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Article *in* Acta Linguistica Academica · June 2021

DOI: 10.1556/2062.2021.00487

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Acta Linguistica Academica
DOI: 10.1556/2062.2021.00487

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Morphology-phonology interplay in lexical stress assignment: Ichishkiin Sɨnwit

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Received: March 24, 2021 • Accepted: May 17, 2021

ABSTRACT

This paper presents a novel analysis of the stress system of Ichishkiin Sɨnwit (Sahaptian). Ichishkiin Sɨnwit has been previously analyzed as a unique example of a stress system requiring a ranking of the Affix Faithfulness constraints over the Root Faithfulness constraints. I argue, however, that such idiosyncratic stress mechanisms are not necessary. Instead, I propose that accent assignment is *cyclic*: Underlying accent in the outermost derivational layer within the relevant domain wins. A central role in this analysis belongs to (i) the underlying specification of morphemes for accent, and to (ii) morpho-prosodic domains. The current proposal additionally offers an insight into the role of morpho-prosodic domains in the hiatus resolution strategies.

KEYWORDS

prosody, morphology, lexical stress, cyclic accent, prosodic domains, Ichishkiin Sɨnwit

1. INTRODUCTION

This paper develops a novel analysis of lexical stress in Ichishkiin Sɨnwit, a synthetic language of the Sahaptian branch of the Plateau Penutian family (Rigsby & Rude 1996; DeLancey &

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Golla 1997).[1] This paper addresses the issue of morphological vs. phonological effects in stress assignment in lexical stress systems, i.e. in stress systems where stress position is dependent on the underlying specification of some syllables as carrying accent (Revithiadou 1999; van der Hulst 2010; Bogomolets 2020). I use the term *accent* to refer to the underlying marking for prominence of some syllables within some morphemes in such languages, while *stress* is used to refer to the surface phonetic realization of the underlying marking (van der Hulst 2012). 'Typical' words in highly synthetic languages provide the necessary phonological length and morphological complexity to investigate the effects of both phonological and morphological factors in the calculation of lexical stress. Ichishkiin Sɨnwit (henceforth IS) is additionally interesting for a study of morphology-phonology interplay in lexical stress as it has been previously analyzed as a unique example of an Affix Controlled Accent language (Hargus & Beavert 2006; 2016), i.e. a system that requires a high ranking of the Affix Faithfulness constraints over the Root Faithfulness constraints (cited as such, for instance, in Urbanczyk 2011; Inkelas 2014, 28-29. on the notions of Root Controlled Accent and Affix Controlled Accent see Alderete 1999; 2001; Yates 2017, 41–71; Bogomolets 2020, 135–189). I argue, however, that IS does not warrant positing such idiosyncratic stress mechanisms. Instead, I propose that when an accent competition in IS arises, it is resolved *cyclically*:

(1) *Cyclic Accent* analysis of Ichishkiin Sɨnwit
Underlying accent in the outermost derivational layer within the relevant morpho-prosodic domain always wins.

The central role in the proposed analysis belongs to (i) the cyclic evaluation of the underlying marking of morphemes for accent, and to (ii) morpho-prosodic domains. I adopt the general architecture of the prosodic structure and the specific terms proposed in the recursion-based model of Ito & Mester (2013). It will be shown that the IS stress assignment differentiates between the domain comprising of the root and suffixes, which I term 'Minimal Prosodic Word' (ω^{min}), and prefixes, which are outside of that domain. Prefixes then are prosodically adjoined either at the recursive levels of the Prosodic Word – ω-prime, or at the Maximal Prosodic Word level (ω^{max}):

(2) $[\omega^{max}$ Prefix . . .$[\omega'$ Prefix $[\omega'$ Prefix $[\omega^{max}$ Root+Suffixes$]]]]$

I propose that cyclic accent has two passes in IS: it firstly applies within the ω^{min} domain, and, secondly, it applies iteratively to the prosodic adjuncts, i.e. to the prefixal portion of the word. Culminativity of stress is a property of both ω^{min} and ω^{max} in IS, and thus there is only a single

[1]The language is generally described as having three groups of dialects, following Jacobs (1931), Rigsby (1965), and Rigsby & Rude (1996): River, Northeast, and Northwest. Yakima (or Yakama), the focus of this analysis, belongs to the Northwest dialect. Beavert & Hargus (2009) report that the traditional native name *Ichishkiin (Sɨnwit)* is preferred by the community over the Salish term *Sahaptin*, therefore *Ichishkiin* is used throughout this paper. The language has previously been described as "synthetic to polysynthetic" (Jansen 2010; Beavert & Jansen 2011) or simply as polysynthetic (Matissen 2004). Provided wildly different criteria have been put forward as definitional for a 'polysynthetic' language depending on the theoretical preferences of the authors, I refrain from the term 'polysynthetic' and use a theoretically neutral descriptive term 'highly synthetic language' throughout this paper.

primary stress in every ω^{max}. The 'prefixal' pass of the cyclic accent mechanism is only evident if no stress is assigned within the ω^{min} pass. IS stress thus exhibits an instance of an asymmetry widely attested cross-linguistically and formalized by Moskal (2015) as the No Dominant Prefix Hypothesis (3):

(3) a. No Dominant Prefix Hypothesis (NDPH)
In lexical material, a (dominant) prefix cannot alter the accentual landscape of its root (and suffixes).

b. In a configuration **x** [ω^{min} **y**
x cannot alter (properties of) y, but
y can alter (properties of) x.[2] (adapted Moskal 2015, 263)

I show that stress patterns found in IS are exactly predicted by (3).[3]

The theoretical contribution of this paper is in showing that the cyclic nature of accent can be masked by other properties of the phonological system, specifically in the case of IS – the sensitivity of the language to morpho-prosodic domains. An important analytical contribution of the paper is that it captures all the stress generalizations in IS without invoking rules, constraints or constraint rankings which otherwise are uniquely needed for the IS stress patterns. An important typological implication of this paper is this: if it is possible to analyze the IS stress without invoking Affix Controlled Accent (Hargus & Beavert 2006), affix faithfulness is unattested as a property of lexical stress systems. This gap is not trivial for our understanding of the morpho-phonological information available to lexical stress calculation. Finally, the proposal put forward in this paper finds additional support in the insight it offers into some segmental processes in the language, namely the role of morpho-prosodic domains in the hiatus resolution strategies. This paper for the first time unifies the behavior of stress in Ichishkiin and the asymmetries observed in segmental processes between the ω^{min} domain and morphemes which are outside of that domain (prefixes).

I begin this paper by presenting all the relevant IS stress patterns in 2.1–2.2 and the previous analysis of these patterns in 2.3. I then argue in 3 that the observed stress patterns can be reanalyzed in a typologically less marked way with an account involving a cyclic accent assignment and the sensitivity of the phonological system to cross-linguistically attested morpho-prosodic domains. Section 4 provides a brief discussion of the additional evidence for the proposed prosodic structure, which comes from the hiatus resolution patterns in IS. Supporting patterns in segmental phonological processes found in a sister language Nez Perce are also discussed. Finally, some conclusions are drawn in Section 5.

[2]The label for the boundary has been changed here from PWord to ω^{min} for consistency with the terminology in the current paper.

[3]In the earlier version of this analysis, I employed a non-recursive model of the Prosodic Hierarchy where the Root+Suffixes domain was treated as a Prosodic Stem constituent. I have abandoned it in favor of the recursive model after a deeper investigation of the hiatus resolution patterns prompted by questions from two anonymous reviewers (see section 4 of this paper). An in-depth investigation of the precise nature and labeling of the prosodic constituents in question requires further research, however. On possible repertories of cross-linguistically supported prosodic constituents see Selkirk (1980, 1986); Vogel & Nespor (1997), and much of subsequent work; see also Downing & Kadenge (2020) for extensive evidence in support of the *PStem* constituent; Hyman (2008) for an analysis of the Root+Suffixes constituent vs. the prefixal domain across Bantu languages; Scheer (2008, 2010) and Vigário (2010) on recursivity in phonology (or lack thereof) and on the process-driven nature of the Prosodic Hierarchy.

2. RELEVANT DATA

Ichishkiin Sɨnwit, similarly to other highly synthetic languages, has a complex morphological structure with verbs exhibiting the highest degree of complexity. The structure of the verb in the language is the following (based on Rigsby & Rude 1996; Jansen 2010). The pre-root part of a verb can contain the morphemes in (4), where (4a) is the outermost prefix and (4d) is the prefix closest to the root:

(4) Ichishkiin verb prefixes
- a. Person agreement
- b. Preverbs with modal or adverbial meanings
- c. Causative prefix
- d. "Lexical prefix": body parts, instruments or motions

The prefixes in (4) can be followed either by a single root or by two roots. I refer the reader to Jansen (2010, 215–217) for more details on the combinatorics of the morphemes in (4). Verbal suffixes and their relative linear positions are listed in (5), with (5a) being the closest to the root and (5g) being the outermost:

(5) Ichishkiin verb suffixes
- a. Applicative
- b. Inchoative
- c. Desiderative/Purpose
- d. Aspect (Continuous/Imperfective, Perfective, Habitual)
- e. Direction/location of motion
- f. Tense/Imperative/Conditional
- g. Person+Number enclitic

Stress in IS is culminative and obligatory within a morphological word, and it is phonetically cued by raised pitch and greater intensity on the stressed syllable (Hargus & Beavert 2005). The position of stress is generally phonologically unpredictable. As shown in Hargus & Beavert (2006; 2016) and Jansen (2010), both roots and affixes (prefixes and suffixes) can be underlyingly accented. Stress is contrastive, and minimal pairs can be found for morphemes (6), simplex words (7), and morphologically complex words as well (8):[4]

(6) a. pa- '3PL.S'
b. ˈpa- 'INV'

(7) a. ˈakak 'Canada goose'
b. aˈkak 'your (maternal) uncle'

[4]The following abbreviations and symbols are used in the glosses: >: direction of action (e.g. 3>2: third person acting on second person), 1: first person, 2: second person, 3: third person, ABS: absolutive, AGT: agent, APPL: applicative, CAUS: causative, CISLOC: cislocative, DESID: desiderative, ERG: ergative, FUT: future, GEN: genitive, IMP: imperative, INC: incompletive, INSTR: instrumental, INV: inverse, IPFV: imperfective, NMLZ: nominalizer/nominalization, OBJ: object, PL: plural, REC: recent past, REFL: reflexive, S: subject, SG: singular; apostrophe (') marks glottalization.

(8) a. pa-ˈq'inu-na
3PL.S-see-PST
'They saw.'

b. ˈpa-q'inu-na
INV-see-PST
'S/he saw (someone).' (Jansen 2010, 29, 54)

2.1. Underlying accent in roots

Hargus & Beavert (2006; 2016) analyze all roots in IS as underlyingly accented, i.e. there are no words in the language which would not have an underlying accent. At the same time, they term some roots "strong accented roots" – these are the roots which combined with an underlyingly accented prefix retain their underlying accent (while the accent on the prefix deletes). The rest of the roots, termed "weak accented roots" by Hargus and Beavert, do not retain their accent in this case and the prefix surfaces with the primary stress. This also means that no default stress rule has been proposed for the language since it has been assumed that all words in the language have at least one underlying accent. In contrast, I propose that the "weak accented roots" are in fact underlyingly unaccented while the "strong roots" carry an underlying accent. Data presented in Hargus & Beavert (2006; 2016) as well as generalizations in Jansen (2010) suggest that penultimate stress within the root can be analyzed as default in Ichishkiin. All "weak accented roots" of two or more syllables in Hargus & Beavert (2006) carry stress on the penultimate syllable and lose their stress in the presence of an underlyingly accented affix;[5] the "strong accented roots" may carry stress on any syllable and they retain their stress in the presence of an underlyingly accented prefix (see Section 2.2 for details on accent competition patterns). Thus, the roots which I term *unaccented* ("weak accented" in the terminology of Hargus & Beavert 2006; Jansen 2010) only carry stress if combined with unaccented affixes, consider for example an unaccented root *tkʷata* 'to eat':[6]

[5]I have been able to find a single exception to this generalization in Jansen (2010), i.e. a "weak" accented root which consistently surfaces with an accent on a non-penultimate syllable. The root *ajik* 'sit' appears to behave as a "weak accented" (or unaccented) root, but it carries stress on the final syllable when affixed with unaccented morphemes; the stressed syllable is bold-faced in the example (i) below:

(i) iʔ-aj**ˈik**-ʃa
3SG-sit-IPFV
'S/he is sitting.' (adapted from Jansen 2010, 62)

A full exploration of the origins of this exception is beyond the scope of the current paper. However, a possible route for such an exploration could be investigating stress behaviors of the syllables with diphthongs as the nucleus followed by an onsetless syllable (as in the root in question). Such sequences produce a number of irregularities involving resyllabification and variable stress patterns (see, for instance, Jansen 2010, 60–63).

[6]Throughout this paper, underlying accents are marked with the IPA stress diacritic in the second line of the gloss. The first line of the gloss presents the surface stress position.

(9) a. ˈtkʷata-t
tkʷata-t
eat-NMLZ
'eating'

b. ˈmaj-tkʷata-t
ˈmaj-tkʷata-t
morning-eat-NMLZ
'eating breakfast'

c. maj-tkʷata-ˈɬa
ˈmaj-tkʷata-ˈɬa
morning-eat-AGT
'breakfast eater' (adapted from Hargus & Beavert 2016, eg. (2))

In (9a), stress surfaces on the penultimate syllable of the root (i.e. penultimate default). However, when combined with an accented prefix, the root loses its stress, and the underlying accent of the prefix surfaces as stress (9b). In (9c) we observe that in the presence of both – an underlyingly accented prefix and an underlyingly accented suffix, the underlying accent of the suffix is realized as primary stress.[7] I do not address the default stress pattern further in this paper, as the focus here is on the cases of stress competition such as (9c), but see Bogomolets (2020, 102–106) for a possible analysis.

2.2. Stress competition patterns

Let us consider the patterns of accent competition in more detail. All generalizations presented in this section come from the previous descriptions of the stress system of IS (see Hargus & Beavert 2005, 2006, 2016; Jansen 2010). When a word contains only one underlying accent, that accent is realized as stress:

(10) a. ˈpaʔatɬ'awiʃa
ˈpa-ʔatɬ'awi-ʃa
INV-beg-IPFV
'S/he's begging her/him.'

b. wanˈpawaas
wanp-ˈawaas
sing.medicine.song-INSTR
'musical instrument' (adapted from Hargus & Beavert 2006, 180–1)[8]

[7]It should be noted that, if found to be on the right track, the reanalysis of the "weak accented" roots as unaccented proposed here would produce a less marked pattern typologically. However, the overall analysis of the stress system of IS developed in the remaining part of this paper is not contingent on this reanalysis and should hold regardless of it with a possible need to introduce additional diacritic marking for the "weak accented" roots if these are found to be a true phonological category.

[8]Note that all descriptions of the language distinguish between glottal stops, transcribed as /ʔ/ and glottalized consonants transcribed as a consonant followed by an apostrophe, e.g. /ɬ'/ (Rigsby & Rude 1999; Hargus & Beavert 2006; Jansen 2010).

In (10a), only the inverse prefix ˈ*pa-* carries an underlying accent while the suffix is underlyingly unaccented, and the root, in the terms proposed here, is underlyingly unaccented as well. The prefix thus realizes its underlying accent as primary stress. Similarly, in (10b), only the instrumental suffix -ˈ*awaas* has an accent on the first syllable, which receives primary stress.

Data important for the present discussion comes from morphologically complex words composed of more than one morpheme carrying an underlying accent. When multiple underlyingly accented prefixes are combined with an unaccented root, the leftmost (outermost) accented prefix realizes its accent as stress. Consider (11) where there are two prefixes marked for underlying accent, and the leftmost one is stressed:

(11) Multiple accented prefixes
ˈpaʃapawinata
ˈpa-ʃaˈpa-wina-ta
INV-CAUS-go-FUT
'S/he will let her/him go.' (adapted from Jansen 2010, 54)

When multiple underlyingly accented suffixes are combined with an unaccented root, the rightmost (outermost) one realizes its accent as stress:

(12) Multiple accented suffixes
ʃjakɬaanˈmi
ʃjak-ˈɬa-anˈmi
scout-AGT-GEN
'of a scout' (adapted from Jansen 2010, 55)

Finally, when an unaccented root is combined with one or more underlyingly accented suffixes *and* one or more underlyingly accented prefixes, the rightmost underlyingly accented suffix is always stressed:

(13) Accented suffixes and accented prefixes

a. pinaq'inuˈt'awaas
piˈna-q'inu-t'-ˈawaas
REFL-see-NMLZ-INSTR
'mirror, window' (adapted from Jansen 2010, 54)

b. hawˈlaak ʃapaʃukʷaaˈɬa
hawˈlaak ʃaˈpa-ʃukʷaa-ˈɬa
empty.space CAUS-know-AGT
'prophet' (adapted from Hargus & Beavert 2006, 181)

Both forms in (13) contain an underlyingly accented prefix and an underlyingly accented suffix, and the accent of the suffix is realized as stress.

Let us now consider wordforms with underlyingly accented roots with an example of the accented root *ʔiˈwaχi* 'to wait'. In words containing an accented root and one or more underlyingly accented prefixes, the root accent always wins:

(14) Accented root and accented prefix

a. paʔiˈwaχim
ˈpa-ʔiˈwaχi-m
INV-wait-CISLOC
'Wait for me.'

b. ʔaʃapaʔiˈwaχik
ˈʔa-ʃaˈpa-ʔiˈwaχi-k
ABS-CAUS-wait-2SG.IMP
'Make her wait for him.' (adapted from Hargus & Beavert 2006, 180)

In (14a), the accented root is prefixed with a single underlyingly accented prefix, while in (14b), the same accented root is prefixed with two accented prefixes. In both cases, the root receives the primary stress, while accents in the prefixes are deleted.

In contrast to (14), in words containing an accented root and one or more underlyingly accented suffixes, the root does not win, rather the rightmost (outermost) accented suffix realizes its accent as stress:

(15) Accented root and accented suffix

a. ʔiwaχiˈɬa
ʔiˈwaχi-ˈɬa
wait-AGT
'one who waits'

b. ʔiwaχitpaˈma
ʔiˈwaχi-t-paˈma
wait-NMLZ-THING.FOR
'a place for waiting (waiting room, bus stop etc.)'

c. ʔiwaχitpamaˈnmi
ʔiˈwaχi-t-paˈma-ˈnmi
wait-NMLZ-THING.FOR-GEN
'of a waiting place' (adapted from Hargus & Beavert 2006, 180)

In (15a–b), the underlyingly accented root is affixed with a single accented suffix, while in (15c), the same accented root is affixed with two accented suffixes. In both cases, the root loses its accent and the primary stress surfaces on the outermost accented suffix. The patterns of accent competition in IS are summarized below in (16):

(16) P-P-**R**-S-S
P-P-ˈ**R**-S-S
ˈP-ˈP-ˈ**R**-S-S
ˈ**P**-ˈP-R-S-S
ˈP-ˈP-ˈR-ˈS-ˈ**S**

Notation used: P – prefix, R – root, S – suffix, ˈ – underlying accent; the winning morpheme which receives primary stress is bold-faced and underlined, e.g. **S**

2.3. Previous analysis

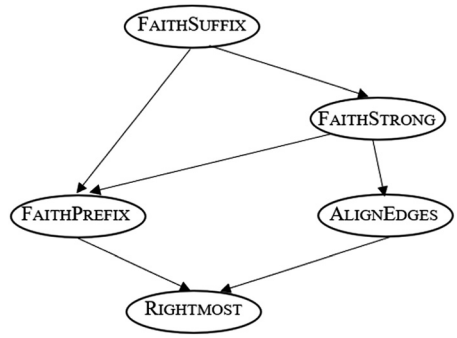
Based on the data presented above, Hargus & Beavert (2005; 2006; 2016) and Jansen (2010) came to the descriptive hierarchy in stress assignment in (17), stated in their terms in (17a) and restated in the terms used in the current paper in (17b):

(17) a. accented suffixes > strong roots > accented prefixes > weak roots
b. accented suffixes > accented roots > accented prefixes > unaccented roots

In the only existing formal analysis of the Ichishkiin Sɨnwit stress system, Hargus & Beavert (2006) propose to account for the stress patterns with the set of constraints in (18) and the constraint ranking in (19):

(18) Set of constraints (Hargus & Beavert 2006, 182)
FaithSuffix = Preserve accent of accented suffixes.
FaithStrong = Preserve accent of "strong" roots.
FaithPrefix = Preserve accent of accented prefixes.
AlignEdges = The edges of level 0 of a prosodic word, i.e., both the initial and the final syllable, be aligned with a level 1 grid mark. One violation is incurred if either the initial or the final syllable does not carry a level 1 grid mark, and two violations are incurred if both the initial and the final syllables do not have a level 1 grid mark (Hargus & Beavert 2006, 182, following Gordon 2002, 497).
Rightmost = Align (*, R, Pwd, R), where * represents accent.

(19) Hargus and Beavert (2006, 183): OTSoft[9]-generated ranking in a Hasse diagram



[9]Hayes et al. (2003)

The ranking of the constraints in (18) and the Ichishkiin case in general became a unique example of a stress system that seemingly requires a high ranking of the Affix Faithfulness constraints over the Root Faithfulness constraints (it is cited as such, for instance, in Urbanczyk 2011; Inkelas 2014, 28-29). It is worth noting that although the ranking of FaithSuffix >> FaithStrong >> FaithPrefix derives some part of the accent competition patterns presented in 2.2, it is not immediately clear what role AlignEdges would play in resolving the competition between two accented affixes if neither of them aligns with the initial or the final syllable of a word. On the other hand, while the application of the Rightmost constraint would favor the rightmost of the lexical accents within a prosodic word, which would produce the correct winner of the competition when accented suffixes are involved, it would in fact produce an incorrect outcome in a competition between underlyingly accented prefixes. In cases of competition between underlyingly accented prefixes in the absence of other underlyingly accented morphemes in the word, AlignEdges would be responsible for the leftmost prefix winning only if the accented syllable of the leftmost prefix aligns with the initial syllable of the prosodic word. However, if the accented syllable does not align with the initial syllable of a prosodic word, the application of the Rightmost constraint will then favor the rightmost of the competing accents, contrary to the empirical facts, consider an example below:

(20)

pi'nat͡ʃaχɨlpanita	tpɨʃ
pi'na-'t͡ʃa-χɨlp-ani-ta	tpɨʃ
REFL.SG-CAUS-open-APPL-FUT	face
'S/he will open up her/his face.'	(adapted from Jansen 2010, 213)

In (20), two prefixes carry an underlying accent – the causative prefix *'t͡ʃa-* is underlyingly accented on the only syllable while the singular reflexive prefix *pi'na-* carries an underlying accent on the second syllable. In accordance with the generalizations summarized in (16), in a competition between two underlyingly accented prefixes, the underlying accent of the leftmost prefix wins, thus resulting in the primary stress on the second syllable in the verb in (20). Deletion of either of the two underlying accents will result in equal violations of the FaithPrefix constraint. Neither of the two accents align with the initial syllable of the word, thus AlignEdges would not be helpful in resolving the competition,[10] which means that the lowest ranked Rightmost constraint should presumably produce the correct output. This is, however, clearly not the case since in all cases of competition between two underlyingly accented prefixes, the leftmost wins, as it does in (20). The ranking of the constraints in (19) thus makes an incorrect prediction for words with multiple accented prefixes and no underlying accent on other morphemes.

Additionally, the cross-linguistic validity of the constraints in (18) and their respective ranking in (19) is not clear. In the next section, I argue that no such idiosyncratic constraint ranking is necessary to account for the Ichishkiin Sɨnwit stress patterns. Instead, I will argue that

[10]As pointed out by an anonymous reviewer, a system which allows a gradient constraint violation could potentially resolve this issue and result in the AlignEdges picking out the leftmost prefix in examples like (15).

stress in the language is assigned *cyclically* and is sensitive to cross-linguistically valid differences between morpho-prosodic domains. The proposed analysis has an improved empirical coverage over the previous account while also minimizing the use of language-specific mechanisms disprefered in a universalist linguistic paradigm. Additionally, the proposed analysis unifies the asymmetries observed between prefixes and suffixes in their prosodic behavior and the asymmetries between their behavior in other phonological processes in IS as well as in the Sahaptian languages more generally.

3. ICHISHKIIN SɬNWIT STRESS: REANALYSIS

The proposed analysis of stress in IS is twofold. Firstly, I propose that accent is assigned *cyclically,* i.e. accent in the outermost derivational layer within a prosodic domain wins. I will show that this straightforwardly accounts for the '*outermost* accent wins' patterns in both suffixes and prefixes (11)–(12). Secondly, I propose that the stress algorithm in the language distinguishes between the domain comprising of the root and suffixes (ω^{min}) on one hand, and prefixes which are outside of that domain on the other hand. Prefixes are prosodically peripheral and are adjoined either at the recursive levels of the Prosodic Word – ω-prime, or at the Maximal Prosodic Word level (ω^{max}) as shown in (3) above. I propose that cyclic accent has two passes in IS: it firstly applies within the ω^{min} domain, and, secondly, it applies iteratively to the prosodic adjuncts, i.e. to the prefixal portion of the word. Consider a sample structure of a morphologically complex word in (21) below:

(21) [ω^{max} ʃapa- [ω^{min} ʃukʷaa-ˈɬa]]
ʃaˈpa-ʃukʷaa-ˈɬa
CAUS-know-AGT
'prophet' (example adapted from Hargus & Beavert 2006, 181)

Descriptively, what we observe is that stress in the ω^{min} is preferred over the stress outside of the ω^{min}, i.e. in the prefixes. Differences in phonological behavior between the Root+Suffixes domain on one hand and prefixes on the other hand have been described and analyzed for multiple unrelated languages (see for example Bobaljik & Wurmbrand 2001 for Itelmen; Booij & Rubach 1984 for Polish; Hyman 2008 for Bantu languages; Kim 2015 for Huave; Rice 1989 for Slave; Vogel 1989 for Hungarian; Zuraw et al. 2014 for Samoan; see also Downing & Kadenge 2020 for an overview). Some examples of synthetic languages treating the Root+Suffixes domain and the prefixes differently with respect to stress assignment include Tahltan (Athabaskan; Bob & Alderete 2005), Witsuwit'en (Athabaskan; Hargus 2005), Moses-Columbian (Salish; Czaykowska-Higgins 1993), and Plains Cree (Algonquian; Russell 1999), to name a few. I thus propose that stress assignment in Ichishkiin Sɬnwit falls within a widely attested pattern.

A number of prominent approaches to modeling such an asymmetry exist. In terms of the theory of Prosodic Hierarchy (Selkirk 1980, 1986; Vogel & Nespor 1997), the special phonological behavior of prefixes has been analyzed by postulating that prefixes form an independent prosodic domain, i.e. a prosodic boundary is inserted at the left edge of a root

separating prefixes from the Root+Suffixes domain.[11] The account pursued in this paper follows the general line of such approaches and connects it to the proposals which have aimed to find morphological origins for phonologically manifested prosodic boundaries (e.g. Newell & Piggott 2014; Moskal 2015). Specifically, I will show that the IS prefix-ω^{min} asymmetry in stress assignment patterns exactly as predicted by the *No Dominant Prefix Hypothesis* put forward in Moskal (2015).

In the remaining part of this section, I first introduce the assumptions behind the cyclic accent analysis in 3.1. I then address the stress competition patterns within the ω^{min} domain in 3.2 and outside of that domain in 3.3. Finally, the prefix-ω^{min} competition is analyzed in 3.4.

3.1. Cyclic stress assignment: assumptions

In the following sections I aim to show that it is possible to analyze the conflicting directionalities of stress assignment in the root+suffixes portion of the word and in the prefixal part of the word as stemming from the cyclic nature of stress in IS. A number of preliminary assumptions are discussed below.

Firstly, I assume that phonological cyclicity is diacritical (see Schwayder 2015, 48–72 for a summary of alternatives). Cyclic morphemes induce a new metrical plane, marked as 'Cycle *n*' in the representations below. The cyclic analysis proposed in this paper is formalized in derivational terms. In the derivations throughout this paper, lexical accents are marked with an 'x' on the stress grid (following the representation of lexical stress in van der Hulst 1999; 2010 on the basis of the derivational tradition established in Halle & Vergnaud 1987; Halle & Idsardi 1995 a.o.).

Secondly, I assume that all roots are cyclic. Such an assumption is parallel to the proposals in the early days of Lexical Phonology where roots would always project a cycle (cf. Kiparsky 1982; Booij & Rubach 1984; the inherently cyclic nature of roots/stems is also assumed in Halle & Vergnaud 1987; Halle et al. 1991). Roots thus always induce a new prosodic cycle. If a root has an underlying accent, it is projected onto the grid in accordance with the stress rules active in the language (see (23) below).

Thirdly, underlyingly accented affixes are cyclic for the purpose of lexical accent assignment: they induce a new prosodic cycle, project a grid mark in that cycle, and trigger the application of the *Stress Erasure* (22). Affixes which do not carry an underlying accent are non-cyclic for the purpose of lexical accent assignment. I assume that morphemes which are not marked as cyclic are inactive but visible to the cyclic phonology (Halle & Nevins 2009), unless evidence to the contrary can be found in the language.[12] Their inactive status with respect to the cyclic accent assignment means that they do not induce a new cycle, i.e. they do not trigger a construction of a

[11] See also Peperkamp (1997) for an account of such prosodic structures in the framework of Optimality Theory. Alternatively, in the framework of Lexical Phonology, the asymmetries in stress behavior between prefixes and suffixes could be derived through the appropriate ordering of suffixation, stress rules, and prefixation (Kiparsky 1983; see also Booij & Rubach 1984).

[12] The visibility of the phonological (segmental) shape of these morphemes to the stress mechanism ensures that they potentially can bear stress assigned by the neighboring cyclic morphemes: for instance, if a lexical accent language has pre-accenting morphemes. The visibility of underlyingly unaccented morphemes to the stress mechanism appears to be parametric. See, for instance, Bogomolets (2020, 169–73) for a discussion of the behavior of unaccented morphemes in a Uto-Aztecan language Choguita Rarámuri, where underlyingly unaccented affixes are not only inactive in the accent assignment mechanism, but are also necessarily invisible to it.

new metrical plane, nor can they project a grid mark which could be interpreted as stress or trigger the application of *Stress Erasure* (22). Noncyclic affixes are represented on the same metrical plane as their base.

Finally, the cyclic stress derivation is subject to the standardly assumed *Stress Erasure Convention* (Halle 1990; Halle et al. 1991):

(22) *Stress Erasure Convention (SEC)*
At the beginning of each pass through cyclic phonology, erase all metrical structure and stresses assigned on previous cycles.

Crucially, it will be shown that (22) must apply within a domain (the ω^{min} domain or the prefixal domain), but its application is blocked between the prosodic adjuncts (prefixes) and the ω^{min} domain (root+suffixes). In 3.4, I discuss this as a predicted outcome of the No Dominant Prefix Hypothesis (Moskal 2015), which accounts for the prefix-suffix asymmetry in stress assignment in IS.

3.2. Stress competition within the ω^{min} domain

Let us begin the analysis of the Ichishkiin Sɨnwit accent competition patterns with an account of the stress assignment in words containing an underlyingly accented root and suffix(es), but no underlyingly accented prefixes. Recall, in all such cases, primary stress moves rightwards with the addition of each new underlyingly accented suffix, as exemplified by (12) in 2.2. These data are straightforwardly accounted for if accent assignment is *cyclic* in Ichishkiin, i.e. accent assignment must reapply iteratively from the most embedded elements to the least embedded elements within a morpho-prosodic domain. This generalization is implemented by the simple rules in (23):

(23) a. Project a mark on line 0 for every element capable of bearing a stress.
b. Project a mark on line 1 for underlying accent.
c. Assign main stress to the grid mark on line 1 by promoting it to line 2.

Note that stress rules in (23) do not make any reference to foot structure: a foot as a prosodic constituent is not assumed to be universal here (following much of recent scholarship, e.g. van der Hulst 1996, 2010, 2012; Özçelik 2019). IS does not provide any evidence for positing the foot structure: (i) its stress assignment is not metrical, but is dependent on the unpredictable morpheme-specific lexical marking, and (ii) there is no evidence of rhythm of any kind in the language (see Hargus & Beavert 2016).[13] Thus, I assume that the foot is not part of the Prosodic Hierarchy organization in the language.[14]

[13]The regular penultimate default stress within the root which I propose, if confirmed, might require introducing the foot structure: specifically, it may require a formation of a single (non-iterative) trochaic foot aligned to the right edge of the root domain. Further research is required, however, to evaluate this possibility.

[14]This is in line with the recent proposals in the Prosodic Hierarchy studies regarding an 'emergent' rather than 'universal' status of prosodic constituents (e.g. Scheer 2008; Schiering et al. 2010).

Consider the derivation in (24a–b) below where an underlyingly accented root is in competition with an underlyingly accented suffix in a complex verb, and the derivation in (25a–b) where the same root is in competition with two underlyingly accented suffixes in a deverbal noun. Square brackets superscripted with a 'c' in the derivations below represent cyclic constituents, while non-cyclic constituents are marked with a superscript 'n'. These brackets do not represent true phonological objects and are included only for clarity of exposition.

(24) a. ʔiwaχiˈjatʼaʃa
ʔiˈwaχi-ˈatʼa-ʃa
wait-DESID-IPFV
'S/he wants to wait.' (adapted from Hargus & Beavert 2006, 181)

b. [[[ʔiˈwaχi]^{c} ˈatʼa]^{c}ʃa]^{n}

Line 0	x x x	Cycle 1: 23a
Line 1	x	23b
Line 2	x	23c
	ʔiwaχi ˈatʼa ʃa	Cycle 2: SEC
Line 0	x x x x x x	23a
Line 1	x	23b
Line 2	x	23c
	ʔiwaχiˈ**ja**tʼaʃa	Output stress

(25) a. ʔiwaχitpamaˈnmi
ʔiˈwaχi-t-paˈma-ˈnmi
wait-NMLZ-THING.FOR-GEN
'of a waiting place' (adapted from Hargus & Beavert 2006, 180)

b. [[[[ʔiˈwaχi]^{c} t]^{n} paˈma]^{c} ˈnmi]^{c}

Line 0	x x x	Cycle 1: 23a
Line 1	x	23b
Line 2	x	23c
	ʔiwaχi t paˈma	Cycle 2: SEC
Line 0	x x x x x	23a
Line 1	x	23b
Line 2	x	23c
	ʔiwaχi t pama ˈnmi	Cycle 3: SEC
Line 0	x x x x x x	23a
Line 1	x	23b
Line 2	x	23c
	ʔiwaχitpamaˈ**nmi**	Output stress

In Ichishkiin Sɨnwit, in words where there is a competition between an underlying accent in the root and underlying accents in the suffixes, i.e. a competition within the ω^{min} constituent, the cyclic application of accent assignment thus produces a primary stress in the outermost derivational layer, as shown in (24)–(25), i.e. the outermost suffix always wins.

3.3. Stress competition between prefixes

The pattern of accent competition involving underlying accent in the prefixes is straightforwardly accounted for with the same *Cyclic Accent* mechanism as the competition pattern within the ω^{min} discussed above. Recall from 2.2, if there is no accent in the ω^{min}, but multiple prefixes carry an underlying accent, the leftmost (the outermost) of the underlying accents is realized as primary stress. I propose that accent assignment applies iteratively in the pre-stem portion of the word as well. Consider the form below with two underlyingly accented prefixes but no underlying accent in the ω^{min} constituent:

(26) a. ˈpaʃapawinata
ˈpa-ʃaˈpa-wina-ta
INV-CAUS-go-FUT
'S/he will let her/him go.' (adapted from Jansen 2010, 54)

b. [ˈpa [ʃaˈpa [[wina]^{c} ta]^{n}]^{c}]^{c}

Line 0	x x x	Cycle 1: 23a
Line 1		23b: N/A
Line 2		23c: N/A
	ʃaˈpa wina ta	Cycle 2
Line 0	x x x x x	23a
Line 1	x	23b
Line 2	x	23c
	ˈpa ʃapa wina ta	Cycle 3: SEC
Line 0	x x x x x x	23a
Line 1	x	23b
Line 2	x	23c
	ˈ**pa**ʃapawinata	Output stress

As predicted by the *Cyclic Accent* analysis (1), primary stress in forms like (26) is assigned in the outermost derivational layer in the prosodic domain, i.e. in the outermost underlyingly accented prefix.

3.4. Stress competition between prefixes and ω^{min}

The patterns of accent competition discussed thus far can be straightforwardly analyzed as *cyclic,* i.e. accent in the outermost derivational layer within a domain wins. However, recall the pattern of competition which arises if both, underlying accents in the prefixes and underlying accents in the ω^{min} are found within a single word (16). In these cases, the underlying accents in the prefixes never win in Ichishkiin Sɨnwit. This is a puzzling pattern with respect to the predictions of the *Cyclic Accent* analysis, as we might expect that at least in some cases prefixes might be structurally higher than suffixes (cf. (4)–(5)). Thus, if the full wordform is a domain of stress assignment and competition, then by the application of *Cyclic Accent* (1), we should expect the winning stress to belong to the outermost accented suffix in the configuration in (27a), but to an accented prefix in the configuration in (27b). Brackets in (27) represent morphological constituency:

(27) a. [ˈ**Prefix**-[[Root]-Suffix]]
b. [[Prefix-[Root]]-ˈ**Suffix**]

I propose that the results of accent competition observed in Ichishkiin Sɨnwit are influenced by the sensitivity of stress assignment to ω^{max}-internal prosodic domain boundaries. Thus, although the accent mechanism is the same in Ichishkiin Sɨnwit and in languages which follow the predictions of the *Cyclic Accent* analysis in (27) – i.e. *cyclic*, the surface effects differ because of the difference in the prosodic constituents relevant for stress assignment.[15] Specifically, in Ichishkiin, cyclic accent in the prefixes can only be assigned if no stress has been assigned within the ω^{min}. In the remaining part of this section, I address this asymmetry between the domain of ω^{min} and prefixes, which are outside of that domain.

3.4.1. Prefixes are prosodically peripheral to ω^{min}. So far, I have proposed that (i) accent assignment in IS is sensitive to ω^{max}-internal domains, and that (ii) accent assignment is *cyclic* in IS within the ω^{max}-internal domains. We have also observed an asymmetry in stress assignment between the ω^{min} domain and the prefixal part of the Prosodic Word whereby an accent can be assigned outside of the ω^{min} domain only if no accent has been assigned within the ω^{min} domain. In other words, prefixes are unable to alter the accent placement derived in the ω^{min}.

This asymmetry may appear to violate the predictions of the *Cyclic Accent* analysis proposed in this paper. However, this asymmetry is exactly what is predicted by the *No Dominant Prefix Hypothesis* (Moskal 2015). Working in the framework of Distributed Morphology (Halle & Marantz 1993), Moskal proposes that a prosodic boundary is induced by the left edge of the innermost *Spell-Out Domain* defined by a category-defining node in the morphological structure. This boundary is argued to be situated between the prefixes and the root in words of lexical categories since the root's left edge coincides in this case with the left edge of the complement of a category-defining node (cf. Edge Alignment Theory, Selkirk 1986; Downing 2010; Cheng & Downing 2012; see also Scheer 2010, 238–246 and throughout the book for a discussion of the special status of the left edge of roots and words):

(28) Morpho-Prosodic boundary between root and prefixes
The left edge of prosodic words aligns with the left edge of the Spell-Out Domain:
$[_{PWord}$ **Root** Moskal (2015, 260)

Note that Moskal (2015) associates the relevant prosodic boundary with a *Prosodic Word* boundary rather than a ω^{min} boundary (28), but this terminological difference is not important for the current discussion. In the terms used in the current paper, (28) can be restated as in (29):

[15]One such language discussed in the literature is Chamorro (Austronesian; Chung 1983), where the underlying accent in a prefix can only win, i.e. be realized as primary stress, if the prefix is the outermost derivational layer (see also Bjorkman & Dunbar 2016 for the limitations on the cyclic analysis of Chamorro stress).

(29) Morpho-Prosodic boundary between ω^{min} and prefixes
The left edge of ω^{min} aligns with the left edge of the Spell-Out Domain:
[ω^{min} **Root**

The proposed morpho-prosodic boundary is hypothesized to intervene between the prefixal domain and the ω^{min} domain in the following way specifically with respect to accent assignment:

(30) a. No Dominant Prefix Hypothesis (NDPH)
In lexical material, a (dominant) prefix cannot alter the accentual landscape of its root (and suffixes).

b. In a configuration **x** [ω^{min} **y**
x cannot alter (properties of) y, but
y can alter (properties of) x. (adapted Moskal 2015, 263)[16]

Moskal (2015) provides ample cross-linguistic evidence in support of (29) and (30) for both segmental and prosodic processes.[17] Crucially, for the accentual patterns, Moskal notes that NDPH applies only to languages with the *deletive accent resolution* while it is not applicable to the languages with the *additive accent resolution*. In a deletive resolution system, in a competition of two lexical accents, one accent is demoted (deleted), consider (31):

(31)
x	x		x	
σ	σ	→	σ	σ

In (31), the deletive resolution is exemplified – when two accents are present in a domain, the resolution may be to delete the rightmost of the two accents thus resulting in the leftmost accent carrying primary stress (or the other way around in a language where the rightmost of the competing accents wins). The surface hallmark of *deletive accent* systems is the lack of phonetically or phonologically detectable secondary stress since all but one accents are deleted.

In additive resolution systems, in a configuration of two competing lexical accents, one of the two accents is promoted:

(32)
			x	
x	x		x	x
σ	σ	→	σ	σ

In (32), the additive resolution is shown – when two accents are present within a domain, the resolution may be to promote one of them (the leftmost one in (32)) by adding a grid mark. This again results in primary stress on the leftmost syllable. In additive accent systems, in

[16]The label for the boundary has been changed here from PWord to ω^{min} for consistency with the terminology in the current paper (cf. (28) vs. (29)).

[17]See also Hyman (2008) for many examples of the asymmetries in the direction of application of phonological processes cross-linguistically following the same pattern.

contrast to the deletive accent systems, secondary stress is detectable through phonetic or phonological cues. We can illustrate the two strategies as applying to competing accents in prefixes and the root in a hypothetical case where the prefix accent wins over the accent in the root:

(33) a. Deletive resolution

```
 x     x            x
[prefix [root]] → [prefix [root]]
```

b. Additive resolution

```
                    x
 x     x            x     x
[prefix [root]] → [prefix [root]]
```

Moskal (2015) notes that both strategies (31)–(32) alter the representations as a whole, but only the deletive resolution (33a) alters the existing material in the root by removing a grid mark, which NDPH predicts to be impossible (30). Thus, NDPH applies to languages with the deletive resolution, but not to languages with the additive resolution. Ichishkiin Sinwit does not exhibit any evidence of being an additive system. On the contrary, it can be argued that it employs the deletive strategy which is evidenced by the fact that there is no secondary stress in the language (Hargus & Beavert 2016), suggesting that underlying accents which do not receive the primary stress get deleted.[18] It is thus expected that predictions of NDPH (30) hold for the Ichishkiin Sinwit data, i.e. the accent competition between prefixes and the ω^{min} can never result in a deletion of the accent belonging to the ω^{min}. Thus, accents in the prefixes will always lose to the accents in the root and in the suffixes.[19] The asymmetry between the prefixal accent and the accent in the ω^{min} in IS thus follows a cross-linguistically observed pattern which can be formally derived from the presence of a morpho-prosodic boundary between the word-internal domains.

To summarize, in the stress assignment patterns, we find two pieces of evidence for the sensitivity of the IS phonological system to prosodic domains. Firstly, the cyclic accent assignment behaves as though there are two domains: accent is assigned cyclically within the root+suffixes portion of the word, but the cyclic accent mechanism "restarts" in the prefixal part of the word in the absence of accent elsewhere. Secondly, the stress assignment asymmetry between prefixes on one hand and root+suffixes on the other hand suggests a domain boundary. If the analysis proposed here is on the right track, we might, however, expect that the morpho-prosodic boundary (29) and the asymmetry it creates between the prosodic domains would have an effect not only on accent assignment but on other properties of the phonological system as well. The next section of this paper summarizes evidence from segmental phonological processes for the proposed domain boundary. It will be shown that the prefixes-ω^{min} boundary has its effects on segmental phonology not only in IS but in its sister language – Nez Perce – as well.

[18]This property of the system is formalized through the application of the *Stress Erasure Convention (22)* in the cyclic stress derivations throughout this paper.

[19]See Bogomolets (2020, 113–133) for a comparative discussion of accent competition patterns in the closely related Nez Perce which exhibits an additive resolution system.

4. PROSODIC DOMAINS AND SEGMENTAL PHONOLOGY

The analysis of the lexical accent system of Ichishkiin developed in this paper crucially relies on the proposal that the lexical accent system refers to a word-internal prosodic boundary, which, I have proposed following much of cross-linguistic work, coincides with the left edge of the root (i.e. the left edge of the ω^{min} domain in (2)). If this constituent and the prosodic boundary it introduces are active in the language, we might expect to see their effects on other phonological phenomena as well. This is exactly what we find in Ichishkiin and in its only sister-language within the Sahaptian branch, Nez Perce: segmental process across the family treat the ω^{min} domain morphemes (roots and suffixes) and the morphemes outside of the ω^{min} domain (prefixes) in markedly different ways.[20] This section suggests that (i) the proposed morpho-prosodic boundary between prefixes and ω^{min} is warranted within Ichishkiin as well as within the family more broadly; and (ii) that stress patterns in Ichishkiin should not be viewed in a vacuum as it has been done previously: stress behavior can be influenced by non-stress-specific properties of the phonological system.

4.1. Ichishkiin: Hiatus resolution

So far, I have proposed that the asymmetries that we observe in the accentual behavior of prefixes vs. suffixes in Ichishkiin are due to them belonging to different prosodic domains: while suffixes constitute the ω^{min} domain with the root, prefixes are more peripheral and are outside of that domain. I proposed to formalize this difference in terms of a morpho-prosodic boundary at the left edge of the root based on the proposal put forward in Moskal (2015). In addition to the stress patterns, in Ichishkiin, morphemes within the ω^{min} domain and morphemes outside of that domain differ in their treatment of vowels in hiatus.

Vowel hiatus, i.e. adjacent vowels, is banned in most environments in the language. When a combination of two morphemes results in adjacent vowels, a number of strategies are used in the language to resolve it. Two of these strategies show a clear sensitivity to the prosodic domains and their edges.

The first strategy of hiatus resolution is a glottal stop epenthesis. An epenthetic glottal stop is inserted (i) in the onset of a vowel-initial morpheme if that morpheme is word-initial (34),[21] (ii) at the prefix-root boundary (35), and (iii) between prefixes (36):

(34) ˈʔaʃam
aʃam
wife
'wife'

[20]In a more distantly related Klamath language, morpho-phonology exhibits a comparable asymmetry whereby ω^{min}-internal morphemes – roots and suffixes, and ω^{min}-external morphemes – prefixes behave as belonging to different domains defined by different phonological processes (Marlo & Pharris 2004; Zoll 2002).

[21]The orthographic system of Ichishkiin does not indicate the glottal stops that are epenthesized before a vowel in the word-initial position (Jansen 2010, 37).

(35) i-ʔaˈjik-ʃa
i-ajik-ʃa
3SG-sit-IMPF
'S/he is sitting.'
(adapted from Jansen 2010, 41, 62)

(36) pina-ʔi-
pina-i-
REFL-CAUS-
(Sharon Hargus, p.c.)

In contrast, within the ω^{min}, i.e. at the junctures between the root and suffixes, hiatus is resolved via glide insertion (Jansen 2010, 58–59). Contrast examples in (34)–(36) with examples in (37) where glide insertion resolves the hiatus between the root and the suffix. The quality of the glide – /j/ or /w/ depends on the first vowel in the sequence of two vowels with /w/ epenthesized if the first vowel of the sequence is /u/, and /j/ being the elsewhere case (Jansen 2010, 60); epenthetic consonants are bold-faced:

(37) a. ʔiwaχi-ˈ**j**at'a-ʃa
ʔiwaχi-ˈat'a-ʃa
wait-DESID-IPFV
'S/he wants to wait.'

b. ˈtu-**w**in
ˈtu-in
what-3>3.ERG
'what'
(adapted from Jansen 2010, 351; Hargus & Beavert 2006, 181)[22]

We can generalize that glide-insertion is a process internal to the the ω^{min} domain, while glottal stop-insertion marks the left edge of the (recursive) Prosodic Word, i.e. the left

[22]Two other ways of treating vowels in hiatus are observed in the language but are not addressed here. Firstly, in some environments, which might be conditioned by frequency and degree of lexicalization, vowels in hiatus coalesce (Sharon Hargus, p.c.). This process does not appear to be sensitive to the proposed prosodic domains as it can be observed within the ω^{min} domain as well as outside of it. Secondly, hiatus appears to be tolerated with enclitics, cf. the tolerated adjacent vowels of the past tense suffix and the person enclitic in (i) below; the syllable with hiatus is bold-faced:

(i) ˈχatikw?i**kaam**
ˈχatikw?ik-a=am
fall.over-PST=2SG
'You fell over.' (Jansen 2010, 87)

An in-depth investigation of the full variety of hiatus resolution patterns in the language is left for future research.

edge of every iteration of ω if the appropriate requirements on the phonological environment are met.[23]

In the next subsection, I discuss another phonological process – vowel harmony – in the closely related Nez Perce. Vowel harmony applies to the prefixal and the ω^{min} domain in non-parallel ways as well, additionally supporting the claim that the prefixal domain and the ω^{min} domain are not subject to the same phonological processes in the Sahaptian languages.

4.2. Nez Perce: Prefixes and ω^{min} in vowel harmony

A different segmental process is sensitive to the distinction between the ω^{min} domain on one hand and prefixes on the other hand in Nez Perce (Nimipuutímt). The difference between these domains, in addition to stress patterns (see Crook 1999; Bjorkman 2010; Bogomolets 2020, 113–134), is evident in the Nez Perce vowel harmony process. Nez Perce vowels fall into the following dominant-recessive pairs:

(38) Dominant-Recessive vowel pairs in Nez Perce

Dominant:	/a/	/o/	
			/i/
Recessive:	/æ/	/u/	

The vowel /æ/ is orthographically 'e'; the vowel /i/ behaves as either dominant or recessive depending on the morpheme (Crook 1999, 245).[24]

Roots and suffixes in the language can trigger vowel harmony, while prefixes never trigger vowel harmony: Hall & Hall (1980, 227, f.n. 2) note that Nez Perce has no prefixes which would trigger vowel harmony; Crook (1999, 247–48) states that 'there are no prefixes that currently trigger harmony, and there is scant evidence that there were dominant prefixes in recent times'. Roots and suffixes, in contrast, regularly trigger vowel harmony. Consider, for instance, examples in (39)–(40) below. In (39), a dominant root spreads harmony bidirectionally, resulting in the /æ/-/a/ alternation in both prefixes and the suffix. In (40), vowel harmony triggered by the dominant suffix *-qa* spreads iteratively to the preceding suffix *-see* and to the root, resulting in the /æ/-/a/ alternation in the suffix and in the /u/-/o/ alternation in the root; dominant morphemes are bold-faced:

(39) ʔaˈnaas**lawyala**ca
ʔe-ˈnees-ˈ**lawyala**-cee
3OBJ-PL.OBJ-gaff-INC
'I am gaffing them.'

[23]The split between the hiatus resolution strategies found in Ichishkiin is strikingly similar to the one found in Algonquian languages and previously analyzed as evidence for a difference between morpho-phonological domains to which prefixes and suffixes belong (see Newell & Piggott 2014 for Ojibwa; see Schwayder 2015, 134–140 for Plains Cree).

[24]The particular dominant feature spreading in the Nez Perce vowel harmony system is not entirely clear: while Hall and Hall (1980) proposed to interpret it as tongue root harmony, Crook (1999, 252) argues against such an analysis.

(40) ko'saa**qa**
kuu-see-**qa**
go-INC-REC
'I just went.' (Crook 1999, 247–248)

We can generalize that vowel harmony in Nez Perce behaves in a way that is parallel to the phonological behavior of stress in Ichishkiin and is exactly as predicted by the NDPH (29)–(30). We thus observe a by now familiar pattern where a phonological process crucially differentiates between the ω^{min}-internal morphemes and the ω^{min}-external morphemes (see Moskal 2015, 256–258 for a discussion of this pattern as caused by a prosodic boundary between the prefixes and the stem) suggesting their unequal status in the Prosodic Hierarchy.

This section has demonstrated that a number of phonological processes not only in IS but in the language family more broadly make a crucial distinction between prefixes on one hand and the ω^{min} on the other hand. This distinction can be seen as an integral property of the phonological system of these languages. It is thus not a coincidence that the stress system of IS is influenced by this distinction between the morpho-prosodic domains as well.

5. DISCUSSION

This paper has proposed a reanalysis of the stress system of Ichishkiin Sɨnwit in terms of a cyclic accent account in combination with the sensitivity of the phonological system to the difference between cross-linguistically valid prosodic domains: the domain comprising of the root and suffixes (ω^{min}) on one hand, and prefixes, which are outside of that domain, on the other hand. The analysis in terms of a cyclic accent mechanism and prosodic domains captures in a natural way the puzzling pattern of conflicting directionalities in stress competition resolutions involving prefixes vs. suffixes. Additionally, it provides an insight into a number of segmental processes in Ichishkiin Sɨnwit as well as in the related language Nez Perce; under the previous analysis, the prefix-ω^{min} asymmetries found in the segmental processes remained unconnected to the prefix-ω^{min} asymmetries in the stress patterns.

I suggested that the sensitivity of both prosodic and segmental processes to the morpho-prosodic domains can be seen as a reflex of the morphological structure. Specifically, the asymmetries in the phonological behavior between the units within the ω^{min} (roots and suffixes) and outside of the ω^{min} (prefixes) can be derived from the morphological asymmetries between these as formalized in Moskal (2015). Morphological derivation induces a boundary at the left edge of the ω^{min}, which then influences segmental and prosodic processes and interactions within the domains at each side of the boundary as well as between the domains across the boundary.

The patterns of accent competition presented above suggest that Ichishkiin Sɨnwit presents an example of the so-called *bracketing paradox* where the morpho-syntactic bracketing does not necessarily translate into an isomorphic phonological bracketing. What we observe is that suffixes in the language are always phonologically integrated with the root, while prefixes are not, regardless of the morpho-syntactic constituency. Thus, phonological facts of the system motivate the structure in (41a) across the board. However, morpho-syntactically and in terms of the semantic scope, prefixes are not always peripheral to suffixes in the language (see also

Bjorkman 2010 for a similar picture in Nez Perce). Thus, at least in some contexts, the bracketing paradox in (41) arises:

(41) a. Across-the-board phonological bracketing
[Prefixes [Root +Suffixes]]

b. Possible morphological bracketing
[[Prefixes + Root] Suffixes]

This paper has established a number of ways in which the phonological bracketing in (41a) can be observed in the prosodic and segmental patterns in the language leaving the non-isomorphy between (41a) and (41b) for further research (see Newell to appear for an extensive overview of the problem and for possible solutions, Newell 2019 for a historical overview of approaches to bracketing paradoxes; see also Hyman 2008; Downing & Kadenge 2020 for an overview of the asymmetries which suggest the cross-linguistic preference for (41a) in phonology).

A typological outcome of the proposed reanalysis of the IS stress system is that an account of the Ichishkiin Sinwit stress without invoking Affix Controlled Accent (Hargus & Beavert 2002, 2006) is possible. This suggests that affix faithfulness is unattested as a property of lexical stress systems. On the other hand, the proposed analysis suggests that the particular accent assignment mechanism within a language can be obscured by independent properties of the phonological system. Thus, even though the *cyclic accent* analysis proposed in this paper accounts for the majority of accent patterns in the language, the presentation of cyclic accent in Ichishkiin is masked by the sensitivity of the phonological system to prosodic domains and their boundaries.

ACKNOWLEDGEMENTS

My sincere gratitude for helpful comments and discussion goes to Harry van der Hulst, Jonathan Bobaljik, Matthew Gordon, Paula Fenger, Adrian Stegovec, Saurov Syed, to the members of Leipzig Phonology Group where an earlier version of this work was presented, to the editor, András Cser and two anonymous reviewers. I also thank Sharon Hargus for answering my data questions.

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