h á s e
```

Line 2 consists of a single head which is the head of the word. The head of the word is phonetically realized as primary stress and the heads on Line 1 are realized as secondary stress.

Implicit in the nature of ICC is the requirement for two elements per constituent. If ICC encounters a single element, then that element is left ungrouped. Consider a Warao word with an odd number of syllables.

```
(12)          *  (*  *  (* *       Line 0
              |   |  |   | |
              y a w ì r a n á e
```

In (12) ICC applies twice but the first element cannot be delimited by ICC. The single ungrouped element is unmetrified. Leaving the initial element unmetrified has implications at higher levels of the grid. Consider the completed grid in (14) using the parameter setting for Warao previously discussed and outlined in (13).

```
(13)  Line 0                ICC: L    Head: L

      Line 1    Edge: RRR             Head: L

(14)                      *            Line 2

                   *      *)           Line 1

              *  (*  *  (* *           Line 0
              |   |  |   | |
              y a w ì r a n á e
```

Unmetrified elements cannot project a head. The initial element on Line 0 is not delimited by a parenthesis and consequently cannot project a head onto Line 1. Phonetically, the consequence is that the initial syllable is not realized with stress. In Warao the initial syllable is stressless in words with an odd number of syllables. This is because ICC cannot metrify the single element in word initial position.

2.3 NONALTERNATING STRESS

EMP marks parentheses in relation to terminal elements on Line 1. However, edge marking is also employed on Line 0 in languages that do not have an alternating stress pattern. Consider Russian (Halle 1997) which does not invoke ICC to mark boundaries.

```
(15)                 *  *   *
                     |  |   |
                     g ó r o d - u
```

Unless *górodu* is stressless, which it is not, at least one constituent must be constructed so that a head will be projected onto the next line. In Russian, EMP inserts a right parenthesis to the right of the right-most element on Line 0.

```
(16) Edge: RRR       *  *   *)
                     |  |   |
                     g ó r o d - u
```

Because stress does not alternate, constituents consisting of more or less than two elements will be constructed; such constituents are acceptable within the Metrical framework.

In Russian, HLP on Line 0 projects the left-most element as the head.

```
(17) Head: L         *

                     *  *   *)
                     |  |   |
                     g ó r o d - u
```

The complete metrical grid is provided in (18). Line 1 parameter settings in Russian are Edge: LLL and Head: L.

```
(18)        *
           (*
            *  *   *)
            |  |   |
            g ó r o d - u
```

The metrical parameter settings developed for these Russian examples are provided in (19).

(19) Line 0 Edge: RRR Head: L

Line 1 Edge: LLL Head: L

Languages that do not mark alternating boundaries require the application of EMP on Line 0 to ensure that a constituent is constructed and that a head can be projected onto the higher levels.

2.4 LEXICAL STRESS

Russian has certain morphemes that are lexically marked for stress. The instrumental plural suffix is a lexically marked morpheme with stress on the first syllable: *-ámi*. Structurally, lexically marked morphemes generate stress by projecting a syllable boundary onto the metrical tier.

```
(20)        *  *  (*  *
            |  |   |  |
            g o r o d - á m i
```

The projection of syllable boundaries is governed by the Syllable Boundary Projection Parameter (Idsardi and Halle:407).

(21) **Syllable Boundary Projection Parameter**

Project the left / right boundary of *certain syllables* onto line 0.

Each language that invokes the Syllable Boundary Projection Parameter (SBP) specifies the requirements of 'certain syllables.' In the case of Russian, 'certain syllables' refers to lexically marked morphemes. There are other triggers for SBP and these will be discussed shortly.

In Russian SBP projects the left syllable boundary of lexically marked morphemes. The parametric setting for SBP on Line 0 is Project: L. Consider the grid constructed for Russian with the addition of SBP to the parameters in (19).

(22)

```
              *
             (*
   *   *     (*   *)
   |   |      |   |
  g o r o d - á m i
```

Primary stress is realized on the first syllable of the instrumental plural suffix because of the projection of the left syllable boundary from the phoneme tier. The parenthesis inserted by EMP at the right margin of Line 0 is redundant because the left parenthesis, generated by SBP, delimits the last two elements. However, in words without lexically marked morphemes EMP is required to generate a constituent. In words where only EMP delimits the constituent (i.e. nonlexically marked morphemes) primary stress is realized on the initial syllable.

In Russian SBP is triggered by lexically marked morphemes but in Koya SBP is triggered by heavy syllables. In Koya stress falls on every long or closed syllable, as well as the initial syllable, and primary stress is on the initial syllable. To generate stress on heavy syllables SBP projects a left boundary. In the following example C stands for consonant, V for vowels, and W for the element that contributes weight.

(23)

```
 *   *   *  (*     *   *  (*     *
 |   |   |   |     |   |   |     |
C V C V C V C V W C V C V C V W C V
```

The classification of 'heavy' syllables varies across languages in terms of what constitutes a heavy syllable. Syllable weight is generally determined by the number of elements in the rime.

HLP projects left heads. The projected boundaries group all but the first three elements of the string. Since the initial syllable bears stress EMP places a left boundary to the left of the left-most element. The parameter settings for Koya are listed in (24).

(24) Line 0 Project: L Edge: LLL Head: L

Line 1 Edge: LLL Head: L

The parameter settings in (24) derive the structure in (25).

```
(25)     *
         (*          *          *
         (*  *  *  (*    *  *  (*    *
          |  |  |   |    |  |   |    |
        C V C V C V C V W C V C V C V W C V
```

The triggers for SBP are determined language specifically. Lexical items and syllable structure are both capable of projecting syllable boundaries onto the metrical tier depending on the specific requirements of the language.

2.5 AVOIDANCE CONSTRAINTS

Certain metrical configurations are prohibited in some languages. These configurations are restricted from occurring in the metrical grid by constraints which prevent them from being constructed. Avoidance constraints specify which sequences are not permitted and then any construction which may produce this sequence will be prevented from applying. Consider for example, Garawa (Idsardi and Halle 1995:422) as one of many languages that do not permit stress to occur in adjacent positions, i.e. stress clash. In Garawa stress falls on even-numbered syllables counting from the end of the word. Primary stress falls on the first syllable but the second syllable is never stressed.

(26) a) *wátimpàŋu* 'armpit'

b) *náriŋinmùkunjìnamìra* 'at your own many'

Idsardi and Halle (1995:422) suggest the following parameter settings for Garawa.

(27) Line 0 Edge: LLL ICC: L Head: L

Line 1 Edge: LLL Head: L

Consider the grid in (28) that is constructed from these parameter settings.

(28)
```
        *                     *
        (*    *               (* *    *   *   *
        (* *  (* *            (*(* *  (* *(*  *(* *
         | |   | |              | | |   | | |  | | |
    i)  wátimpàŋu           ii) *náriŋinmùkunjìnamìra
```

The EMP setting ensures that the initial element is always metrified in a position to project a head. When the ICC rule applies in *náriŋinmùkunjìnamìra*, a problem arises because of the ICC boundary to the right of the initial element. The heads of the initial constituent and the second constituent are on adjacent syllables which creates a stress clash. Stress clash is not tolerated in Garawa.

To prevent such a clash from being constructed Garawa invokes an avoidance constraint on Line 0. The constraint will prevent the construction of two boundaries separated by a single element; Avoid (*(. Consider the following grid which is constructed from the same parameters as in (28) but with the addition of the avoidance constraint: avoid (*(applied on Line 0.

(29)
```
        *
        (*     *    *    *
        (** *  (* *(* *(* *        Avoid (*(
         | ||   | | |  | | |
        náriŋinmùkunjìnamìra
```

Avoid (*(prevents the final application of ICC from placing a boundary to the right of the initial element because of the EMP boundary in word initial position. As a result, the initial constituent consists of three elements and there are two unstressed elements between first and second heads on Line 1. The application of avoid (*(prevents the occurrence of a stress clash.

Avoidance constraints are not required by all languages. For example, many languages permit adjacent syllables to be stressed. Therefore, regular application of ICC, EMP, SBP, and HLP in these languages are not subject to such sequential restrictions.

2.6 CYCLICITY

Some languages make morphological distinctions in assigning stress. These distinctions cannot be structurally represented in the metrical grid using the metrical parameters developed thus far. Consider Cahuilla as an example of one of these languages. In Cahuilla primary stress falls on the first syllable of the root. Secondary stress falls on alternating moras both preceding and following primary word stress (Idsardi 1992:38). Note that glides are considered moras in Cahuilla.

(30) a) pàpentúleqàlevèh b) cemèynúʔinqàlet

To consistently generate primary stress on the first syllable of the root Cahuilla must distinguish the root from its prefixes in constructing the metrical grid. This means that the metrical parameters must apply in two applications: one for the root and a second for the prefixes.

Idsardi (1992) follows Halle and Vergnaud (1987) in postulating that phonological rules apply in two distinct blocks. The first block is the cyclic block. Only those morphemes labeled with the feature [+cyclic] are subject to the rules of the cyclic block. Once the cyclic rules have applied then the output from the cyclic block is subject to rules of the second block: the noncyclic block.

For Cahuilla this allows for one set of metrical parameters to apply to the root in the cyclic block. Once the metrical grid for the root has been constructed then the noncyclic prefixes are concatenated. A second set of metrical parameters applies to the new string in the noncyclic block. The metrical structure from the cyclic block is maintained and carried over into the noncyclic block.

In Cahuilla the Line 0 parameter settings for the cyclic block generate the alternating stress pattern to the right of the initial syllable of the root. The Line 0 and Line 1 parameter settings for the cyclic block are listed in (31) and the derivation is provided in (32).

(31) Cyclic Line 0 Edge: LLL ICC: R Head: L
Line 1 Edge: LLL Head: L

(32)

```
         *
         (*       *
         (*   *)  *  *)
          |   |   |  |
         nú?inqàlet
```

The cyclic block generates primary stress on the initial syllable of the root and alternating stress on the syllables to the right.

The prefixes are added to this structure in the noncyclic block. A second set of parameter settings apply in the noncyclic block to construct additional metrical structure on Line 0. The parameter settings and derivations for the noncyclic block are listed in (33) and the derivation of the noncyclic block is provided in (34).

(33) Noncyclic Line 0 ICC: L Head: L

(34)

```
                   *
        *          (*       *
     *  (* *       (*   *)  *  *)
     |   | |        |   |   |  |
     cemèy    +    nú?inqàlet
```

In the noncyclic block ICC generates additional alternating stress to the left of the initial syllable in the root. The additional structure created in the noncyclic block builds around the existing structure from the cyclic block. Notice that no Line 1 parameter settings are required for the noncyclic block because word level stress is generated in the cyclic block. The noncyclic block only adds to the existing structure; it cannot change it.

Cahuilla appears to make a distinction between types of morphemes in applying stress. The initial syllable of the root morpheme is always stressed even when it is preceded by a prefix. The two sets of parameter settings applied in the cyclic and noncyclic blocks account for a stress pattern that makes distinctions between types of morphemes. The morphological distinctions are actually the result of two distinct concatenations.

Idsardi's metrical model of prosody significantly simplifies the mechanisms required to generate stress. Syllable Boundary Projection marks boundaries of syllables with special features, such as weight or lexically marked morphemes. The effect of the Edge Marking Parameter is to capture the marking of stress at word boundaries as a regular pattern rather than requiring complicated constituent construction and reconstruction. The Iterative Constituent Construction rule assures the exhaustive construction of binary constituents working from one edge of the string to the other. ICC is restricted to constructing binary constituents. That is, single elements will be left unmetrified by the ICC. The Head Location Parameter projects heads onto the next higher line from the right-most or the left-most element of a constituent. The parameter settings of each of the above parameters is applied consistently for the line it is specified. For example, Head: L will always project the left-most element of every constituent on that line. Each line sets its own parameter settings.

Irregular stress patterns imposed by certain morphemes, such as enclitics, can be constructed by generating multiple sets of parameter settings. One set of parameter settings applies in the cyclic block with the morphemes that are lexically marked [+cyclic]. The largest string created in the cyclic block is then input to the noncyclic block where noncyclic morphemes and the second set of parametric settings apply.

NOTES

[1] Idsardi (1992) uses ‘x’ as an abstract mark but I adopt Halle’s (1997) use of ‘*’.

CHAPTER 3
STONEY STRESS PATTERNS

Accounts of stress in the Dakota branch of Siouan languages consistently reveal a pattern of second syllable stress (Shaw 1980, 1985a, 1985b, Chambers 1978, Carter 1974, Matthews 1955, Wolff 1950, Boaz and Deloria 1941, Riggs 1890). Shaw (1985a) discloses an innovative stress pattern in Stoney that has no semblance to the other reported Dakota languages; primary stress is realized on the penultimate syllable. Another innovation found in Stoney, that is not found in Dakota, is secondary stress.

Both Alexis Stoney and Morley Stoney share the innovative penultimate stress pattern but they have divergent secondary stress patterns. Shaw (1985a, 1985b) argues that Dakota stress is marginally maintained in Morley Stoney to the extent that it generates secondary stress on the second syllable. Data from Alexis Stoney (Rhyasen-Erdman fieldwork 1994-97) reveals a different pattern of stress. Secondary stress in Alexis Stoney is not restricted to the second syllable; it predictably alternates on every other syllable.

A further innovation in Alexis Stoney is the distinction between nouns and verbs. The stress pattern in verbs, as already mentioned, is penultimate stress. In nouns, however, primary stress is realized on the final syllable.[1] Secondary stress alternates on every other syllable preceding primary stress for both nouns and verbs.

3.1 NOUNS

Primary stress on nouns in Alexis Stoney is productively realized on the final syllable.

(1)	(a) *sihá*	'foot'	(e) *nabé*	'hand'
	(b) *makú*	'chest'	(f) *pùdadán*	'candy'
	(c) *tapú̃*	'cheek'	(g) *àhiyá*	'song'
	(d) *wicá*	'man'	(h) *yahìyarén*	'star'

Regardless of the number of syllables in a noun primary stress falls on the final syllable. The generalization in (2) identifies the pattern for primary stress.

(2) **Primary stress falls on the final syllable in nouns.**

The examples in (1f-h) demonstrate an alternating stress pattern. Multisyllabic words with more than two syllables generate stress on alternating syllables. The sequence of alternating stress falls on odd numbered syllables counting from the end of the word. The recursive nature of stress in nouns is described in the generalization stated in (3).

(3) **Nominal stress falls on all odd numbered syllables counting from the end of the word.**

3.1.1 LONG VOWELS. The alternating stress pattern does not consistently predict all of the stress locations in Stoney. In addition to alternating syllables stress falls on long vowels. Consider the following examples containing long vowels:

(4) (a)	*mitààshín*	'mom's brother's son'
(b)	*cììzí*	'tongue'
(c)	*ìshdashdààbín*	'eye glasses'

Stress is consistently realized on the long vowel in all of the examples in (4). In each case the long vowel is in a syllable which immediately precedes a stressed syllable. This creates a sequence of two adjacent stresses, which is an acceptable sequence in Stoney.

Regardless of whether a long vowel falls within the alternating stress pattern or not, long vowels are stressed. The generalization in (5) maintains this fact.

(5) **All long vowels are stressed.**

Although the alternating stress pattern is suspended by the application of stressed long vowels it is not completely blocked. Notice in (4c) that the alternating stress pattern is reapplied preceding the stressed long vowel. If there is more than one syllable preceding the long vowel then stress is realized on alternating syllables for the remaining string of syllables. This will be accounted for and explained further in 3.1.3.

3.1.2 STEM FORMATIVE ROOTS. In the majority of nominal forms stress falls on the final syllable but there are exceptions to the rule. There is a group of bisyllabic nouns which realize primary stress on the penultimate syllable. Consider the following examples of penultimate nominal stress.

(6) (a) *cába* 'beaver' (d) *shṹga* 'dog'

(b) *póra* 'ear' (e) *mína* 'knife'

(c) *nóra* 'nose'

The forms in (6) all realize stress on the penultimate syllable rather than the final syllable.

These words all belong to a class of consonant final roots. Recall from Chapter 1 that consonant final roots are affixed with a stem formative vowel, *-A*. The forms in (7) demonstrate the epenthesis of the stem formative vowel.

(7) (a) *cab-A* (d) *shũg-A*

(b) *por-A* (e) *min-A*

(c) *nor-A*

According to Chambers (1978) and Shaw (1980, 1985a, 1985b) stress applies to the monosyllabic root before stem formation applies. This effectively assures that the stem formative vowel never surface with stress. The following Morley Stoney example[2] is a simplified version of a derivation taken from Shaw (1985a:16) to demonstrate the realization of stress in stem formative roots:

(8) Root: /kθab/

Stress: /kθáb/

Epenthesis: /kθáb-A/

Ablaut: <u>/kθábe/</u>

[kθábe] 'he/she is smart'

Stress cannot fall on the final syllable because stress applies before epenthesis of the final vowel. The following generalization denotes the stress pattern in stem formative roots.

(9) **Stress does not fall on stem formative vowels.**

The stem formative vowel in Alexis Stoney is becoming reanalyzed as part of the root in nominal forms. There is both intraspeaker and interspeaker variation of primary stress on the penultimate and ultimate syllables of stem formative roots. Younger speakers commonly use forms with final primary stress. Although the older speakers tend to use forms with penultimate stress there is a lot of variation in the placement of stress between the final and penultimate syllables.

(10)

	Final	Penultimate
(a)	*cabá*	*cába*
(b)	*borá*	*bóra*
(c)	*norá*	*nóra*
(d)	*shũgá*	*shṹga*
(e)	*miná*	*mína*

The realization of stress on the final syllable, which diachronically does not fall within the domain of stress, suggests that the stem formative vowel is being lexicalized as part of the root in Alexis Stoney. That is, the stem formative vowel is no longer being analyzed by some Stoney speakers as epenthetic but is being interpreted as the second syllable of the root. As part of the root, the stem formative vowel is capable of bearing stress.

3.1.3 THE *-bi* MORPHEME. Nouns which are derived by the affixation of the *-bi* morpheme are not stressed on the final syllable.

(11)	(a) *ìdugábi*	/iduga-bi/ 'to smoke'-nom	'cigarette'
	(b) *sàgudábi*	/*saga+yuda-bi*/ 'raw'+'eat'-nom	'turnip'

Where *-bi* contributes a nominalizing function stress is realized on the penultimate syllable rather than the final syllable.

When *-bi* is affixed as a plural marker stress is not realized on the final syllable.

(12)	(a) *wī̄yámi* 'women'	/wĩya-bi/ 'woman'-pl	(b) *wicábi* 'men'	/wica-bi/ 'man'-pl

The group of nouns pluralized by *-bi* is a limited set, restricted to human nouns. Regardless of its function as a nominalizer or a pluralizer, the *-bi* morpheme does not fall in the domain of stress, as give in (13).

(13) **Stress does not fall on *-bi*.**

The application of stress disregards the final syllable of pluralized or nominalized forms, and certain stem formatives, such that stress is realized on the penultimate syllable.

Given the number of factors that permit variations to the alternating stress pattern the generalization in (3) is too specific. When alternating stress is interrupted by other types of stress the recursive pattern is reapplied to the remaining syllables, as in (11). However, it does not necessarily apply to odd numbered syllables. Stress alternates for any sequence of two or more consecutive syllables. The generalization in (3) is revised in (14):

(14) **Stress alternates on every other syllable, counting from right to left, for any sequence of two or more consecutive syllables.**

3.1.4 EXCEPTIONS. There are a limited number of other nominal forms which do not realize primary stress on the final syllable.

(15) (a) *paróna*	'duck'	(d) *wìyásga*	'sand'
(b) *wadézha*	'animal'	(e) *wíya*	'woman'
(c) *taxmúse*	'rawhide'		

The words in (15a-d) could very likely be compound words with the second constituent being a stem formative root. The word final [e] in (15c) is a strong indication that the final vowel is an epenthetic vowel which has undergone ablaut. Until further evidence is available to distinguish the components of (15a-d) they will be categorized as exceptions. Penultimate stress in (15e) is unexpected. There is no apparent reason why stress is realized on the penultimate syllable. It is possible that *wíya* could be a stem formative root but it has not been identified as such in any other Dakota language. For now *wíya* is considered to be a truly exceptional form.

Primary stress in nouns predominantly observes a rule of final syllable stress. There are a number of other contributing factors in the application of stress. All long vowels are marked for stress. Nominal forms affixed with *-bi* realize stress on the penultimate syllable. Similarly, the stem formative vowel is disregarded in the application of stress, specifically in the Dakota languages and unproductively in Stoney. Speaker variation between stress on the final syllable and the penultimate syllable in stem formative roots points to a reanalysis of the epenthetic vowel as part of the root. The secondary stress patterns are generated from a recursive stress rule applied from right to left.

3.2 VERBS

The stress patterns in Stoney are uniquely different from those in other Sioux languages. The Dakota languages predominantly observe a rule of second syllable stress. Observe the following Teton examples from Chambers (1978:6) demonstrating the location of stress on the second syllable.

(16) (a) *wakté* 'I kill him'

(b) *mayákte* 'You kill me'

(c) *wicáwakte* 'I kill them'

In contrast, Stoney has developed an innovative stress pattern which does not productively generate primary stress on the second syllable. Furthermore, Stoney has developed a distinction between nouns and verbs which has not been reported in the other Dakota languages. As outlined in 3.1 nouns observe a final syllable stress rule. In verbs primary stress is predominantly realized on the penultimate syllable (Shaw 1985a, 1985b, Bellam 1976). The following paradigmatic data is provided from Alexis Stoney to demonstrate the realization of penultimate stress in verbs.

(17) (a) *badída-d* 'He pushed it'

(b) *bàdidá-mi-d* 'They pushed it'

(c) *badìda-mí-dda-d* 'They will push it'

The affixation of suffixes demonstrates the pattern of penultimate stress. As suffixes are added to the end of the word primary stress 'shifts' rightward such that it falls on the penultimate syllable.

Primary stress does not always fall on the penult. It also falls on the final syllable if it is a long vowel.

(18) (a) *iyáád* /i-ya-ya-d/ 'You found it'

[cf. *íyad* 'He found it']

(b) *wàshbāwáád* /washbā-wa-ya-d/ 'I cook'

[cf. *wàshbāyád* 'He cooks']

(c) *wacéèd* /wa-cee-d/ 'I cried'

[cf. *céébid* 'They cried']

Stress rules do not distinguish between underlying or derived long vowels; all long vowels in the final syllable are stressed. The primary stress pattern is generalized in (19).

(19) **Primary stress falls on the final syllable if it is a long vowel; otherwise the penultimate syllable.**

Notice in (17b-c) that secondary stress is subject to a similar alternating pattern observed in nouns. However in verbs, even numbered syllables are stressed counting leftwards from the primary stress. When the final syllable is stressed then stress alternates on odd numbered syllables, as in (18b). Alternating stress cannot be identified by the numeric location in the sequence of syllables because it is assigned relative to primary stress. The alternation in the placement of primary stress causes variations in the placement of secondary stress. However, the generalization describing the alternating pattern in nouns is general enough to account for the alternating pattern in verbs.

(20) **Stress alternates on every other syllable, counting from right to left, for any sequence of two or more consecutive syllables.**

3.2.1 Long Vowels. All long vowels are realized with stress. If the long vowel occurs in the penultimate or final syllable then it is realized with primary stress. If the long vowel occurs in any other syllable it is realized with secondary stress. The following examples demonstrate long vowel stress.

(21) (a) *àakídad* /a-ya-kida-d/ 'You looked at it' [cf. *akídad* 'He looked at it']

(b) *àukídad* /a-wa-kida-d/ 'I looked at it'

(c) *wacèemíced* /wa-cee-mice-d/ 'I am crying'

(d) *wacéeshid* /wa-cee-shi-d/ 'I didn't cry'

(e) *wacéed* /wa-cee-d/ 'I cried'

Notice that the 'long vowel' in (b) is a diphthong phonologically derived through coalescence. Derived diphthongs are stressed just like long vowels. For the purposes of the remaining discussion diphthongs will be grouped with long vowels.

(22) All long vowels are stressed.

3.2.2 Monosyllabic Roots. There are a group of bisyllabic words which do not observe a penultimate stress pattern but realize stress on the final syllable.

(23) (a) *wagdéd* 'I killed' [cf. *wagdéshid* 'I didn't kill']

(b) *yagdéd* 'You killed' [cf. *gdébid* 'They killed']

(c) *maxmád* 'I'm sleepy' [cf. *xmábid* 'He's sleepy']

(d) *gagsád* 'He broke it (with an axe)' [cf. *gagsábid* 'They broke it']

(e) *nagsád* 'He broke it (with the feet)' [cf. *nagsábid* 'They broke it']

(f) *wahníd* 'I got home' [cf. *hníbid* 'They got home']

The group of bisyllabic forms in (23) poses an interesting problem for a penultimate stress pattern. The stress in all of these forms appears on the word-final syllable, although the comparative form provided for each example in (23) realizes penultimate stress. Notably there is no significant vowel length to the final syllable in these cases.

The list of exceptional forms in (23) is not exhaustive; in fact final stress in bisyllabic stems is not an uncommon pattern. Both Shaw (1985) and Taylor (1981) observed that bisyllabic stems realize stress on the final syllable in Dakota. They also noted that these bisyllabic words are formed by prefixation on a monosyllabic root. All of the bisyllabic forms in (23) are formed from prefixed monosyllabic roots. The derivations are provided in (24).

(24)	(a) *wagdéd*	wa-gde-d	(1subj - 'kill' - decl)	'I killed'
	(b) *maxmád*	ma-xma-d	(1subj - 'sleepy' - decl)	'I'm sleepy'
	(c) *gagsád*	ga-gsa-d	(instr. - 'break'- decl)	'he broke it'
	(d) *wahníd*	wa-hni-d	(1subj - 'go home' - decl)	'I got home'

Monosyllabic roots are stressed in final syllable position, where stress does not normally fall in verbs. Evenmore, monosyllabic roots are stressed when they occur in any position.

(25) (a) *<u>gdè</u>-bíddad* 'They will kill it'

(b) *ga-<u>gsá</u>-bid* 'They didn't break it'

(c) *<u>hnì</u>-bíshid* 'They didn't come back'

If the monosyllabic root is in word final or penultimate position it realizes primary stress and if it is elsewhere in the word it realizes secondary stress.

(26) **Monosyllabic roots are always stressed.**

When more than one syllable precedes the monosyllabic root, alternating stress applies to every other syllable counting leftwards from the root.

(27) *yànagsàbíshid* 'You (pl) didn't break it (with the feet)'

Secondary stress is lexically marked on the monosyllabic root and it alternates on preceding syllables.

There are a group of monosyllabic roots which do not observe (26). Consonant final roots which are concatenated with the stem formative vowel do not mark the monosyllabic root with stress in multisyllabic forms.

(28) (a) i) *gsáb-A* 'to be wise'

ii) *gsabéshid* 'he is not smart / wise'

(b) i) *cár-A* 'to be frozen'

ii) *caráshid* 'It is not frozen'

(c) i) *bór-A* 'to blow'

ii) *boráshid* 'he did not blow'

(d) i) *hnéb-A-d* 'he vomited'

ii) *yàhnebábid* 'you (pl) vomited'

Stress is realized on the root in all of the (i) forms as would be expected for monosyllabic roots. However, in the multisyllabic forms in (ii) the monosyllabic root is not realized with stress. Rather, stress is realized in a recursive pattern starting from the penultimate syllable.

Recall that the stem formative vowel in nouns is being reanalyzed by Alexis Stoney speakers as part of the root. When the epenthetic vowel is reanalyzed as part of the root it can bear stress but when it is not analyzed as part of the root it cannot bear stress. In each of the (ii) forms stress is realized on the stem formative vowel. Therefore, the final vowel in stem formative verbs is interpreted as part of the root.

The same pattern of reanalysis is observed in Morley Stoney. Shaw (1985a) reports that there is speaker variation between stress on the monosyllabic root and stress on the epenthetic vowel in verbs. Both forms in each example in (29) are grammatical forms produced by Morley Stoney speakers (Shaw 1985a:13). The root is underlined for identification.

(29) (a) (i) *<u>kθáb</u>-e-sĩč* 'he isn't smart' (b) (i) *<u>čár</u>-a-sĩč* 'it isn't frozen'

(ii) *<u>kθab</u>-é-sĩč* (ii) *<u>čar</u>-á-sĩč*

According to Shaw's data the epenthetic vowel is not counted in the application of penultimate stress in the (i) forms in both (29a-b). For this reason stress is realized on the antepenultimate syllable. In the (ii) forms the epenthetic vowel constitutes a necessary syllable in the application of stress and therefore stress falls on the penult. The presence of speaker variation indicates that the reanalysis of the epenthetic vowel in Morley Stoney is still in process. The (i) forms will likely fade from use and the (ii) forms will become the predominantly regular pattern.

In short, the roots in (28) are bisyllabic and exhibit the regular alternating stress pattern. The stem formative vowel is no longer recognized as a separate segment and therefore, the stem formative root is now interpreted as a bisyllabic root.

3.2.3 The PERFECTIVE MORPHEME. The regular stress pattern in Alexis Stoney verbs generates stress on the penultimate syllable and on every other syllable preceding the penult. However, there is one other contributing stress pattern. Whenever the perfective morpheme is affixed to the end of a verb the final syllable is realized with stress.

(30)	(a)	i)	*wagdéshi-d*	'I didn't kill' (imperfective)
		ii)	*wagdèshí-n*	'I didn't kill' (perfective)
	(b)	i)	*hníbi-d*	'They got home' (imperfective)
		ii)	*īhnìbí-n*	'We (pl) were home' (perfective)
	(c)	i)	*tàushúsha-d*	'I spit' (imperfective)
		ii)	*tàushùshashí-n*	'I didn't spit' (perfective)
	(d)	i)	*wagságsa-d*	'I chopped' (imperfective)
		ii)	*wàgsagsé-n*	'I chopped' (perfective)

In each set of examples in (30) the imperfective form has penultimate stress and the perfective form has final syllable stress. In (30a-d) the only factor that would trigger a stress shift is the concatenation of the perfective morpheme. There seems to be no phonological explanation for the stress shift. Final syllable stress in all of the (ii) forms is not attributable to a closed syllable since all of the (i) forms also have a closed final syllable.

The stress shift can only be explained morphologically; the perfective morpheme is lexically marked for stress. Since the perfective morpheme always appears in word final position the lexical stress associated with the perfective morpheme will consequently always be realized in the final syllable.

Final syllable stress is triggered by long vowels, monosyllabic roots, and the perfective morpheme. The generalization in (19) needs to be revised considering all of these triggers.

(31) **Primary stress falls on the final syllable if it is a long vowel, a monosyllabic root, or affixed by the perfective morpheme; otherwise it falls on the penultimate syllable.**

The alternating stress pattern, as stated in (20), still applies to any sequence of two or more syllables. For example, in the perfective form in (30c) the final syllable is stressed due to the perfective morpheme and the initial syllable is stressed due to a long vowel. There are two intervening syllables that are not inherently stressed. The alternating stress pattern stresses the left-most of the two syllables as it applies from right to left.

3.2.4 SHAW'S ANALYSIS OF MORLEY STONEY. Morley Stoney observes the same pattern of primary stress already outlined for Alexis Stoney. In verbs, primary stress is marked on the penultimate syllable. However, secondary stress patterns (Shaw 1985a, 1985b) are markedly different from those in Alexis Stoney. As discussed, secondary stress in Alexis Stoney observes an alternating stress rule. According to Shaw, secondary stress in Morley Stoney is realized on the second syllable.

3.2.4.1 STONEY STRESS RULE (SSR). To demonstrate the overall stress pattern in Morley Stoney a verbal paradigm is provided in (32) (Shaw 1985a:7). The representation used here for Morley Stoney is a phonemic notation used by Shaw.

(32) (a) *akída* 'look at it'

(b) *akìdá-kta-č* 's/he will look at it'

pot-decl

(c) *akìda-bí-kta-č* 'they will look at it'

pl

(d) *akìda-bi-ší-kta-č* 'they will not look at it'

neg

Shaw (1985a:7) proposes the Stoney Stress Rule (33) to account for the primary stress patterns demonstrated in (32).

(33) **Stoney Stress Rule (SSR)**

$$V \longrightarrow \acute{V} / \_\_ CVC\#$$

The location of primary stress exhibits some variability. Shaw (1985a:8, 1985b:189) presents a group of forms which realize stress on the final syllable rather than the penultimate syllable.

(34) (a) *čì-ǰi-kudé-n-č* [3] 'I shot yours'

(b) *akìda-bí-n-č* 'They looked at it'

(c) *akìda-bi-ší-n-č* 'They didn't look at it'

(d) *wičà-ya-kudé-n-č* 'You shot them'

All of the forms in (34) are stressed on the final syllable in contrast to the SSR. Each of these forms end in, what Shaw defines as a superheavy syllable. The superheavy syllable is a VCC syllable derived from the concatenation of the perfective morpheme /-n/ and the declarative morpheme /-č/. When the final syllable is composed of a VC sequence primary stress is realized on the penultimate syllable.

(35) (a) *či̇̀-ǰi-kúde-č* 'I was shooting yours'

(b) *akìda-bí-kta-č* 'They will look at it'

According to Shaw the weight of superheavy syllables is what is marked for stress.

The analysis of superheavy syllables hinges on the assumption that the perfective morpheme is a nasal consonant underlyingly. However, there is phonotactic and comparative evidence to support an alternate analysis to Shaw's superheavy syllables. First of all, the perfective morpheme is /-ũ/ in Teton Dakota and a [+nasal] feature historically in Alexis Stoney. The reanalysis of the perfective morpheme in Alexis Stoney as *-n* cannot be presumed to have occurred in Morley Stoney as well. Recall that obstruents preceded by a nasal segment become prenasalized by a homorganic nasal. Therefore, the [n] in Morley Stoney perfective structures is a phonetically transitional nasal created by the concatenation of a nasal feature and an alveolar obstruent (declarative). Furthermore, the assertion of a word final consonant cluster violates the phonotactic constraint that restricts word final position to one consonant. In fact, the only occurrence of a 'consonant cluster' in coda position is the coocurrence of the perfective and declarative morphemes in Morley Stoney. In keeping with the rules of nasalization and the phonotactic constraints in Stoney, the homorganic nasal preceding the declarative morpheme should be analyzed as a phonetic variant of a nasal feature [+nasal].[4]

If the perfective morpheme is not a consonant underlyingly then the concatenation of the perfective and declarative morphemes does not create a superheavy syllable, as defined by Shaw (1985a). If the final syllable is not a superheavy syllable in perfective structures then it is not syllable structure which is marked for stress. The final syllable in perfective structures is stressed because the perfective morpheme, itself, is inherently marked for stress. From this point on the perfective morpheme in Morley Stoney will be represented by -*N* to denote the [+nasal] feature.

3.2.4.2 DAKOTA STRESS RULE (DSR). The secondary stress pattern in Morley Stoney varies significantly from that of Alexis Stoney. In (20) and (22) secondary stress falls on the second syllable. Shaw argues that the secondary stress patterns are generated from a conservative Dakota stress rule which assigns stress to the second syllable of a word. To fully understand the realm of the Dakota Stress Rule as it applies to Stoney it is necessary to outline the significant points of the rule.

Chambers (1978) formalizes a Dakota stress rule to account for the pattern of second syllable stress in the Dakota languages.

(37) **Dakota Stress Rule (DSR)**

$$V \longrightarrow \acute{V} \,/\, \#\,(C_0 V)\, C_0 \_\_$$

The DSR states that a vowel becomes stressed when it is realized in the second syllable of a word or when it is realized in the only syllable of the word. The forms in (38) illustrate the application of the DSR in Teton (Chambers 1978:3).

(38) (a)	*aphé*	'to wait for'	(e) *uníktepi*	'we kill you'
(b)	*naxmá*	'to hide'	/u-ni-kte-pi/	dual.subj-2obj-'kill'-pl
(c)	*pazó*	'to reveal'	(d) *pawíyakpa*	'to polish'
(f)	*iyúka*	'to go to bed'	/pa-wiyakpa/	cause - 'to shine'

Regardless of the number of syllables in a word stress falls on the second syllable. No additional stress markings appear on any word. Stress in the Dakota languages is restricted to a single stress realized on the second syllable of the word.

For a particular group of bisyllabic forms stress does not fall on the second syllable. Monosyllabic verb roots are stressed if they occur in the first syllable of the word. In the following examples, from Chambers (1978:10), the verb root is underlined.

(39) (a) *thípi* /Ø-thi-pi/

'they dwell' 3subj-'dwell'-pl

(b) *ĩkta* /Ø-ĩ-kta/

'he will wear (something)' 3subj-'wear'-pot

(c) *čhíkesni* /Ø -chi-ka-sni/

'he is disinclined to do it' 3subj-'want'-rather-neg

(d) *éxča* /Ø-e-xča/

'it is here' 3subj-'here'-'very'

According to Chambers, the DSR will not assign stress to the second syllable if it is occupied by a suffix because suffixes are not within the domain of the DSR. Regardless of the number or type of suffixes adjoined to a monosyllabic root only the root is capable of bearing stress.

The restriction on suffixes affects stem formative roots. Epenthetic vowels do not fall in the domain of the DSR so the root is stressed even when it does not occur in second syllable position. All of the following Teton examples are consonant final roots which are affixed by a stem formative vowel (Chambers 1978:14-15)

(40) (a) *núɤ-A* 'to be gnarled' (d) *sút-A* 'to be hard'

(b) *píž-A* 'to be wrinkled' (e) *théč-A* 'to be new'

(c) *púz-A* 'to be dry'

Suffixes and stem formative vowels are not capable of bearing stress.

The Dakota Stress Rule accounts for the regular second syllable stress pattern in the Teton dialect of the Dakota languages. Suffixes and stem formative vowels do not fall in the domain of the DSR and therefore cannot bear stress. Roots and prefixes alone bear stress.

3.2.4.3 DSR AND SSR IN STONEY. In order to account for the variations in primary and secondary stress, Shaw suggests a co-existent relationship between the SSR and DSR. The DSR assigns stress to the second syllable counting from the left margin of the word. At the same time, the SSR assigns stress to the penultimate syllable counting from the right margin of the word. Consider the forms in (41) provided by Shaw (1985a:14) to demonstrate the coapplication of the DSR and the SSR.

(41) (a) *muh-mùdá-kta-č* — 'I'm going to eat'

(b) *o-čì-Jí-ka-č* — 'I'm digging it for you'

(c) *ĩ-yì-ktõ-ktṍ-ða-č* — 'We (dual) are sawing'

(d) *ĩ-yì-ktõ-ktõ-ðá-bi-č* — 'We (pl) are sawing'

The fact that stress in (a) and (b) are adjacent, and that stress in (d) is separated by two syllables, is cited by Shaw to argue against a recursive stress rule.

Shaw includes a number of examples which violate the DSR.

(42) (a) *mã-kadé-N-č* — 'I was hot before'

(b) *mĩči-čú-N-č* — 'I gave it to myself'

(c) *wa-hnudé-N-č* — 'I'm finished eating'

(d) *ĩ-kadé-šĩ-č* — 'We were not hot'

(e) *čì-Ji-kúde-č* — 'I was shooting yours'

(f) *ĩ̀-hni-bí-N-č* — 'We came home'[5]

Secondary stress in these examples poses problems for the claim that secondary stress is assigned by the DSR. In (42a-d), surprisingly, no secondary stress is realized at all. In each of these examples the second syllable is stressless. In (42e-f) secondary stress falls on the first syllable rather than the second syllable. The only condition of the DSR which permits stress to be assigned to the first syllable is for monosyllabic roots. However, in (42e) *či-* is not the root; it is the first person nominative morpheme and *kude* is the root morpheme. In (42f) *ĩ-* is the dual person morpheme and *hni* is the root. Thus, there is nothing inherent about the first syllable which attracts stress. Shaw's stress rule would predict the following forms for (42e) and (42f):

(43) (a) **či-ǰì-kúde-č* 'I was shooting yours'

(b) **ĩ-hnì-bí-N-č* 'We came home'

Since the first syllable of the word is not a root then perhaps the second syllable is blocking the assignment of stress. The only restriction on the DSR which could prevent assignment of stress to the second syllable is if the second syllable were a suffix. The second syllable in (42e) is the second person genitive prefix and in (42f) is the root morpheme. According to the conditions outlined by both Shaw (1985) and Chambers (1978) there are no conditions restricting stress from applying to the second syllable in (42e) and (42f). The DSR clearly cannot predict the forms in (42).

The effect of applying two nonrecursive stress rules from opposite margins of a word is that multisyllabic words may have a number of stressless syllables between primary and secondary stress. For example, (41d) has two syllables separating second syllable and penultimate stress. Also, nonrecursive rules, in essence, can only assign one stress. If a grammar contains two nonrecursive stress rules then the maximum number of stresses which could ever occur in a word is two. In a footnote, Shaw (1985a:15) cites a short list of multisyllabic forms with more than one secondary stress. Consider these forms in (44):

(44) (a) *o-wĩča-mìǰi-yagá-kta-č* 'he will tell them for me'

(b) *o-yà-kiyò-pθiyé-k* 'don't jump!'[6]

(c) *o-yà-gi-nàgé-k* 'don't tell him'

(d) *hũyàga-ga-nã-kta-hã́-č* 'he's going to see it!'

Stoney words with more than five syllables are marked with more than one secondary stress. This suggests that stress in Stoney is more likely the result of a recursive rule than the coapplication of two separate nonrecursive stress rules.

The inconsistency of the DSR in assigning secondary stress and the existence of multisyllabic words with more than one secondary stress leads to two conclusions: (1) that a recursive stress rule does exist in Stoney and (2) that the DSR may not apply at all in Stoney. The recursive stress rule needs to be analyzed in more detail to account for the existence of adjacent stress and sequences of unstressed syllables.

The differences in secondary stress between the two dialects are significant enough that the patterns in Alexis Stoney cannot consistently predict the patterns in Morley Stoney and vice versa. From this point on the discussion of stress will refer only to Alexis Stoney, unless specifically noted.

3.3 SUMMARY

Alexis Stoney demonstrates a pattern of alternating stress applying from right to left. The lexical category of the word determines where the stress alternation begins. In nouns the-*bi* morphemes and the conservative use of the stem formative vowel cause primary stress to be realized on the penultimate syllable, otherwise stress is realized on the final syllable. In verbs primary stress falls on the final syllable if it has a long vowel, if it is a monosyllabic root, or if it is affixed by the perfective morpheme, otherwise stress falls on the penultimate syllable. Whether primary stress is realized on the final or the penultimate syllable secondary stress falls on every other syllable preceding primary stress. In addition, all long vowels and monosyllabic roots are stressed regardless of their position in a word. This can often result in a sequence of two adjacent stresses which is acceptable in Stoney grammar.

A summary of the stress patterns discussed here for Alexis Stoney verbs and nouns is provided in (45).

(45) Nouns

a) Primary stress falls on the final syllable.
b) Stress alternates on every other syllable counting from right to left for any sequence of two or more syllables.
c) All long vowels are stressed.
d) Stress does not fall on stem formative vowels and *-bi*.

Verbs

a) Primary stress falls on the final syllable if it is a long vowel, a monosyllabic root, or affixed by the perfective morpheme; otherwise it falls on the penultimate syllable.
b) Stress alternates on every other syllable counting from right to left for any sequence of two or more syllables.
c) All long vowels and monosyllabic roots are stressed.

NOTES

1 Shaw does not mention nominal stress patterns in Morley Stoney.

2 Shaw's example is a derivation of a verb. However, being that it is a monosyllabic root the derivation and the location of stress will be the same for nouns.

3 Shaw represents phonetic aspiration on the voiceless stops in this form. Because aspiration is not contrastive in Morley Stoney it will not be noted in the Morley representations from this point on.

4 I would like to thank Eung-Do Cook for pointing out that the [n] in word final consonant clusters in Morley Stoney is actually a phonetic variant of an autosegmental nasal feature.

5 The gloss provided by Shaw (1985a:8) for this word is 'We went walking'. However, the verb *hni* actually means 'to return home' and Shaw uses this meaning for *hni* later in the article (p.12). The gloss has been changed here to reflect the correct meaning.

6 There is a rule in Morley Stoney which assigns stress to the final syllable in imperative forms. This rule does not apply in Alexis Stoney.

CHAPTER 4

STONEY STRESS: A METRICAL ACCOUNT

The patterns of stress in Stoney are intricate and complicated; including a number of lexically marked stresses and a recursive alternating stress pattern. Within a metrical framework the many factors that contribute to the melody of Stoney stress may be unified by simply setting the parameters of the metrical plane. The following analysis of Stoney stress applies specifically to stress in Alexis Stoney. Considering the significant dialectal differences in secondary stress identified in chapter 3 the metrical structure developed for Alexis Stoney cannot be presumed to also apply to Morley Stoney.

Given that there are different patterns of stress for nouns and verbs, two metrical structures need to be explored. Within metrical theory two different stress patterns can be constructed from the same basic structure. In Stoney, the metrical structure which generates stress for verbs is the same structure that generates stress for nouns, except for a single parametric change.

4.1 NOUNS

Stress in nouns falls on all odd numbered syllables counting from the right edge of the word. The right-most stress is realized as primary stress. Long vowels can interrupt the alternating stress pattern. The parameter settings for constructing the metrical grid in Stoney are outlined below. Each parameter will be explained and demonstrated.

(1) Parameter Settings - Nouns

Line 0:	Project: L	Edge: LLR	ICC: L	Head: L
Line 1:		Edge: RRR		Head: R

4.1.1 ALTERNATING STRESS. It is clear from examples, such as the following, that stress alternates on every other syllable and that it applies from right to left.

(2) (a) *nabé* 'hand'

(b) *pùdadán* 'candy'

(c) *yahìyarén* 'star'

The alternating stress pattern is generated by the Iterative Constituent Construction Parameter (ICC). Because stress is consistently realized at the right margin of a word, and it alternates between the first and second syllable at the left margin of the word, then ICC must apply from the right margin. When ICC applies from the right edge of the word it marks a left boundary after every second element. The setting for ICC is ICC: L.

```
(3) ICC: L        (*  *  (*  *              *  (*  *
                   |  |   |  |              |   |  |
              i)  y a h ì y a r é n    ii)  p ù d a d á n
```

ICC constructs two binary constituents in *yahìyarén*. Projecting right heads in each constituent will generate alternating stress with stress on the final syllable. However, ICC fails to construct alternating stress in *pùdadán* because it cannot metrify the single initial element on Line 0. To construct alternating stress in *pùdadán* the initial element must be delimited by a boundary.

If the final element on Line 0 constituted its own constituent it would accomplish two things. First it would always generate a head for the final syllable, thereby assuring stress. Secondly, the application of ICC would metrify binary constituents to the left of the final constituent. For words with an odd number of syllables the initial element becomes delimited by an ICC parenthesis. Setting EMP to mark a left boundary to the left of the right-most element will isolate the final element within a constituent. Observe the structure constructed in (4) by the parameter settings: Edge: LLR and ICC: L

```
(4)              * (* * (*                  (* * (*
                 | |  | |                    |  |  |
              i) y a h ì y a r é n        ii) p ù d a d á n
```

The consequence of applying EMP to words with an even number of syllables is that the initial syllable is left unmetrified after the application of ICC. Since the initial syllable does not bear stress this construction is acceptable. In words with an odd number of syllables, a consequence of EMP is that the initial syllable is metrified and is capable of projecting a head.

In order to correctly construct heads over the initial and final syllables in words with an odd number of syllables the Head Location Parameter projects left heads; Head: L.

```
(5) Head: L         *    *                   *    *

                 * (* * (*                  (* * (*
                 | |  | |                    |  |  |
              i) y a h ì y a r é n        ii) p ù d a d á n
```

On Line 1 the string of heads is metrified into a single constituent by a terminal boundary. EMP places a right parenthesis to the right of the right-most element; Edge: RRR.

```
(6) Edge: RRR       *    *)                  *    *)

                 * (* * (*                  (* * (*
                 | |  | |                    |  |  |
              i) y a h ì y a r é n        ii) p ù d a d á n
```

Word level stress is realized on the final syllable so HLP projects right heads from Line 1; Head: R.

```
(7) Head: R              *                        *

                    *    *)                  *    *)

                 * (* * (*                  (* * (*
                 | |  | |                    |  |  |
              i) y a h ì y a r é n        ii) p ù d a d á n
```

Setting EMP to construct a constituent around the final element on Line 0 allows ICC to metrify the initial element in words with an odd number of syllables and it ensures that the final element projects a head.

4.1.2 Long Vowels. All long vowels in Stoney are stressed. This means that syllables with long vowels must independently mark stress on the metrical tier. In order for long vowels to project heads they must be metrified at the left margin of a constituent on Line 0. The Syllable Boundary Projection Parameter (SBP) projects the syllable boundary of 'certain syllables' onto Line 0 of the metrical tier. In Stoney 'certain syllables' are defined as those with a long vowel. The SBP in Stoney projects the left syllable boundary to the left of the stress mark corresponding to the long vowel syllable; Project: L.

```
(8) Project: L     (*  *                 *    *     ( *   *
                    |  |                 |    |       |   |
               i)  c ǜ z í          ii)  ì sh d a sh d àà b í n
```

The parameter settings for nouns are restated in (9) and they yield the derivation in (10) for words with long vowels.

(9) Line 0:	Project: L	Edge: LLR	ICC: L	Head: L
Line 1		Edge: RRR		Head: R

```
(10)                 *                                    *

                  *  *)                *           *    *)

                 (*  (*               (*    *     ( *  (*
                  |   |                |    |       |   |
               i) c ǜ z í         ii)  ì sh d a sh d àà b í n
```

Projecting a left boundary from the long vowel syllable places the long vowel element in a position to project a head. Word level stress is generated for the final element because of the parenthesis assigned by EMP. In *ìshdashdààbín* ICC applies to the remaining string of two elements at the left margin.

The choice of projecting a left or right boundary for SBP is significant. Projecting a right boundary, rather than a left boundary will position the long vowel stress mark at the right margin of a constituent, where it cannot project a head.

```
(11)                              *

                        *         *)

                   *    (*     *) (*
                   |     |     |   |
                 * ì sh d a sh d àà b í n
```

A right SBP boundary marks the right edge of the constituent. The left edge is marked by ICC. With the long vowel stress mark at the right edge of the constituent it cannot project a head. The Project: R setting of SBP generates an ungrammatical construction because it fails to metrify the long vowel stress mark at the left margin of the constituent where it can project a head.

4.2 VERBS

Despite the fact that there is a distinction in the placement of primary stress between nouns and verbs, the parameter settings are not expected to be drastically different within the Stoney grammar. In fact verbs observe the same metrical parameter settings as nouns with one change to EMP.

4.2.1 Alternating Stress. Stress in verbs is realized on all even-numbered syllables counting from the right margin. The right-most stress is realized as primary stress. Long vowels, the perfective morpheme, and monosyllabic roots are inherently marked for stress. These stress patterns can be predicted by the following metrical parameters:

(12) Parameter Settings - Verbs

Line 0: Project: L ICC: L Head: L

Line 1: Edge: RRR Head: R

The parameter settings used to construct the metrical structure for nouns generate the correct stress patterns for verbs, save one change. The EMP setting is not appropriate for verbs since verbs do not regularly project heads from the final syllable. Without a final constituent the application of ICC will generate the correct metrical structure for verbs. Consider the metrical structure for verbs demonstrated in (13).

(13)
```
                  *                          *
              *   *)                     *   *)
            (* * (*   *              * (* * (*   *
             | |  |   |              |  |  |  |   |
        i)  b à d i d á dd a d    ii) w a b ò r a n á s d e d
```

The lack of setting for EMP allows ICC to apply from the right edge of the string. With HLP projecting left heads, stress alternates on even-numbered syllables. A consequence of constructing a left-headed binary constituent, at the right margin, is that word level stress is realized on the penultimate syllable. EMP assures word level stress on the final syllable in nouns and the absence of EMP assures word level stress on the penultimate syllable in verbs.

It is possible to set EMP to mark a right parenthesis at the right margin of the string on Line 0; Edge: RRR.

(14)
```
                  *                          *
              *   *)                     *   *)
            (* * (*   *)             * (* * (*   *)
             | |  |   |              |  |  |  |   |
        i)  b à d i d á dd a d    ii) w a b ò r a n á s d e d
```

The presence of the EMP parenthesis does not constructively contribute to the metrical grid. The final two elements are delimited at the left edge by ICC and on the right edge by EMP.

The EMP boundary is redundant and unnecessary. For this reason, it is assumed that EMP has no settings for verbs.

4.2.2 LEXICAL STRESS. Monosyllabic roots are lexically marked for stress in Stoney.

(15) a) gdéd

b) wagdéd

c) gdèbíddad

Metrical theory projects the syllable boundary from lexically marked syllables on the phoneme tier to the metrical tier. The Syllable Boundary Projection Parameter is set in Stoney to project the left syllable boundary; Project: L.

```
(16)        (*               *  (*              (*  *  *
             |               |   |               |  |  |
        i)  gdéd        ii) wa-gdéd       iii) gdè-bíddad
```

The stress mark that corresponds to the monosyllabic root is positioned at the left edge of the constituent when SBP projects the left boundary. The element in the left-most position will be projected by the Head Location Parameter onto the next line. This is necessary in order for the monosyllabic root to be realized with stress. If SBP projects a right syllable boundary then the left head projected by the Head Location Parameter may not necessarily be the one linked to the monosyllabic root.

Consider the metrical structure generated from the application of the parameter settings in (12).

```
(17)         *                 *                 *

             *)                *)              *  *)

            (*              *  (*             (*  (*  *
             |              |   |              |   |  |
        i)  gdéd       ii) wa-gdéd      iii) gdè-bíddad
```

SBP ensures that a head is projected for the monosyllabic root. This is significant when the word is made up of only the monosyllabic root. Words with only one stress bearing element cannot generate stress by ICC. If SBP does not project the syllable boundary of monosyllabic roots then there are no other parameters in Stoney to delimit a consituent. Because all monosyllabic words contain a monosyllabic root, SBP will always delimit a constituent.

Long vowels and the perfective morpheme are also marked for stress in Stoney.

(18) a) wacééd 'I cried'

b)wààgicíshid 'You didn't dance'

c) càmozhán 'I did it' (perf)

Syllables which contain a long vowel or the perfective morpheme trigger SBP. The following examples demonstrate the metrical grid created for words with inherently marked stress.

```
(19)        *                 *               *

            *)            *   *)          *     *)

           *(*           (*  *(* *       (*  *  (*
           | |            |  | |  |       |  |  |
      i) wacééd      ii) wààgicíshid  iii) càmozhá-n
```

Stress patterns in Stoney which do not exhibit alternating stress are generated as a result of lexically or phonologically marked stress. Final syllable stress and adjacent stress follows from the application of SBP for monosyllabic roots, long vowels, and the perfective morpheme.

The triggers for SBP are productive across the grammar so there is no need to specify particular requirements for nouns or for verbs. Long vowels trigger SBP in nouns and verbs. The perfective morpheme does not appear in nominal morphology so there is no need to specify that the perfective morpheme does not trigger SBP in nouns. Monosyllabic roots in verbs and nouns trigger SBP.

4.3 ALTERNATE ANALYSIS

With the regular stress patterns in Stoney verbs, where stress does not fall on the final syllable, it would seem logical to render the final element extrametrical. Extrametricality is a convention which structurally prevents terminal elements from contributing to the construction of the metrical grid. Conventional extrametricality rules are over-powerful in that they render regular terminal elements as extrametrical but they do not apply to a lexically or phonologically marked terminal elements. That is, extrametrical rules are ad hoc. Within Idsardi's (1992) metrical framework extrametricality falls out from the application of the EMP. Consider EMP set to mark a right boundary to the left of the right-most element in Stoney; Edge: RLR.

```
(20)Edge: RLR    * * ) *                  *  *  * ) *
                 | |   |                  |  |  |   |
              i) a kídad        (ii) b à d i d á dd a d
```

The EMP in (20) delimits all of the elements to the left of the right-most element but leaves the terminal element unmetrified. Essentially the final element is 'extrametrical.' Unlike extrametricality rules, EMP is obligated to apply on Line 0 regardless of the status of a lexically or phonologically marked syllable. Creating an unmetrified element in a terminal position, through the application of EMP, is systematic and not, in anyway, ad hoc.

The Head Location Parameter on Line 0 must project right heads in order to generate stress over the penultimate syllable. The following example demonstrates the construction of the metrical grid for Stoney with the Line 0 parameter settings Edge: RLR and Head: R. The Line 1 parameter settings are the same as previously discussed: Edge: RRR and Head: R.

```
(21)          *

              *)

            * *) *
            | |  |
        i)  a k í d a d
```

Idsardi's (1992) ICC rule, applied with Edge: RLR, cannot metrify the correct elements to generate alternating stress. Consider the inadequacy of both applications of ICC in (22).

```
(22)     i) ICC: R                  ii) ICC: L

                 *                          *

             *   *)                         *)

         *   *)  * ) *              * (*  *) *
         |   |   |   |              |  |  |  |
       * b à d i d á dd a d       * b à d i d á dd a d
```

Neither application of ICC correctly generates secondary stress on the initial syllable. An ICC: L application generates one stress in the penultimate position but does not metrify the initial element in the string. An ICC: R application metrifies the initial element but not in a position to project a head.

Idsardi's ICC rule is unnecessarily restrictive by forcing the direction of application to be inalterably associated with a particular, right of left, boundary. Halle (1997) revises the ICC rule to allow the direction of the boundary and the direction of application to be set independently. In other words, rather than assuming that a left parenthesis is applied in a right to left direction, Halle's ICC rule allows a left parenthesis to apply in either a right to left or left to right direction. Halle's ICC rule (1997:300) is presented in (23)[1].

(23) Iterative Constituent Construction:

Insert a left / right boundary applied in a left-to-right / right-to-left direction for binary / ternary feet.

In Stoney all constituents constructed by ICC are binary so it will be assumed for this analysis that ICC is set to construct binary feet.

Halle's revised ICC rule creates more possibilities in constructing constituents. In fact, it can be applied to *bàdidáddad* in such a way as to correctly generate alternating stress to the left of the EMP boundary. If ICC is set to mark right boundaries applying from right to left; ICC: R, R → L it will generate the correct metrical structure presented in (24).

(24)

```
              *
   *          *)
   *)    *    *)   *
   |     |    |    |
   b à d i d á dd a d
```

The combination of EMP and Halle's ICC rule correctly generates alternating stress starting from the penultimate syllable, when HLP projects right heads. The parameter settings to generate the structure in (24) are outlined in (25).

(25) Line 0	Edge: RLR	ICC: R, R → L	Head: R
Line 1	Edge: RRR		Head: R

Given that the EMP must always apply, regardless of lexically or phonologically marked syllables, then if the final syllable triggers SBP it will result in the projection of two adjacent heads onto Line 1. For example, *wàshbawáád* triggers Syllable Boundary Projection for the final syllable due to the long vowel. Consider the grid in (26) for *wàshbawáád* with SBP set at Project: R.

(26)

```
                 *
             *   *)
     *       *)  *)
     |       |   |
 * w à sh b a w áá d
```

The SBP boundary in final position metrifies the final element, such that it can project a head. However, the inflexibility of the EMP results in an inappropriately placed boundary which generates adjacent stress rather than alternating stress.

The problem of adjacent boundaries which arises in (26) is only an issue word finally; the metrical parameters in (25) generate grammatical constructions otherwise. Since the location and the sequence of the incorrect structure is always the same then an avoidance constraint on Line 0 would prevent the construction of two boundaries separated by a single element where one boundary is in word final position. Consider the grid constructed in (27) when Line 0 includes Avoid)*)#.

```
(27)                  *

             *        *)

             *)   *   *)          Avoid )*)#
             |    |   |
            w à sh b a w áá d
```

Assuming that projection from the phoneme tier applies before metrically generated boundaries, the avoidance constraint prevents the construction of the Edge Marking boundary once the word final boundary has been projected from the phoneme tier. ICC completes the metrification on Line 0 by marking a boundary following the initial element. The result is primary stress in the final position and alternating stress on every other syllable preceding final stress.

Given that this set of metrical parameters predictably generates lexically and phonologically generated stress as well as alternating stress initiating from the penult, there is still a fundamental flaw. Avoidance constraints do not distinguish between boundaries based on how they are generated. Therefore, words which project syllable boundaries from the penultimate and final syllables will be prevented from constructing both boundaries in a sequence. In (28) the final syllable projects a boundary due to the perfective morpheme and the penultimate syllable projects a boundary due to the monosyllabic root. The avoidance constraint prevents the second boundary from being constructed. (Regardless of which boundary is the 'second' boundary, both of them are structurally required by the grid.)

```
(28)                    *

                *       *)

                *)  *   *)        Avoid )*)#
                |   |   |
             * w a - g d e - sh i -n
```

When the second projected boundary is prevented from being constructed, ICC metrifies the remaining sequence of elements. This incorrectly generates secondary stress on the initial syllable.

Unless the Avoidance Constraint is further constrained by specifying that the sequence of adjacent boundaries is permissible for projected boundaries, there is no other way to generate the correct metrical structure for (28). Avoidance Constraints, in and of themselves, are extraneous rules that should be avoided if possible, so adding further ad hoc conditions to the constraint only exacerbates the extraneousness of the rule.

Although this analysis accounts for a significant amount of the stress patterns in Stoney it fails to account for the patterns which generate adjacent stress in the penultimate and final syllables. Structurally, this analysis prevents the construction of a sequence of boundaries that would project two adjacent heads in the penultimate and final syllables. The avoidance constraint which prevents this sequence is necessary in some circumstances, such as in (27), but not in all circumstances. The complexity created by the addition of the avoidance constraint causes this analysis to be less systematic and more ad hoc. For this reason, the original analysis of verbs, presented in 4.2 will be maintained as the primary and more comprehensive of the two analyses.

The analysis of final syllable stress in perfective forms can be alternatively analyzed as a weight condition rather than a lexically marked morpheme.[2] The perfective morpheme is represented by a nasal segment, and when this nasal occurs in word final position the final syllable is realized with stress. In addition, *-zhan* (seriative) and *-win* (dubitative), which end in nasals, also attract stress when they are concatenated word finally. However, final syllable stress is not realized in words ending with any consonant. The following examples demonstrate the contrast in stress location between words ending in a sonorant and words ending in an obstruent.

(36) (a) *nàùxozhán* 'I heard it (seriative)'

(b) *náúxod* 'I heard it'

Words ending in an obstruent do not necessarily have final syllable stress but words ending in a sonorant do. The presence of the nasal in word final position appears to contribute weight to the final syllable which is not contributed by word final obstruents. If syllable weight is the trigger for final syllable stress then sonorants are heavy and obstruents are not.

The weight analysis is very plausible but requires much more data to confirm whether the sonorant or the perfective morpheme is the trigger for final syllable stress. The nasal in both the seriative aspect and dubitative mode could possibly be interpreted as the perfective morpheme; so it remains unclear whether the sonorant or the perfective morpheme is attracting stress.

4.4 CYCLICITY

In nouns, stem formative vowels cause a problem in the construction of metrical grids. For conservative Stoney speakers, stem formative vowels do not realize stress and they are not configured in the construction of stress. The problem of metrical construction arises in preventing the stress mark of the stem formative vowel from being metrified.

Consider the metrical grid for stem formatives.

(29)

```
       *
     *  *)
    (*  (*
     |   |
  * cáb-A
```

The stem formative root is monosyllabic so it triggers SBP to project a left boundary. EMP metrifies the final element. The result, as expected for regular nouns, is word level stress on the final syllable. For stem formatives this is incorrect. The metrical grid metrifies and projects a head from *-A*, an element that should be rendered invisible to metrical construction.

The exclusion of the stem formative vowel in constructing the metrical grid can be accounted for if stem formation applies in the noncyclic block. In Stoney, regular morphological concatenation occurs in the cyclic block. That is, all morphemes that contribute to the construction of the metrical grid are concatenated in the cyclic block. The string of cyclic morphemes are subject to the metrical parameters on Line 0. The cyclic parameters are listed in (30).

(30) <u>Cyclic</u> Line 0: Project: L Edge: LLR ICC: L Head: L

Compare the metrical grid constructed for stem formatives and regular nouns in the cyclic block.

(31) Cyclic

```
   *          *  *
  (*         (* *(*
   |          | | |
  cáb        àhiyá
```

Morphemes which are essentially invisible to stress are concatenated in the noncyclic block where Line 1 parameters settings apply. Stem formative vowels apply in the noncyclic block.

(32) <u>Noncyclic</u> Line 1: Edge: RRR Head: R

The structure created in the cyclic block is maintained and built upon in the noncyclic block.

(33) Noncyclic

```
 *          *
 *)       *  *)
(*  *    (* *(*
 |  |     | | |
cáb-A    àhiyá
```

The noncyclic rules generate higher level structures from the Line 1 elements projected in the cyclic block. Noncyclic metrical construction applies to levels at Line 1 and higher, and does not 'refer' back to Line 0. Therefore, the concatenation of an additional stress bearing element on Line 0 has no bearing on the higher level constructions. That is, the concatenation of *-A* in the noncyclic block does not contribute to the computation of stress.

Certain morphemes are systematically excluded from the construction of stress when they apply in the noncyclic block. The homophonous *-bi* morphemes and the stem formative vowel are noncyclic morphemes. They apply in the noncyclic block such that they cannot contribute to the configuration of stress.

4.5 EXCEPTIONS

There remain a small group of forms which exhibit a stress pattern that is not predictable by the metrical framework. The following nouns all demonstrate primary stress on the penultimate syllable rather than the final syllable.

(34) (a) *paróna* 'duck'

(b) *wadézha* 'animal'

(c) *taxmúse* 'rawhide'

(d) *wìyásga* 'sand'

(e) *wíya* 'woman'

These exceptions will remain as such until more is understood about their individual component parts. It is very likely that (34a-d) have the same metrical structure as the forms in (33); that is, the final vowel may be epenthetic. The final syllable is likely affixed at the noncyclic layer of the morphology so it does not configure in the construction of word level stress. Stress in (34e) is a true exception to the regular stress patterns demonstrated in the grammar.

The regular stress patterns in Stoney are generated from the combination of the Iterative Constituent Construction Parameter, the Syllable Boundary Projection Parameter and the Head Location Parameter. In nouns the addition of the Edge Marking Parameter is required to generate final syllable stress. The irregular stress patterns generated by the stem formative vowel and the *-bi* morphemes in nouns are constructed in the noncyclic block where they do not contribute to the construction of the metrical grid. The complete set of parameter settings which generate stress in Stoney are provided in (35). The Edge Marking Parameter is bracketed to signify that it only applies to nouns.

(35)	Cyclic	Line 0	Project: L	(Edge: LLR)	ICC: L	Head: L
	Noncyclic	Line 1		Edge: RRR		Head: R

NOTES

1 Halle's ICC rule is rewritten here in rule form.

2 The analysis of sonorants as heavy segments was recommended by John Archibald, Linguistics Department at the University of Calgary,

CONCLUSION

The application of Metrical Phonology to Stoney provides a succinct account of the intricate patterns of stress in both nouns and verbs. The lack of setting for EMP in verbs provides the change necessary to generate a different primary stress pattern from that in nouns. The change in EMP causes a change in the location of the right-most head projected onto Line 1. In nouns, when EMP delimits the final element into a constitiuent, it licenses the final element to project a head. In verbs, the lack of setting for EMP causes ICC to delimit the penultimate syllable at the left edge of the constituent where it projects a head. All other parameter settings remain unchanged. The difference in the placement of the right-most head becomes most evident when Line 1 heads are projected to mark word level stress. The Head Marking Parameter for Line 1 is set to project the right-most head onto Line 1 for both nouns and verbs. In nouns this is the final syllable. In verbs the placement of the head on Line 2 will vary between the penult and the final syllable depending on whether Syllable Boundary Projection has applied in word final position. The SBP projects syllable boundaries for lexically marked morphemes onto the metrical tier. The projected boundaries enable the stress mark of the lexically marked morpheme to project a head. This ensures that all lexically marked morphemes will be realized with stress.

Stoney has three morphemes which generate an unexpected stress pattern. The homophonous-*bi* morphemes and the stem formative vowel in nouns cause primary stress to be realized on the penultimate syllable. Within a metrical framework these patterns can be predicted. The two separate blocks of the morphological component of the grammar make a distinction between two types of morphemes. Once all of the cyclic morphemes and the Line 0 parameters have applied then the noncyclic morphemes, *-bi* and *-A*, are concatenated. All of the stress bearing elements of the cyclic block are configured in the metrical grid before the concatenation of the noncyclic morphemes so noncyclic morphemes are essentially unable to contribute to the construction of higher levels in the metrical grid.

The concatenation of the stem formative vowel in the noncyclic block generates a pattern of stress used by conservative Stoney speakers. For nonconservative speakers that pattern is being replaced by another pattern. The stem formative vowel is being reanalyzed by Stoney speakers as part of the root, in both nouns and verbs. With the stem formative vowel being incorporated into the root, the root becomes bisyllabic rather than monosyllabic. As a bisyllabic root it no longer triggers the Syllable Boundary Projection Parameter so that the metrical structure is essentially constructed by ICC and EMP.

There are a significant number of similarities in the stress patterns between Morley Stoney and Alexis Stoney. Most notably primary stress is realized on the penultimate syllable in verbs. Although Shaw argues that secondary stress in Morley Stoney is not generated by an alternating stress pattern, it is interesting to note that some Morley Stoney forms can be predicted by the Alexis Stoney metrical structure but are not predictable by the Dakota Stress Rule.

(1) (a) [čìjikúdeč] 'I was shooting yours'

(b) [ìhnibíč] 'We came home' (perf)

In (1) the DSR predicts secondary stress on the second syllable not the first syllable. The Dakota Stress Rule cannot adequately predict the stress patterns in forms such as (1). Both of these forms are predicted by the metrical parameter settings for Alexis Stoney.

(2) Line 0:	Project: L		ICC: L	Head: L
Line 1:		Edge: RRR		Head: R

```
(3)          *                          *

          *    *)                     *   *)

         (*  *(*                    (**(* *
          |   ||                     || |  |
     i)  ìhnibíč              ii)  čìjikúdeč
```

The SBP is triggered by the perfective morpheme in *ìhnibíč*. Projection of a left boundary creates a single-element constituent which will project a head. This head is the right-most element on Line 1 which will be projected onto Line 2 as word level stress. There are no lexically marked morphemes in *čìjikúdeč* that trigger SBP. Secondary stress in both of these examples is clearly the result of a recursive binary structure. ICC constructs a binary constituent to the left of the word final constituent in each example. The left-most element in the initial constituent is projected onto Line 1 where it will be phonetically realized as secondary stress. These Morley Stoney forms, which are exceptions to Shaw's analysis, are succinctly predicted by a unified metrical structure.

However, there are Morley forms that cannot be generated by the metrical structure developed for Alexis Stoney.

(3) (a) [akìdáktač] 'she/he will look at it'

(b) [akìdabišíktač] 'they will not look at it'

The Alexis Stoney metrical structure would predict secondary stress on the initial syllable rather than the second syllable in (a) and would predict secondary stress on the first and third syllables in (b). Shaw (1985a) argues that the forms in (3) provide evidence for two independent stress rules (DSR and SSR) applying in opposite directions. The DSR, however, is not reliable in predicting the secondary stress patterns for Morley Stoney in other forms. Given the evidence that Morley Stoney does realize multiple stress and does not consistently observe second syllable stress, further analysis of Morley stress patterns in favor of a unified metrical analysis would likely be productive.

All of the Stoney groups in Alberta have been assumed to share the same genetic, linguistic and cultural system. However, comparative analyses of the origins, lifestyle and language of the Morley and Alexis people have provided evidence of diversity between the two communities. Further analysis, investigating Stoney stress, has revealed subsequent indications of divergence between the two groups. Alexis and Morley Stoney have distinctly different patterns of secondary stress that cannot be reconciled by the application of phonological theory. The two communities share strong linguistic and cultural ties but the similarities between the Alexis and Morley people can no longer be presupposed.

BIBLIOGRAPHY

Andersen, Raoul R (1970). Alberta Stoney (Assiniboin) Origins and Adaptations: A Case for Reappraisal. *Ethnohistory*, 17: 49-61

Bellam, E. Jay (1976). *Studies in Stoney phonology and morphology.* MA Thesis, University of Calgary, Calgary, Alberta.

Boaz, Franz and Ella C. Deloria (1941). Dakota Grammar. *Memoirs of the National Academy of Sciences,* 23(2).

Boaz, Franz and Ella C. Deloria (1932). Notes on the Dakota Teton Dialect. *International Journal of American Linguistics,* 7: 97-121.

Boaz, Franz and John R. Swanton (1911). Siouan: Dakota (Teton and Santee Dialects) with remarks on the Ponca and Winnebago. *Bureau of American Ethnology Bulletin*, 40(1): 875-965. [Reprinted in 1978, Seattle, WA: The Shorey Book Store.]

Buechel, Eugene S. J. (1939). *A Grammar of Lakota: The Language of the Teton Sioux Indians*. Rosebud, South Dakota: Rosebud Educational Society.

Buechel, Eugene (1983). *Lakota-English Dictionary.* Paul Manhart (ed). Pine Ridge, South Dakota: Red Cloud Indian School Inc.

Carter, Richard (1974). *Teton Dakota Phonology.* Ph.D. dissertation, University of New Mexico. University of Manitoba Anthropology Papers, 10.

Chambers, Jack (1978). Dakota Accent. *Linguistic Studies of Native Canada*, Eung-Do Cook and Jonathon Kaye (eds.). Vancouver: University of British Columbia Press, 3-18.

Cook, Eung-Do (1996). Laryngeal constraint in Stoney. Department of Linguistics, University of Calgary, manuscript.

Cook, Eung-Do (1995). A Summary of a Stoney Literacy Course. A summary given to Paul Band Indian Reserve, September 15. Department of Linguistics, University of Calgary. Unpublished.

Cook, Eung-Do (1990). The sound system of Stoney spoken at Alexis Reserve and recommendations for a practical orthography: A report to the Alexis Indian Band. Department of Linguistics, University of Calgary. Unpublished.

Cook, Eung-Do and Camille Owens (1991). Conservative and innovative features of Alexis Stoney. *Occasional Papers in Linguistics* 16. Papers from the American Indian Languages Conferences, Held at the University of California, Santa Cruz, July and August. Carbondale: Department of Linguistics, Southern Illinois University.

Halle, Morris (1997). On Stress and Accent in Indo-Euorpean. *Language*, 73(2): 275-313.

Halle, Morris and Jean-Roger Vergnaud (1987). *An Essay on Stress*. Cambridge: Massachusetts Institute of Technology Press.

Harbeck, A. Warren (1980). *Some agreement phenomena in Stoney.* MA Thesis, University of Calgary.

Hollow, Robert C., Jr. (1970). A note on Assiniboine phonology. *International Journal of American Linguistics*, 36 (4): 296-298.

Hungry Wolf, Adolf and Beverly Hungry Wolf (1989). *Indian Tribes of the Northern Rockies*. Shookumchuk, British Columbia: Good Medicine Cultural Foundation and Historical Society.

Idsardi, William. (1992). *The Computation of Prosody.* Ph.D. dissertation, Massachusetts Institute of Technology.

Idsardi, William and Morris Halle (1995). General Properties of Stress and Metrical Structure. *The Handbook of Phonological Theory*, John A. Goldsmith (ed.). Cambridge: Basil Blackwell Ltd., 403-443.

Laurie, John L. (1958). *The Stoney Indians of Alberta: I and II*. Glenbow Alberta Institute, Calgary, Alberta. Unpublished.

Liberman, Mark (1979). *The Intonational System of English.* Ph.D. dissertation, Massachusetts Institute of Technology, 1975. New York: Garland Press.

Matthews, G. Hubert (1955). A phonemic analysis of a Dakota dialect. *International Journal of American Linguistics,* 21: 56-59.

Parks, Douglas R. and Raymond J. DeMallie (1992). Sioux, Assiniboine, and Stoney dialects: A classification. *Anthropological Linguistics*, 34: 233-55.

Riggs, Stephen. R. (1890). Dakota Grammar, Texts, and Ethnography. *Contributions to North American Ethnology*, 7: 1-165.

Rood, David and Allan Taylor (1996). Sketch of Lakhota, a Siouan Language. *Handbook of North American Indians,* Ives Goddard (ed.), Washington : Smithsonian Institute, 17: 440-479

Shaw, Patricia (1985a). Coexistent and competing stress rules in Stoney. *International Journal of American Linguistics*, 51: 1-18.

Shaw, Patricia (1985b). Modularization and substantive constraints in Dakota Lexical Phonology. *Phonology Yearbook*, 2:173-202.

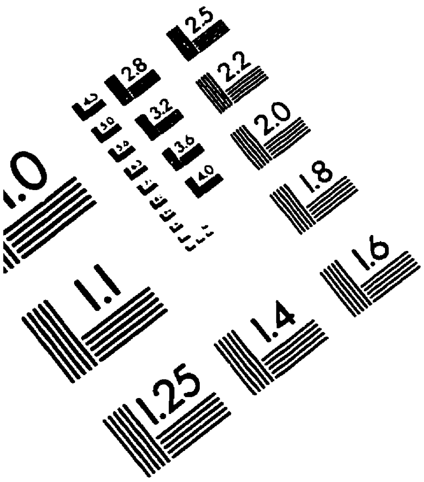
Shaw, Patricia (1980). *Theoretical Issues in Dakota Phonology and Morphology*. New York: Garland Publishing.

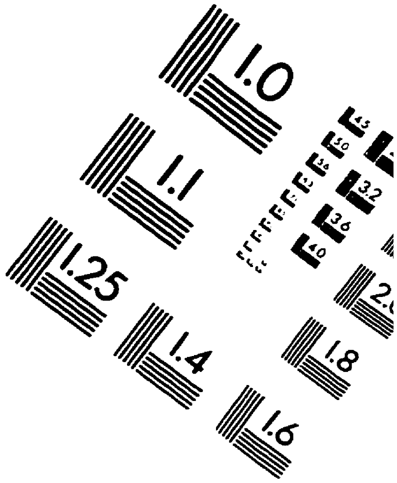
Taylor, Allan R. (1981). Variation in Canadian Assiniboine. *Siouan and Caddoan Linguistics Newsletter*, July: 9-16.

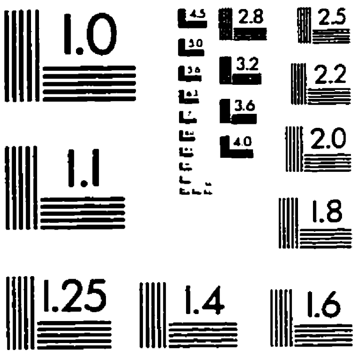
Taylor, Allan R. (1983). Old vocabularies and linguistic research: The Case of Assiniboine. Na'pao, *Saskatchewan Anthropology Journal*, 13:31-44.

Wolff, Hans (1950). Comparative Siouan I, II, III. *International Journal of American Linguistics*, 16: 61-66, 113-131, 168-178.

IMAGE EVALUATION TEST TARGET (QA-3)







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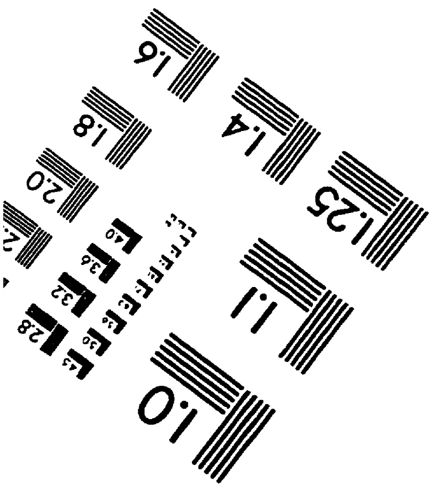

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