ACCENT AND PRO-DPS IN BLACKFOOT*

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Abstract

This paper argues that Blackfoot clitics are prosodized uniformly as phonological adjuncts. I use the behavior of stress in nominalizations under proclisis as a diagnostic. Although stress exhibits two behaviors under proclisis, I show that this does not correspond to two strategies of clitic prosodization, but instead results from the extrametrical nature of phrase-initial syllables in Blackfoot. I situate my analysis within a Prosodic Phonology framework (e.g. in Inkelas 1989; Ito and Mester 1992; Selkirk 1984) and fit Blackfoot into Peperkamp's (1996) typology of clitic prosodization.

1. Introduction

Peperkamp (1996) argues that clitics may be prosodized via multiple strategies. She develops a typology of clitic prosodization and shows that languages may vary along several parameters, which she captures with Optimality Theory constraint rankings. In particular, languages differ as to whether they allow prosodic restructuring after clisis. Stress shift under clisis is overt evidence of restructuring.

(1)

Properties under clisis	**Type I**	**Type II**
Prosodic restructuring?	Allowed	Not allowed
Stress of the base shifts?	Yes	No
Examples	Lucanian	Neapolitan, Standard Italian

Blackfoot phrasal prosody is characterized by one or more syllables spoken with a relatively higher pitch than the surrounding syllables, called 'pitch accents' (Frantz 2009; Van Der Mark 2003). This paper argues that the phonetic property of high pitch, or accent, is the manifestation of primary stress within a prosodic word. I develop a metrical analysis of Blackfoot stress in unpossessed nominalizations, and examine the affect of proclisis on accent location.

Blackfoot accent exhibits two different behaviors under proclisis. For some stems, the accent of the base remains unaffected. For example, in (2) the accent falls on the second or third syllable of the base both with and without a possessor proclitic *nit*= '1' or *ot*= '3'. In all examples, L stands for a light syllable, H for a heavy syllable, and an acute accent represents (phonological) primary stress or (phonetic) accent.

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(2) **No accent shift under proclisis**

a.**nís**.sɪn anii-hsin 'talk'	[L Ĥ H]	→	o.ta.**nís**.sɪn ot=anii-hsin 'his/her talk'	L= [L Ĥ H]
a.t^{s}ɪ.**ní**.ksɪn atsiniki-hsin 'story'	[L L Ĺ H]	→	nɪ.t^{s}ɪ.t^{s}ɪ.**ní**.ksɪn nit=itsiniki-hsin 'my story'	L= [L L Ĺ H]

In other cases accent shifts leftward under proclisis. In (3), accent occurs on the second or third syllable of the unpossessed nominalizations. After proclisis of *kit*= '2' or *ot*= '3', accent occurs on the initial syllable of the base in both cases. The original location of accent is underlined.

(3) **Accent shift under proclisis**

aʔ.**póʔ**.ta.ksɪn a'po'taki-hsin 'work'	[H Ĥ L H]	→	kɪ.**táʔ**.poʔ.ta.ksɪn kit=a'po'taki-hsin 'your work'	L= [Ĥ H L H]
aː.kɪ̥.^{h}**táː**n aakihtaa-n 'packing'	[H L Ĥ]	→	o.**táː**.kɪ̥.^{h}taːn ot=aakihtaa-n 'his/her packing'	L= [Ĥ L H]

This behavior is unexpected because Blackfoot looks like a mix of the Type I and Type 2 languages introduced in (1). I will show that proclitics in Blackfoot are prosodized in a uniform fashion, and that the dual behavior of accent is due to other phonological factors. In Section 2 I give an overview of Blackfoot phonology and syllable structure. Section 3 describes the accent of unpossessed nominalizations, which I argue instantiates stress. I develop an OT account of Blackfoot stress and prosodic structure in nominalizations and crucially show that the first syllable of the phrase is extrametrical in the sense that it is not parsed to a foot. In Section 4 I discuss the typology of clitic prosodization developed in Peperkamp (1996). In Section 5 I explain how the metrical analysis from Section 3 and the assumptions in Section 4 can derive both behaviors of accent in possessed nominalizations. Finally, I conclude in Section 6 and place this paper in the context of a broader research program on Blackfoot metrical structure.

2. Blackfoot phonological overview

2.1 Phonological inventory

Blackfoot is an Algonquian language spoken in Alberta and northern Montana with four mutually intelligible dialects. The phonological inventory of Blackfoot is given in Table 1 below. Morphological representations use the orthography developed in Frantz (1978), which closely mirrors the IPA, except that geminates

Table 1: Blackfoot phonemic inventory

	Labial	Coronal	Dorsal	Glottal
Stops	p p: ^{h}p	t t: ^{h}t	k k: ^{h}k	ʔ
Fricatives		s s: ^{h}s		
Nasals	m m:	n n:		
Glides	w	j	(w)	

Front	Central	Back
i iː		
		o oː
	a aː	

are written as doubled consonants, [j] = <y>, [ʔ] = <'>, and <h> represents pre-aspiration of the following obstruent.

Following Reis Silva (2011), I assume that all Blackfoot obstruents except [ʔ] contrast plain and pre-aspirated obstruents. Short vowels are allophonically devoiced word-internally when they precede a pre-aspirated consonant, as in [i.t**o̥.^{h}k**óː.nɪm.ʔḁ] 's/he found it then'. Long vowels are only partially devoiced, as in [i.t**óo̥.^{h}k**o.yiː] 's/he waiting for him/her then'. Long and short vowels before pre-aspirated consonants are neutralized word-initially, where both are partially voiced: [**o̥o̥.^{h}k**óː.nɪt] 'find it!', [**o̥o̥.^{h}k**óːs] 'wait for him/her!'[1].

I also transcribe the three assibilants [t^{s}], [^{s}t], and [k^{s}] and lax vowels, because their distribution is only partially predictable. The assibilant [t^{s}] is a regular allophone of /t/ before /i/; [k^{s}] and [^{s}t] occur before and after, respectively some instances of /i/. All vowels have an allophonic short, lax counterpart [ɪ ɛ ə ɔ ʊ] which occurs in closed syllables (Elfner 2006; Frantz 2009), but lax vowels also occur unpredictably in some open syllables.

2.2 Syllable structure

The location of accent is sensitive to syllable weight. Heavy syllables include (C)VV and (C)VC syllables, while light syllables are (C)V (Elfner 2006). That closed syllables are heavy in Blackfoot is independently motivated by the fact that all coda consonants shorten a preceding long vowel or diphthong. Assuming that syllables cannot be trimoraic, this is evidence that codas themselves contribute weight to the syllable (Elfner 2006; Hayes 1989).

Coda consonants are limited to /ʔ/, /s/, geminate consonants and sonorants (R) which precede a voiceless syllable nucleus. The sonorants are separated from voiceless nuclei by a facilitative [ʔ] which is parsed as the onset to the voiceless nucleus; the sonorant is parsed to the coda of the preceding syllable.

[1]The devoicing is often accompanied by secondary frication which assimilates to the place of the preceding vowel ([iɕ], [aχ], [ox]). Some accounts of Blackfoot phonology treat the fricative as a separate coda segment (Denzer-King 2009; Elfner 2006; Kaneko 1999), but I treat the frication as a secondary characteristic of pre-aspiration because it does not shorten preceding long vowels like other codas in Blackfoot (Elfner 2006; Reis Silva 2011).

(4)	Coda	Example	Morphology	Gloss
	ʔ	á:.sê**ʔ**.ni	[aasei'ni]-wa	's/he cried (AI)'
	s	i**s**.pʊm.ʔɪ̥.^{h}ta	[isspommihtaa]-wa	's/he helped out (AI)'
	C	sʊ.kó**t**.ta:t	[sokottaa]-t	'spit! (AI)'
	RV̥	i**n**.ʔɪ̥.^{h}kí	[inihki]-wa	's/he sang (AI)'

3. Stress in event nominalizations

Event nominalizations are a useful probe for prosodic structure in Blackfoot, because the location of pitch accent is highly restricted and only occurs on the second or third syllables. Nominalizations are derived from animate intransitive (AI) verb stems by a suffix (Bliss et al. *forthcoming*; Frantz 2009). The allomorph *-n* occurs after *a*, (5a), and *-hsin* occurs elsewhere, (5b, 5c).

(5) **Nominalization suffix allomorphs**

a.	aw.ʔḁ.^{h}ká:n	b.	sɪ.ná:.ksɪn	c.	aʔ.póo̥.^{h}sɪn
	[awahkaa]–n		[sinaaki]–hsin		[a'poo]–hsin
	[play.AI]–NMLZ		[write.AI]–NMLZ		[travel.AI]–NMLZ
	'play(ing)'		'writing'/'drawing'		'trip'/'travel'

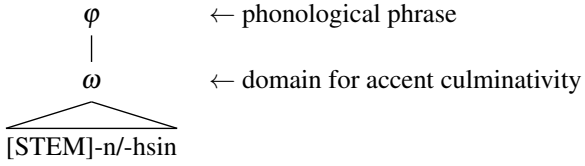
As a notational aside, the sequences /…ki-^{h}s…/ and /…ti-^{h}s…/ contract to single syllables. I transcribe these as […ksV…] and […tsV…], respectively. The non-superscript *s* is meant to convey that the [s] is longer in duration than it is in the assibilants [k^{s}] and [t^{s}]. Preceding long vowels remain long, as in [sɪ.n**á:**.ksɪn] 'writing' in (5b). This suggests that the [k] and [t] were not parsed to the coda of the preceding syllable, or else the the long [a:] would have shortened. Thus I syllabify the sequences [ks] and [ts] as onsets in my transcriptions.

3.1 Accent exhibits metrical properties

Within event nominalizations, accent exhibits typical properties of a metrical stress system (Hayes 1995). Specifically, accent is (1) obligatory, (2) culminative, (3) oriented towards the left edge, and (4) sensitive to syllable weight.

Accent is *obligatory* in that all nominalizations have at least one accented syllable. Accent is *culminative* in that all nominalizations have at most one accented syllable. This property does not hold of longer phrases, which may have multiple pitch accents. I hypothesize that the prosodic word (ω) instantiates culminativity of accent, and that nominalizations map onto this domain.

(6)



Accent is *orientated towards the left edge* because it always falls on the second or third syllable counting from the left edge. Nominalizations can be longer than three syllables, but accent never falls on the fourth or fifth syllable.

(7) **No fourth or fifth syllable accent**

pək.kˢɪ.ní.ki.maːn	*pək.kˢɪ.ni.kí.maːn	'crushed choke cherries'
a.sɪ.mím.ʔo̥.ʰksɪn	*a.sɪ.mɪm.ʔo̥.ʰksín	'gossip'

Accent is *sensitive to syllable weight*, because in words of three or more syllables, the choice between second and third syllables is determined by the weight of the second syllable. Stress falls on the second syllable when heavy (8), and the third otherwise (9). The weight of the second syllable is highlighted below through bolding. This pattern holds regardless of the number of syllables in the word or the weight of the surrounding syllables.

(8) **Second syllable accent**

anii-hsiN	'speech, talk'	a.nís.sɪn	L **H́** H
sinaaki-hsiN	'writing'	sɪ.náː.ksɪn	L **H́** H
a'po'taki-hsiN	'work'	aʔ.púʔ.ta.ksɪn	H **H́** L H
ka'kiaaki-hsiN	'chopped wood'	kaʔ.kjáː.ksɪn	H **H́** H

(9) **Third syllable accent**

atsiniki-hsiN	'story'	a.tˢɪ.ní.ksɪn	L **L** Ĺ H
asimimmohki-hsiN	'gossip'	a.sɪ.mím.ʔo̥.ʰksɪn	L **L** H́ L H
issitsimaa-n	'baby'	ɪs.sɪ.tˢí.maːn	H **L** Ĺ H
awahkaa-n	'playing'	aw.ʔḁ.ʰkáːn	H **L** H́

Disyllabic stems always exhibit accent on the second syllable of the word, (10).

(10) **Second syllable accent (disyllabic stems)**

inaa-n	'possession'	i.náːn	L H́
ohki-hsiN	'bark'	ʊʊ̥.ʰksín	H H́

3.2 Metrical analysis of accent: an overview

I take the above properties as evidence that accent is metrical in nature. In particular, it behaves like the inverse of stress systems like Latin, where stress falls on the penult when heavy, but the antepenult otherwise (e.g. Hayes 1995). Languages with antepenultimate stress are usually analyzed as right-aligned trochaic systems with an extrametrical final syllable. I propose a similar solution for Blackfoot, where the first syllable is extrametrical and there is a left-aligned iambic foot. This solution unites second and third syllable accent in one analysis, because both correspond to the head of an iamb, as in (11).

(11) Second syllable accent: <σ> (Ĥ)...
Third syllable accent: <σ> (L Ĺ)...
<σ> (L Ĥ)...

The problem is that extrametricality is usually assumed to be a right-edge phenomenon; initial extrametricality is unexpected (e.g. Gordon 2002; Hayes 1995). Although other languages have third syllable stress, it often only arises in conjunction with certain types of initial syllables. The next section makes the case that Blackfoot has third syllable stress for all types of initial syllables. In other words, the first syllable is extrametrical categorically or 'across the board'.

3.3 'Across-the-board' initial extrametricality

For some languages, the initial syllable is left unparsed to a foot only when it is intrinsically less prominent than other types of syllables (Kager 2012). For example, initial light syllables may be left unparsed while initial heavy syllables must be parsed, or initial onsetless syllables are left unparsed while initial syllables with onsets are parsed. In those languages, extrametricality is not a categorical metrical property, but arises in certain cases due to non-metrical factors having to do with the initial syllable. This is not the case in Blackfoot, shown in (12) and (13).

(12) **Onsetless vs. onsetful initial syllables**

asimimmohki-hsiN	'gossip'	a.sɪ.mím.ʔo̥.^{h}ksɪn	L L Ĥ L H
pakksinikimaa-n	'crushed chokecherries'	pək.k^{s}ɪ.ní.ki.maːn	H L Ĺ L H

(13) **Heavy vs. light initial syllable**

atsiniki-hsiN	'story'	a.t^{s}ɪ.ní.ksɪn	L L Ĺ H
issitsimaa-n	'baby'	ɪs.sɪ.t^{s}í.maːn	H L Ĺ H

Unparsed edge syllables could have occurred via right-to-left parsing of iambic feet, with the head iamb leftmost in the word. The left column of Table 2 schematizes this for three-, four-, and five syllable words, ignoring syllable weight distinctions. Only odd-parity words have an unfooted initial syllable, while even-parity words do not. The right column of Table 2 schematizes my proposal of a left-to-right iambic system with initial extrametricality. The initial syllable in this case remains unparsed 'across-the-board', regardless of the number of syllables.

Table 2: Unparsed initial syllables

	Iambs align right	**Iambs align left (+ EM)**
3 syll	σ (σ σ́)	σ (σ σ́)
4 syll	(σ σ́) (σ σ̀)	σ (σ σ́) σ
5 syll	σ (σ σ́) (σ σ̀)	σ (σ σ́) (σ σ̀)

Even-parity words will disambiguate these two parses. Nominalizations happen to always end in a heavy syllable, so I have used four-syllable verbal forms

containing all light syllables to demonstrate this. (Verbs without person proclitics exhibit the same accent patterns as nominalizations.) These words have accent on the third syllable, confirming that the initial syllable is unparsed to a foot.

(14)	'tell a story' (AI)	i.t^{s}ɪ.ní.ki	L (L Ĺ) L	*i.t^{s}í.ni.ki	*(L Ĺ) (L Ì)
	's/he hit him/her' (TA)	a.wa.já.ki	L (L Ĺ) L	*a.wá.ja.ki	*(L Ĺ) (L Ì)

I conclude that the initial syllable in Blackfoot is left unparsed to a foot 'across-the-board'. In other words, Blackfoot exhibits a rare stress pattern involving initial extrametricality.

3.4 Metrical analysis of accent

The analysis below uses ranked and violable constraints within Optimality Theory (McCarthy and Prince 1993b; Prince and Smolensky 1993). I rely on categorical metrical constraints instead of alignment constraints, which overgenerate the metrical typology and predict certain unattested patterns, such as right-to-left iambic parsing (McCarthy 2003). Finally, I assume a flavor of Prosodic Phonology adopted by e.g. Inkelas (1989); Ito and Mester (1992); Peperkamp (1996); Selkirk (1984), such that phonological words and phrases have internal structure and are organized into the prosodic hierarchy shown in (15).

(15)
φ	phonological phrase
|	
ω	prosodic word
|	
Ft	foot
|	
σ	syllable
|	
μ	mora

Within these frameworks, initial extrametricality requires that the initial syllable of the word or phrase be unparsed to a foot; or equivalently, that no foot stands at the left edge of the word or phrase. I propose that we capture this via the positional markedness constraint NONINITIALITY (NONINIT). It prohibits left-aligned feet and is modelled on McCarthy's (2003) NONFINALITY constraint. Because Blackfoot nominalizations are simultaneously a word and a phonological phrase, we cannot tell if the unfooted syllable is at the word level (subject to NONINIT(ω)) or phrasal level (subject to NONINIT(φ)). I use the "cover" constraint NONINIT unless I need to distinguish between these[2].

(16) NONINIT(ω)/NONINIT(φ)
*Ft / $[_{\omega/\varphi}$ —
'Word/phrase-initial feet are prohibited.'

[2]McCarthy (2003) does not posit a difference between NONFIN(ω) and NONFIN(φ).

Syllables which are unparsed to feet must be parsed to some higher prosodic level, such as the word (ω), which violates the Exhaustivity parameter in the Strict Layer Hypothesis (Nespor and Vogel 1986; Selkirk 1984). McCarthy (2003) expresses Exhaustivity as a family of PARSE-X constraints, where X stands for each level of the prosodic hierarchy. NONINIT ranks higher than PARSE SYLLABLES, which allows initial syllables to be parsed directly to the prosodic word.

(17) PARSE SYLLABLES (PARSE-σ)
No ω immediately dominates a σ. ('Syllables are parsed into feet.')

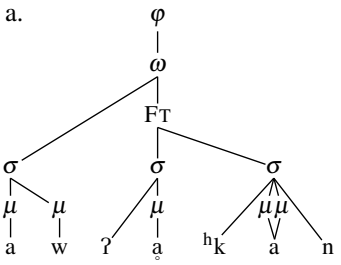
(18) NONINIT $\gg$ PARSE-σ

This ranking is illustrated below with *awahkáán* 'playing'. The winning candidate parses the initial syllable directly to the word, which satisfies NONINIT but violates PARSE-σ. Candidate (b) parses all syllables into feet, but because the first foot stands at the left edge of the word or phrase, it fatally violates NONINIT. The prosodic structures for each candidate are shown in (20). Note that the candidates here and below are marked for both primary and second stress. Primary stress is pronounced with a pitch accent, while secondary stress is covert.

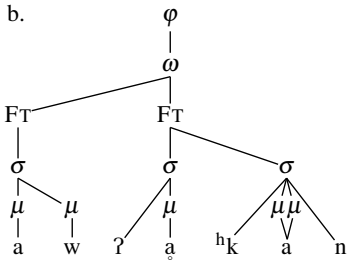
(19)

/awahkaa-n/	NONINIT	PARSE-σ
a. ☞ aw.(ʔa̰.^{h}káːn)		*
b. (áw).(ʔa̰.^{h}kàːn)	*!	

(20) a.



* b.



To create left-aligned iambs, NONINIT must also be ranked above the rhythmic *LAPSE constraint, which requires stressed syllables to be separated by no more than one unstressed syllable (Gordon 2002; Kager 2001; McCarthy 2003).

(21) *LAPSE
* $\breve{\sigma}$ / __ $\breve{\sigma}$
i.e. assign one violation-mark for each pair of adjacent unstressed syllables.

Because NONINIT creates one weak syllable at the left edge, the leftmost foot will be aligned as far left as possible in order to minimize violations of *LAPSE. This is shown below in (23) for *itsiníki-wa* 'tell a story'. This form has

four light syllables in it. Candidates (a) and (b) both satisfy NONINIT but differ in which two syllables are parsed into a foot. Candidate (a) has a left-aligned foot which minimizes violations of *LAPSE, and will always be the optimal candidate. Candidate (c) has no violations of *LAPSE or PARSE-σ, but violates NONINIT.

(22) NONINIT $\gg$ *LAPSE

(23)

/itsiniki-wa/	NONINIT	PARSE-σ	*LAPSE
a. ☞ i.(t^{s}ɪ.ní).ki		**	*
b. i.t^{s}ɪ.(ni.kí)		**	**!
c. (i.t^{s}í).(ni.kì)	*!		

The remainder of the analysis uses standard constraints to derive a quantity-sensitive iambic system with primary stress leftmost (McCarthy 2003; McCarthy and Prince 1993a). To derive a quantity sensitive system, WEIGHT-BY-POSITION (WBP) and FOOT BINARITY (FTBIN) must be undominated.

(24) WEIGHT-BY-POSITION (WBP)
Codas project a mora.

(25) FOOT BINARITY (FTBIN)
Feet must be binary under a moraic or syllabic analysis.

If closed syllables were not treated as heavy syllables, then a word like *a'pó'takssin* 'work', with a heavy second syllable, should have accent on the third syllable instead of the second syllable.

(26)

/a'po'taki-hsin/	WBP
a. ☞ aʔ.(póʔ).(ta.ksìn)	
b. aʔ.(poʔ.tá).(ksìn)	*

The Minimal Word Template in Blackfoot provides some evidence that FTBIN is never violated (McCarthy and Prince 1993b). Minimal words are either a bimoraic monosyllable (H́), as in [pí:t] 'enter!', or a sequence of two light syllables (L Ĺ), as in [i.yí] 's/he ate', but never a single light syllable *(Ĺ).

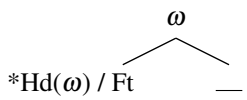
Feet are right-headed in Blackfoot. The foot type constraint in (27) creates iambic feet, and must rank above an analogous trochaic foot constraint.

(27) ALIGN(Ft, R, Hd, R) (FTTYPE=I)
For every foot, there is a head of the foot such that the right edge of the head aligns with the right edge of the foot. (Feet are iambic.)

(28) FTTYPE=I ≫ FTTYPE=T

The head foot is near the left edge of the word, as evidenced by the location of pitch accent. The HEADLEFT constraint requires the head foot to be the leftmost foot. It is modelled on McCarthy's (2003) ENDRULE-L constraint (itself a reformulation of the End Rule in Prince 1983).

(29) HEADLEFT



i.e. the head foot is not preceded by another foot within the prosodic word

(30) HEADLEFT ≫ HEADRIGHT

These two rankings are demonstrated in (31) with *atsiníkssin* 'story'. All four candidates equally satisfy PARSE-σ, NONINIT, and *LAPSE, but have different foot types and location of the head foot. Candidate (a) is the optimal candidate because it satisfies both FTTYPE=I and HEADLEFT. Candidates (b) and (d) are non-optimal because they use trochees instead of iambs. Candidates (c) and (d) are non-optimal because the head foot is rightmost.

(31)

/atsiniki-hsin/	FTTYPE=I	FTTYPE=T	HEADLEFT	HEADRIGHT
a. ☞ a.(t^{s}ɪ.ní).(ksìn)		*		*
b. a.(t^{s}í.ni).(ksìn)	*!			*
c. a.(t^{s}ɪ.nì).(ksín)		*	*!	
d. a.(t^{s}ì.ni).(ksín)	*!		*!	

3.5 Interim Ranking

The above partial rankings are summarized below.

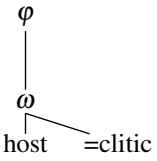
(32) WBP, FTBIN
NONINIT ≫ PARSE-σ, *LAPSE
FTTYPE=I ≫ FTTYPE=T
HEADLEFT ≫ HEADRIGHT

4. Clitic prosodization

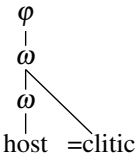
Peperkamp (1996) argues that clitic prosodization can take one of three different post-lexical strategies: incorporation into the prosodic word by restructuring, adjunction to the prosodic word, or incorporation into the phonological phrase. A language uniformly uses only one of the three strategies.

(33) **Prosodization of clitics**

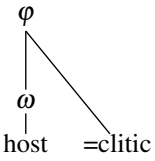
a. **ω-incorporation**



b. **ω-adjunction**



c. **φ-incorporation**



She illustrates this cross-linguistic parameterization using three Romance dialects: Lucanian, Neapolitan, and Standard Italian. All three of these languages have primary word stress on one of the final three syllables, but enclisis has different effects on stress assignment in each language. The first major split is between Lucanian on the one hand and Neapolitan with Standard Italian on the other. In some variants of Lucanian, enclisis always shifts main word stress onto the penult. Lucanian allows prosodic restructuring after enclisis, while the other two do not.

(34) **ω-incorporation (Lucanian)**

vínnə + lə	→	vənníllə	'sell it'
rá + mə + lə	→	rammíllə	'give me it'
mannátə + mə + lə	→	mannatəmíllə	'send me it'

In contrast, neither Neapolitan nor Standard Italian allow prosodic restructuring; the primary stress of the host remains unaffected under enclisis. Neapolitan and Standard Italian differ from one another in that Neapolitan clitics may carry a primary stress if they constitute two or more syllables, but the clitics in Standard Italian never have primary stress. Peperkamp (1996) attributes this difference to the different methods of clitic prosodization used in each language.

(35) **ω-adjunction (Neapolitan)**

fá	fállə	fattíllə	'do – do it – do it to yourself'
cóntə	cóntalə	cóntatíllə	'tell – tell it – tell yourself it'
pɛ́ttənə	pɛ́ttənalə	pɛ́ttinatíllə	'comb – comb them – comb them to yourself'

(36) **φ-incorporation (Standard Italian)**

dá	dámmi	dámmelo	'give – give me – give me it'
pórta	pórtami	pórtamelo	'bring – bring me – bring me it'
teléfona	teléfonami	teléfonamelo	'call – call me – call me about it'

The three methods of prosodization result from the factorial typology in Table 3. FAITHFULNESS is highly ranked in Neapolitan and Standard Italian. It dominates a different constraint in each language and creates a weakly layered structure. Neapolitan adjoins clitics to the word (ω), resulting in a recursive structure (violates NONRECURSIVITY); Standard Italian incorporates clitics into the phrase (φ), resulting in syllables/feet which are not contained in a word (violates

Table 3: Factorial typology of clitic prosodization

ω-incorporation:	NON-RECURSIVITY, EXHAUSTIVITY $\gg$ FAITHFULNESS
ω-adjunction:	EXHAUSTIVITY, FAITHFULNESS $\gg$ NON-RECURSIVITY
φ-incorporation:	NON-RECURSIVITY, FAITHFULNESS $\gg$ EXHAUSTIVITY

EXHAUSTIVITY). In contrast, Lucanian ranks FAITHFULNESS low to allow restructuring, but all words have a strictly layered prosodic structure (Selkirk 1984).

For any language, the method of clitic prosodization is encoded directly in the language's phonology via constraint rankings. Under this analysis, Blackfoot poses a problem. If each language uses only one type of prosodization, then why do possessor proclitics cause two different behaviors of accent?

5. Stress in possessed nominals

5.1 Possessor proclitics

Possession is signalled with the proclitics *nit-* '1', *kit-* '2', or *ot-* '3'. I adopt Bliss's (2011) analysis of possessor proclitics as complex syntactic objects consisting of two syntactic heads: Φ^0 *n-*/*k-*/*w-* (for first, second, and third persons, respectively) and D^0 *it-*. Except for *s*-initial stems, ignored here, proclitics are always followed by a vowel, which is either the stem-initial vowel, or an epenthetic *i* which breaks up consonant clusters. Thus the proclitic is always prosodized as a single light syllable, and the final *t* is parsed as the onset of the following syllable.

5.2 Uniform prosodization

Recall that the accent of some stems remains the same after proclisis, as in (2), while the accent of other stems does shift under proclisis, as in (3). The stems in (2) behave like Neapolitan or Standard Italian, while the stems in (3) behave like Lucanian. I will show that Blackfoot possessor proclitics prosodize uniformly and never trigger prosodic restructuring. Instead, the stress shift has to do with the extrametrical nature of the initial syllable.

First, the presence of accent shift is correlated with the weight of the first syllable of the base. Accent is unaffected if the first syllable is light, but accent shifts leftward to the first syllable of the base if it is heavy. The stems are printed here again with the first syllable of the base bolded.

(37) **Stems with no stress shift after proclisis**

anii-hsiN	'speech, talk'	a.nís.sɪn	**L** Ĥ H
atsiniki-hsiN	'story'	a.t^{s}ɪ.ní.ksɪn	**L** L Ĺ H
asimimmohki-hsiN	'gossip'	a.sɪ.mím.ʔo̥.^{h}ksɪn	**L** L Ĥ L H

(38) **Stems with stress shift after proclisis**

aakihtaa-n	‘packing’	aː.kɪ̥.^{h}táːn	**H** L Ĥ
awahkaa-n	‘playing’	aw.ʔḁ.^{h}káːn	**H** L Ĥ
a’po’taki-hsiN	‘work’	aʔ.púʔ.ta.ksɪn	**H** Ĥ L H
ka’kiaaki-hsiN	‘chopped wood’	kaʔ.kjáː.ksɪn	**H** Ĥ H

Note that examples with accent shift provide evidence that NONINIT(φ) is highly ranked, while NONINIT(ω) is not. Candidates (a) and (b) for *otáákihtaan* ‘his/her packing’ both satisfy NONINIT(φ). Candidate (b) additionally satisfies NONINIT(ω) by leaving the first syllable of the base unparsed to a foot, but this candidate cannot be optimal—the second syllable is accented, and since accent is the phonetic manifestation of stress, it must be footed, as in candidate (a). NONINIT(ω) must be ranked below PARSE-σ and *LAPSE in Blackfoot.

(39)

ot=[aakihtaa-n]	FTBN	HDL	NIN(φ)	*LPS	PS-σ	NIN(ω)
a. ☞ [o.[(táː).(kɪ̥.^{h}tàːn)]$_{\omega}$]$_{\varphi}$					*	*
b. [o.[taː.(kɪ̥.^{h}táːn)]$_{\omega}$]$_{\varphi}$				*	*!*	
c. [o.[(tàː).(kɪ̥.^{h}táːn)]$_{\omega}$]$_{\varphi}$		*!			*	*

In other words, after proclisis, the initial syllable of the base is no longer at the left edge of the phrase and is no longer required to be unparsed to a foot. The stems which begin with a heavy syllable add a foot to the left edge of the word because a heavy syllable can be parsed into a well-formed iamb. Accent shifts because it is the leftmost foot in the word, which makes it the head foot with primary stress and therefore accent. Candidate (c) in (39) added an iamb, but it fatally violates HEADLEFT because primary stress is not leftmost in the word.

Forms with a light initial syllable in the base, like *atsiníkssin* ‘his/her story’ in (40), cannot add prosodic structure under proclisis. If a foot is added, as for candidates (b) and (c), it will violate FTBIN because it is only monomoraic. The optimal candidate leaves that syllable unparsed to a syllable when it is light, even though this incurs more violations of *LAPSE and PARSE-σ.

(40)

ot=[atsiniki-hsin]	FTBN	HDL	NIN(φ)	*LPS	PS-σ	NIN(ω)
a. ☞ [o.[t^{s}ɪ.(t^{s}ɪ.ní).(ksìn)]$_{\omega}$]$_{\varphi}$				*	**	
b. [o.[(t^{s}í).(t^{s}ɪ.nì).(ksìn)]$_{\omega}$]$_{\varphi}$	*!				*	*
c. [o.[(t^{s}ì).(t^{s}ɪ.ní).(ksìn)]$_{\omega}$]$_{\varphi}$	*!	*			*	*

Stems with a light initial syllable also cannot use prosodic restructuring to parse that syllable into a foot. Both candidates below satisfy FTBIN and HEADLEFT, which have been left out of the tableau. Candidate (b) incurs no violations of *LAPSE and minimal violations of PARSE-σ, but fatally violates FAITHFULNESS. Candidate (a) is optimal because it does not restructure existing prosodic structure.

(41)

ot=[atsiniki-hsin]	FAITH	NIN(φ)	*LPS	PS-σ	NIN(ω)
a. ☞ [o.[tˢɪ.(tˢɪ.ní).(ksìn)]$_\omega$]$_\varphi$			*	**	
b. [o.[(tˢɪ.tˢí).(ni.ksìn)]$_\omega$]$_\varphi$	*!			**	

The Blackfoot data shows that Peperkamp's FAITHFULNESS constraint, for which 'both deletion and addition of structure are penalized' (Peperkamp 1996:117) needs to be split into multiple prosodic faithfulness constraints. While Blackfoot does not allow deletion or restructuring of existing structure, it does allow the addition of well-formed structure.

6. Conclusion

Blackfoot accent shows two behaviors under proclisis: for stems which begin with light syllables, accent remains in place, but for stems which begin with a heavy syllable, accent shifts to that syllable. The presence or absence of accent shift under proclisis was one of Peperkamp's (1996) diagnostics to tell whether a language allows prosodic restructuring under clisis or not. I showed that Blackfoot never allows restructuring under clisis. Accent shift has nothing to do with the prosodization of the proclitic and instead has to do with whether or not a well-formed iamb can be added to the prosodic word. Future research should test whether proclitics in Blackfoot are incorporated into the phrase or are adjoined to the prosodic word.

Peperkamp's analysis predicts that a language prosodizes clitics uniformly regardless of lexical class. Blackfoot proclitics can be used on verbs to denote verbal arguments, where they do not affect accent in the same manner as for nominalizations. The accent of a verb after proclisis always occurs on the second syllable of the phrase if it is not devoiced. This behavior is unexpected and is another subject for future research.

(42)

ot=anii-wa	's/he spoke'	o.táː.ni
nit=itsiniki	'I told a story'	nɪ.tˢí.tˢɪ.ni.kḭ
kit=a'po'taki	'you worked'	kɪ.táʔ.poʔ.ta.kḭ
ot=iyaakihtaa-wa	's/he packed'	o.tˢí.jaː.kɪ̥.ʰta

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