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Accent Strength in Lithuanian: Evidence from the Saussurean Accent Shift

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This paper investigates the distribution of surface accents in Lithuanian nominals based on data from Standard Lithuanian. Inflected nouns and adjectives in this language are subject to the following major accent rules: (a) the Basic Accentuation Principle (Halle & Vergnaud 1987a; b); (b) the Saussurean Accent Shift (Blevins 1993, Ambrazas 2006). I argue that one can account for both in a system where underlying lexical accents can vary in strength. This approach provides advantages compared to the analysis presented in Blevins (1993). For instance, in order to determine the placement of the accent within a weak stem, one does not have to resort to extraprosodicity or floating tones, thanks to a weak accent being present in the UR. The Saussurean Accent Shift, for which Blevins's paper accounts only partially (see Section 5), is analyzed as an edge effect whereby a clash of two underlying accents at the right edge of a prosodic word results in the surface accent being right-aligned.

1 Introduction

The central claim of this article is that underlying accents in Lithuanian can be strong and weak. While the surface realization of all accents is uniform with no variation in intensity, the evidence for the variation in strength in the underlying representations (UR) comes from the way accents interact with each other. The existence of an underlying distinction between identical surface elements can be detected based on information that comes from a source other than the shape of the elements themselves. In this particular case, the indicator is the ultimate position of the surface accent within a given prosodic word.

I will show that the Basic Accentuation Principle (BAP) (Halle & Vergnaud 1987b; Blevins 1993) follows directly from a combination of two factors: (a) a preference for realizing strong accents over weak ones; (b) the default preference for stems over suffixes. I claim that the accent shift to a subset of short inflectional suffixes (aka the Saussurean Accent Shift) results from a cumulative effect in the grammar where a clash of two underlying accents located at the right edge of a prosodic word interacts with an otherwise ineffective, low-ranked constraint requiring the surface accent to be right-aligned. Together, the constraint against clashes and the constraint penalizing non-final surface accents are capable of overriding the BAP and producing outputs with the main stress located on the suffix, while the BAP would prefer it to be on the stem.

In order to analyze the accentuation system in Lithuanian, the Optimality Theory (Prince & Smolenksy 2004) framework is used in this article, enriched with concepts from Turbidity Theory (Goldrick 2011; Trommer 2011) in order to capture an underlying clash of accents that is always repaired in the SR.

2 The data

All the data used in this paper comes from Standard Lithuanian. The prescriptive norm is determined by the State Commission of the Lithuanian Language. There is a very high degree of variation in accentuation across different dialect groups (Zinkevičius 1994; Bacevičiūtė et al. 2004). The accentual patterns of Standard Lithuanian – which are the only ones this article discusses – are based on the dialects spoken around the city of Kaunas. All the roots and stems used in this work are presented with the lexical accents listed in all conventional dictionaries. The accentual properties of the inflectional suffixes are also taken from the affix inventory of Standard Lithuanian (Dambriūnas et al. 1998; Ambrazas 2006).[1] In addition to drawing data from the accent specifications for morphemes in Standard Lithuanian, I have worked with a group of

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[1] The author, who is a fluent L2 speaker of the language, is aware of the fact that the most commonly used varieties, including the capital dialect of Vilnius, have prosodic systems which have either more or fewer accent paradigms than what is addressed in this work. However, a cross-dialectal study is beyond the scope of the current analysis and remains a fascinating subject for future research.

L1 consultants (without linguistic training) coming from the cities of Vilnius and Kaunas. The correctness of the data has been confirmed by all of them.

As far as word-level prosody is concerned, Standard Lithuanian may be described as a pitch-accent language. While there is always only one main accent present within a prosodic word,[2] accented heavy syllables may surface with a more prominent first mora (the falling intonation, or *priegaidė*) or a more prominent second mora (the rising *priegaidė*). The fact that this distinction is contrastive is illustrated in (1).[3]

(1)   a.   kóošee 'filter.PST.3' [V]
          b.   koóšee 'porridge.NOM.SG' [N]

A heavy syllable in Lithuanian contains either a long nuclear vowel, as in (1), a diphthong or a short vowel – /a ɛ i u/ – followed by a coda sonorant – /r l m n/ (Ambrazas 2006). The respective contrasts are listed in (2).

(2)   a.   píilee 'he poured' ~ piílee 'duck'
          b.   láisvee 'freedom' ~ laísvas 'free'
          c.   káltas 'forged' ~ kaĺtas 'guilty'

There are multiple phonetic cues used to distinguish between the two contours. In diphthongs and VR-combinations (known as 'mixed dipthongs' in traditional Lithuanian terminology), the segment associated with the more prominent mora is pronounced with more intensity and greater duration, while the segment associated with the less prominent one is somewhat reduced (Ambrazas 2006):

(3)   a.   -áu- ↔ [aˑw]
          b.   -aú- ↔ [ɒuˑ]
          c.   -ál- ↔ [aˑl]
          d.   -aĺ- ↔ [ɐlˑ]

In monophthongs, the phonetic realization of the contours varies very strongly across dialects and also among individual speakers. While pitch is usually mentioned as one of the factors, most researchers seem to agree that the location of the intensity peak is the main cue even in monophthongs (Pakerys 1995; Girdenis 2003). Rising monophthongs are usually also somewhat longer than falling ones.[4] If a syllable loses its accent, the tonal contrasts are neutralized, with an

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[2] There is some evidence for secondary accents in long words. This is normal in the North-Western dialects of Lithuanian (Low Lithuanian) (cf. Zinkevičius 1994; Ambrazas 2006), but not very common in the standard language. I will leave this aside in the current work and concentrate on the core layer of Lithuanian nouns which contains mostly mono-syllabic roots.

[3] Throughout the article, long vowels will be indicated using double letters for greater clarity.

[4] The opposite is true for diphthongs, with the falling ones being noticeably longer.

intermediate-quality rime surfacing instead (Dambriūnas et al. 1998; Ambrazas 2006; Stundžia 2009):

(4) a. ka̲ltí 'forged.M.NOM.PL'
     b. ka̲ltí 'guilty.M.NOM.PL'   [both pronounced as [kɐlʲtʲí]]

2.1 The prosody of nominals

Lithuanian nouns and adjectives have contrastive mobile accent. There are numerous minimal pairs, including intraparadigmatic ones.

(5) a. várpai 'ear_of_wheat.DAT.SG' ↔ varpaí 'bell.NOM.PL'
     b. várpaa 'ear_of_wheat.ACC.SG' ↔ vaŕpaa 'bell.ACC.SG'
     c. galvá 'head.NOM.SG' ↔ gálva 'head.INS.SG'

The placement of the accent in Lithuanian depends on the underlying specifications of the morphemes present in an inflected form. Roots and inflectional suffixes are traditionally described as being strong or weak (Halle & Vergnaud 1987a; b; Blevins 1993; Dambriūnas et al. 1998; Ambrazas 2006; Stundžia 2009). If a strong morpheme (presumed to have an underlying accent) competes against a weak one (presumed to be accent-free), the strong morpheme will have the surface accent:

(6) a. **viir** [str] + aa [wk] → víiraa 'man.ACC.SG'
     b. dain [wk] + **oos** [str] → dainoós 'song.GEN.SG'

If two strong or two weak morphemes are concatenated, the leftmost morpheme (i.e. the root in the two examples below) will have the surface accent:

(7) a. **viir** [str] + **ai** [str] → víirai 'man.NOM.PL'
     b. dain [wk] + aa [wk] → daínaa 'song.ACC.SG'[5]

These two accentuation rules are known as the Basic Accentuation Principle, formulated in Halle & Vergnaud (1987b) in the following manner:

(8) *Basic Accentuation Principle*
     Stress the leftmost accented vowel or, in the absence of accented vowels, the leftmost vowel.

Crucially, if a stem that displays its accent at the very right edge (whenever it is accented) is followed by a so-called attracting suffix (Ambrazas 2006; Dambriūnas et al. 1998; Stundžia 2009), the resulting surface accent will be on the suffix, regardless of the relative strength of the combined elements. The behavior is demonstrated in **Table 1**. To show the location of the accent

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[5] Since weak morphemes are considered accent-free in the traditional approaches, the only way for them to end up being accented is to receive an accent via epenthesis.

within each root, the weak non-attracting suffix -as is used in the second column (any stem will be accented when combined with it).

			wk, non-attr	**wk, attr**	**str, attr**
			-as	**-u**	**-ɛ**
			NOM.SG	INS.SG	LOC.SG
wk, non-final	kɛlm-	'stump'	kɛĺmas	kɛĺmu	kɛlmɛ́
wk, final	vaik-	'child'	vaíkas	**vaikú**	vaikɛ́
str, non-final	viir-	'man'	víiras	víiru	víirɛ
str, final	ind-	'dish'	ińdas	**indú**	**indɛ́**

Table 1: Attracting suffixes.

In the table, the highlighted forms deviate from what is predicted by the Basic Accentuation Principle, cf. (6) and (7). To be more precise, the instrumental singular of 'child' is predicted to be *vaíku* because the leftmost morpheme is expected to win when both elements are weak. Similarly, for 'dish', the the instrumental singular should be *ińdu* because the root is strong and the suffix is weak, and the locative singular is predicted to be *ińdɛ* following the same logic.

The shift of the surface accent to an attracting suffix is known as the Saussurean Accent Shift (Blevins 1993). Phonologically, all attracting suffixes are monosyllabic and light in Modern Lithuanian. Apart from sharing this phonological commonality, they do not form a natural class with respect to their morphosyntactic features. The set of Saussurean suffixes includes: (a) the weak instrumental singular markers -u, -a, -ɛ; (b) the weak nominative-accusative dual markers -i, -u; (c) all accusative plural markers -as, -is, -us, -ɛs (all weak); (d) the short strong nominative singular -a, -i; (e) the strong locative singular -ɛ. For full inflectional paradigms, see Section 8.

In descriptive terms, the Saussurean Accent Shift can be easily pinned down as a shift of the surface accent from the penultimate position to the right edge of a phonological word. This phenomenon is the main focal point of this article. In the previous approaches (Halle & Vergnaud 1987a; b; Blevins 1993), all weak morphemes are analyzed as accent-free. If one were to maintain this assumption, then, in order to account for the difference between the nominative singular and the instrumental singular in **Table 1**, either random diacritics or lexically indexed constraints would be needed. I show below how the difference can be accounted for in terms of prosodic diacritics whose existence has been motivated independently for other languages.

2.2 Remarks on nominal inflection

Lithuanian nouns have inherent masculine or feminine gender and inflect for number and case (Ambrazas 2006). There are three numbers and seven grammatical cases in Lithuanian, with the dual slowly disappearing from the system.

Like many other Indo-European languages, Lithuanian has inflectional classes. Inflectional class correlates with gender, but there is no one-to-one correspondence between the two (Embick 2010; Kramer 2015; Šereikaitė & Kushnir 2022). For example, masculine nouns can be found in all inflectional classes:

(9)   a.   vaíkas 'child', M, Class I
        b.   deédee 'uncle', M, Class II
        c.   žveerís 'beast', M, Class III
        d.   alús 'ale', M, Class IV
        e.   akmuó 'stone', M, Class V

Feminine nouns do not appear in Classes I and IV, but are otherwise unrestricted.

(10)   a.   dainá 'song', úpee 'river', F, Class II
        b.   žuvís 'fish', F, Class III
        c.   sesuó 'sister', F, Class IV

I follow Dambriūnas et al. (1998) in distinguishing five major inflectional classes in Modern Lithuanian. Each inflectional class contains prosodically strong and weak suffixes interplaying with the prosody of the bases they are combined with. Detailed paradigms for nouns of all declension types are presented in Section 8.

3 The analysis

In this section, I present an analysis of the Saussurean Accent Shift. I argue that weak non-attracting and weak attracting suffixes differ in having no underlying prosody and a weak underlying accent respectively. The accent shift is treated as a right-edge effect whereby a clash of two underlying accents word-finally results in the right-hand accent always surfacing faithfully.

3.1 The core proposal

The main proposal of this article is that a morpheme that is prosodically weak is not necessarily accent-free. One immediately accessible piece of evidence for this proposal comes from the fact that every weak nominal base has a fixed accent position which doesn't have to be the initial one. This can be seen in the following examples, where various weak roots are combined with the weak accusative singular/plural suffixes:

(11)   a.   kɛlm + aa → kɛ́lmaa 'stump.ACC.SG'
        b.   doobil + aa → dóobilaa 'clover.ACC.SG'
        c.   dain + aa → daínaa 'song.ACC.SG'
        d.   nuostab + uu → nuostaábuu 'wonderful.M.ACC.SG'[6]

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[6] The lengthening of /a/ in the syllable /sta/ is automatic.

e. sɛptiin + is → sɛptíinis 'seven.M.ACC'
f. Aniikštʲ + us → Aníikščius 'place_name.ACC'

In Blevins (1993), weak roots are considered to be accent-free. In weak-weak combinations, such as in (11), it is assumed that an epenthetic accent is inserted at the left edge of the prosodic word. For noun forms like *daínaa* (ACC.SG), the first mora is assumed to be extraprosodic in order to explain why the epenthetic accent is not initial. However, there exist roots like *nuostab-* and others which are weak and have their fixed accent position even further removed from the left edge. In roots like *sɛptiin-*, the accent is neither initial nor final, yet its position is, once again, strictly determined.

My proposal, which is central to this paper, is that every lexical root in Lithuanian bears exactly one underlying accent.[7] The difference between roots like *víir-* 'man' and *daín-* 'song' is not about having or not having an accent – it's the relative strength of the underlying accent instead. For the time being, let us mark strong accents with a double acute accent in order to distinguish them from weak accents (single acute):

(12)   *víir-* 'man', *daín-* 'song'

As far as the Basic Accentuation Principle is concerned, this enriched notation does not change anything, for a strong accent will always take precedence over a weak one, with the accent of the root/base winning otherwise:

(13)   a.   daín + oős → dainoós 'song.GEN.SG'
        b.   víir + aí → víirai 'man.NOM.PL'

Bimoraic weak non-attracting suffixes, such as the accusative singular, may be analyzed as having either a weak underlying accent or no accent at all – the main accent will be on the base in either case:

(14)   daín + áa/aá(/aa) → daínaa

With the new system of underlying morpheme specification in mind, Halle & Vergnaud's BAP can be restated in new terms:

(15)   *The Basic Accent Placement Rule (BAPR):*
        A non-compound prosodic word in Lithuanian has exactly one prominent position.
        If there are two underlying accents of different strengths, the strong accent will be
        pronounced on the surface. Otherwise, the accent belonging to the morphological base
        will be pronounced.[8]

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[7] Whether roots can be entirely accent-free is elaborated upon below.

[8] In more complex derivations with more than two morphemes combined, the prosodic optimization is cyclic with every cycle containing at most two accents in the input (Kushnir 2019).

The predictions begin to diverge when it comes to the Saussurean Accent Shift. As we saw above, there is a set of short (monomoraic) inflectional formatives whose addition to stems accented on their final mora triggers an exceptional shift of the surface accent to the right edge of the prosodic word. For example, the weak stems *kɛ́lm-* 'stump' and *vaík-* 'child' may be combined with the weak <u>attracting</u> instrumental suffix -u, producing the following two outputs:

(16)   a.   kɛ́lm + ?u → kɛ́lmu 'stump.INS.SG'   [expected, BAPR]
       b.   vaík + ?u → **vaikú**, *vaíku 'child.INS.SG'   [unexpected]

Even more interestingly, this <u>weak</u> suffix will have the same effect when applied to a strong stem whose accent is on the final mora:

(17)   ińd + ?u → **indú**, *ińdu 'vessel.INS.SG'

Blevins (1993) assumes that the instrumental singular suffix is strong, i.e. it is underlyingly accented. Also, in Blevins's system, the weak stem *kɛ́lm-* is accent-free. Her analysis therefore predicts the output *kɛ́lmú*, which is not attested.[9] It is evident that the suffix is weak because it does not generally win over just any weak stem. It is, however, also not prosodically void since it triggers an unexpected output when it follows a stem whose final mora has an accent (weak or strong). In order to move towards being able to account for this, we can endow the suffix with a weak underlying accent, resulting in the following interactions with different stem types:

(18)   a.   víir + ú → víiru   [strong, non-final]
       b.   ińd + ú → **indú**, *ińdu   [strong, final]
       c.   kɛ́lm + ú → kɛ́lmu   [weak, non-final]
       d.   vaík + ú → **vaikú**, *vaíku   [weak, final]

Compare these outputs with what is obtained when a completely accent-free suffix is added (e.g. the vocative singular -ɛ):[10]

(19)   a.   víir + ɛ → víirɛ
       b.   ińd + ɛ → ińdɛ
       c.   kɛ́lm + ɛ → kɛ́lmɛ
       d.   vaík + ɛ → vaíkɛ

In (19), the suffix has no underlying prosody, which results in the expected behavior: the surface accent is always on the stem, matching the location of the only underlying accent present in the structure.

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[9] The output *kɛ́lmú* is incorrect in the prescriptive grammar of Lithuanian, and has also been deemed as such by all the L1 consultants the author has asked.

[10] Like in the case with the accusative singular formative above, there is no reason to assume any kind of underlying prosody for the vocative singular since it never has the surface accent in Lithuanian.

The Saussurean Accent Shift is also triggered by strong monomoraic inflectional markers, such as the locative singular -$\acute{\varepsilon}$:

(20) a. víir + -$\acute{\varepsilon}$ → víirɛ
     b. ińd + -$\acute{\varepsilon}$ → **indɛ́**, *íńdɛ
     c. kɛ́lm + -$\acute{\varepsilon}$ → kɛlmɛ́
     d. vaík + -$\acute{\varepsilon}$ → vaikɛ́

In (20), only the second output is unexpected because, with two strong morphemes competing, the base is supposed to win according to BAPR. All the other forms are BAPR-conforming.

Crucially, in Blevins's analysis, the instrumental suffix -u and the locative suffix -ɛ do not differ underlyingly: both are accented. This cannot be the case since the two morphemes evidently behave differently. The issue with the approach in Blevins (1993) is that the analysis must equate the instrumental singular suffix with either the vocative singular (weak) or the locative singular (strong) representationally. In reality, it has its own unique behavior. The suffixes in the three examples above have to have three different underlying representations, and a simple weak/strong dichotomy does not suffice.

In the system with weak and strong underlying accents sketched above, the Saussurean accent shift becomes a generalization that is easy to state in synchronic terms:[11]

(21) *The Saussurean Accent Shift:*
     If any two underlying accents are located on two adjacent moras at the right edge of the word, the surface accent will be final irrespective of accentual strength.

The crucial observation for this generalization is that all Saussurean suffixes are monomoraic. A clash of two underlying accents anywhere but at the very right edge of the word does not result in any special effects and is subject to the BAPR:

(22) ińd + ǎms → íńdams, *indáms 'dish.DAT.PL'

The analysis in Blevins (1993), once again, predicts the accent shift and the incorrect output *indáms*, which does not happen word-medially.[12]

Inflectional formatives in Lithuanian are usually mono- or bimoraic. With the accent types suggested above, the following typology of possible monosyllabic formatives can be established:

(23) a. -$\acute{\mu}\mu$, -$\mu\acute{\mu}$, -$\acute{\mu}$
     b. -$\acute{\mu}\mu$, -$\mu\acute{\mu}$, -$\acute{\mu}$
     c. -$\mu\mu$, -μ

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[11] Diachronically, the Saussurean Shift was a process in Old Lithuanian where the main surface accent was shifted from a circumflex base-final syllable to an acutely toned inflectional suffix (Stang 1966).

[12] The output *indáms* is considered wrong in the standard language and has been resolutely rejected by all my L1 consultants.

Long suffixes without an accent are expected to behave in the exact same manner as those with a weak underlying accent: they will always lose to any base because of the BAPR. However, in the monomoraic suffixes -µ́ and -µ, the underlying prosody may result in a word-final clash after bases with final stress. These are exactly the formatives that trigger the accent shift in Lithuanian.

The interactions are summarized in **Table 2.**

|	[-µ̋µ] _Aff_	[-µµ̋] _Aff_	[-µ́µ] _Aff_ [-µµ́] _Aff_ [-µµ] _Aff_	[-µ̋] _Aff_	[-µ́] _Aff_	[-µ] _Aff_
[...µ̋...] _St_	[...µ́...][µµ]	[...µ́...][µµ]	[...µ́...][µµ]	[...µ́...][µ]	[...µ́...][µ]	[...µ́...][µ]
[...µ̋] _St_	[...µ́][µµ]	[...µ́][µµ]	[...µ́][µµ]	**[...µ] [µ́]**	**[...µ] [µ́]**	[...µ́][µ]
[...µ́...] _St_	[...µ...][µ́µ]	[...µ...][µµ́]	[...µ́...][µµ]	[...µ...][µ́]	[...µ́...][µ]	[...µ́...][µ]
[...µ́] _St_	[...µ][µ́µ]	[...µ][µµ́]	[...µ́][µµ]	[...µ][µ́]	**[...µ] [µ́]**	[...µ́][µ]

Table 2: Prosodic interactions of stems and suffixes.

The above table presupposes that any accented light suffix will inevitably trigger the Saussurean Accent Shift. I do believe this to be the correct generalization. Section 3.5 discusses the sole two exceptions from it.

Following the claim made above about the existence of weak and strong underlying accents in Lithuanian, I will now propose how they are represented in the grammar. I am not aware of any existing literature suggesting that there are surface accents of different strengths in Lithuanian,[13] so the underlying contrast only manifests itself through the processes determining the winning accent in a phonological word.

As in Blevins (1993), I will use the simple notion of an underlying accent being an H element linked to one of the moras within the structure. Additionally, a weak accent is distinguishable from this simple representation by the presence of the diacritic '*l*' on it, indicating a low register (Yip 1980; Hyman 1993; Snider 1999). The notation H^l is equivalent to the combination of features [+H, -upper].

(24)   *Underlying representations of heavy syllables:*

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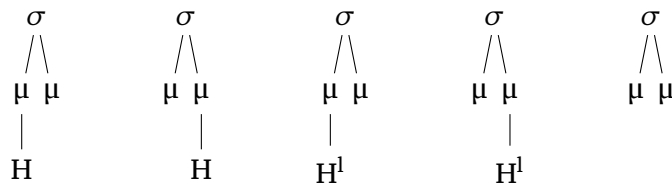
[13] Nor do I or any of my L1 consultants believe this to ever be the case in Standard Lithuanian.

In (24), the first two examples represent strongly accented heavy syllables, with the precise position of the accent corresponding to the falling and rising patterns in Modern Lithuanian. The following two representations are virtually identical, except that the accents are weak due to the presence of the *l*-diacritic. The syllable on the right lacks underlying prosody altogether.

While some languages (e.g. Cantonese) make full use of the available combinations of tonal features (melody + register) on all levels including surface representations, others do not (Yip 1980: 270). Lithuanian would certainly gravitate towards the more impoverished end of the spectrum. The only two underlying representations it makes use of are [+H, +upper] (H) and [+H, -upper] (H^l). Additionally, both accent types are mapped onto one single phonetic representation. In terms of learnability, the positive evidence for the existence of H^l-accents comes from the presence of morphemes that are able to cause a prosodic effect while failing to pattern with strong morphemes. An L1 learner of the language has to postulate a third category, distinct from both strong and fully weak morphemes. If the features [±H] and [±upper] are considered to be part of a universal inventory, then they may be readily employed to create a distinction between underlyingly weak and strong accented moras.

As far as light syllables are concerned, they only ever contain one mora, and only this mora can bear an accent:

(25)   *Underlying representations of light syllables:*

$$\sigma \qquad \sigma \qquad \sigma$$
$$| \qquad\quad | \qquad\quad |$$
$$\mu \qquad\quad \mu \qquad\quad \mu$$
$$| \qquad\quad |$$
$$\text{H} \qquad\quad \text{H}^l$$
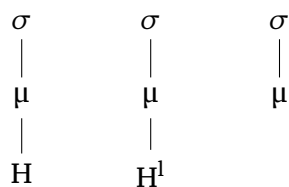
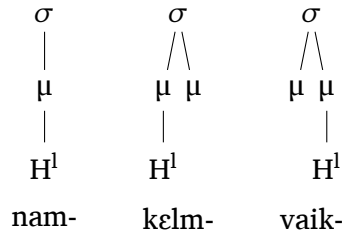## 3.2 Deriving the Basic Accent Placement Rule

With the above system of possible underlying accents in mind, my assumptions about the distribution of stem and suffixal morphemes in Lithuanian declension paradigms are listed below.[14]

Weak stems (assumed to have no underlying accent in the traditional approaches), such as *nám-* *'house'*,[15] *kélm-* *'stump'* or *vaík-* *'child'*, have a weak underlying accent (H^l):

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[14] For convenience and out of space-saving considerations, I will only be listing mono- and bimoraic stems. The generalizations made below about the distribution of accents in surface forms will not be different for stems with more than two moras.

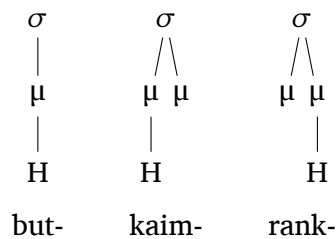[15] In actual output forms, the resonant /m/ in *nám-* always ends up in the onset of the following syllable, thus never being moraic. Throughout this paper, I will assume that resyllabification of postvocalic stem-final resonants into the first syllable of the inflectional suffix takes place for independent reasons and is obligatory. This process will not be shown in the tableaux.

(26)   Weak stems:

$$\sigma \qquad \sigma \qquad \sigma$$
$$| \qquad \wedge \qquad \wedge$$
$$\mu \qquad \mu\ \mu \qquad \mu\ \mu$$
$$| \qquad | \qquad |$$
$$H^l \qquad H^l \qquad H^l$$

nam-   kɛlm-   vaik-

Strong stems, such as *bűt- 'apartment'*, *kǎim- 'village'* or *rañk- 'hand'*, have a strong underlying accent (H):

(27)   Strong stems:

$$\sigma \qquad \sigma \qquad \sigma$$
$$| \qquad \wedge \qquad \wedge$$
$$\mu \qquad \mu\ \mu \qquad \mu\ \mu$$
$$| \qquad | \qquad |$$
$$H \qquad H \qquad H$$

but-   kaim-   rank-

Weak attracting suffixes, such as -ú INS.SG, have a weak underlying accent. Bimoraic weak non-attracting affixes, such -aá[16] ACC.SG, can have a weak underlying accent or no underlying accent at all (with no consequences for the analysis). Monomoraic weak non-attracting suffixes, e.g. -ɛ VOC.SG, have no underlying accent:

(28)   Weak and unaccented inflectional suffixes:

$$\sigma \qquad \sigma \qquad \sigma$$
$$| \qquad \wedge \qquad |$$
$$\mu \qquad \mu\ \mu \qquad \mu$$
$$| \qquad |$$
$$H^l \qquad (H^l)$$

-u   -aa   -ɛ
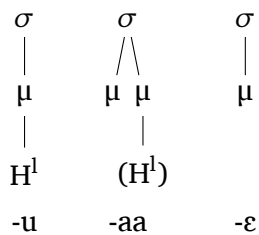
Crucially, the fact that the instrumental singular suffix triggers the Sassurian shift is not attributable to any 'special' property it might possess – it is merely the result of it containing an underlying accent and only one mora.

   Strong suffixes, such as -ɛ̃́ LOC.SG, -ǎms DAT.PL or -aǐ NOM.SG, have a strong underlying accent (same URs as the stem types kǎim- and rañk- above):

---

[16] I chose the second mora of this suffix as the one bearing the underlying accent. However, since this suffix is never stressed, one could also assume that the underlying weak accent is on the first mora, or that there is no underlying accent at all. As far as the instrumental suffix -ú is concerned, I will present a principled reason why it does have an underlying accent in the following subsection.

(29)   Strong inflectional suffixes:

```
    σ       σ        σ
    |      /\       /\
    μ     μ  μ     μ  μ
    |     |         |
    H     H         H
   -ɛ    -ams      -ai
```
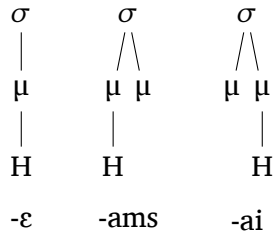
Again, there is nothing that makes the locative singular marker special per se. Its behavior is reducible to the fact that it's short and accented.

As a short reminder, the Basic Accent Placement Rule tells us that, every time a strong morpheme is combined with a weak morpheme, the strong morpheme surfaces with the main accent, regardless of whether it is the stem or the inflectional suffix:

(30)   a.   kǎim + aá → káimaa 'village.ACC.SG'
        b.   nám + aǐ → namaí 'house.NOM.PL'

This gives us the first major principle of nominal accentuation under the current premises:

(31)   *BAPR, Generalization A:*
        A strong underlying accent always wins over a weak underlying accent.

If the strength of the two underlying accents is equal, then it will always be the stem surfacing with the word accent:

(32)   a.   kǎim + aǐ → káimai 'village.NOM.PL'
        b.   vaŕl + ɛɛ́ → vaŕlɛɛ 'frog.ACC.SG'

The second accentuation principle can therefore be formulated as follows:

(33)   *BAPR, Generalization B:*
        All other things being equal, the word accent will be on the stem.

With these two generalizations in mind, we can now build a system that will correctly derive them. Since there is always exactly one surface accent, the most highly ranked constraints in the system are the following ones:

(34)   a.   PwHd: a prosodic word must have a prominent position;
        b.   CULM(H): a prosodic word may contain only one prominent position.

For the relationship between inputs and outputs, I will follow Turbidity Theory (Goldrick 2011; Trommer 2011; Cavirani & van Oostendorp 2019). In Turbidity Theory, the input is always contained in the output. That is, underlying accents are not fully deleted when they are not pronounced, but merely dissociated from the respective accent-bearing units. For every pair of elements linked on two different tiers, there are two association lines. One line projects from

the timing unit (mora) to an accent. The other line projects from the accent back to the accent-bearing unit, ensuring that the accent is actually pronounced.

(35)   *Different accent linkage types:*

Projected and pronounced:	Projected but not pronounced:	De-linked:
μ	μ	μ
$\updownarrow$	$\downarrow$	$\not\equiv$
H	H	H
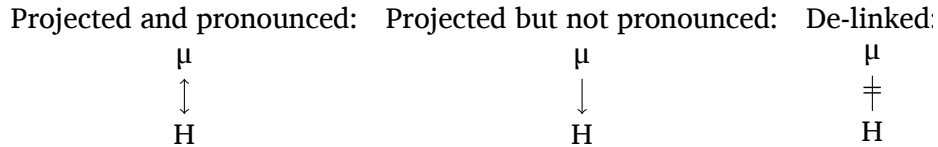
For each accent unit, there is a constraint requiring this accent to be pronounced on the surface. These constraints are also sensitive to the morphological structure:

(36)   a.   PRON(H→ μ_{ST}): assign a violation mark to a candidate in which an association line pointing from a strong accent to a stem mora has been removed;

    b.   PRON(H→ μ_{AFF}): assign a violation mark to a candidate in which an association line pointing from a strong accent to a suffix mora has been removed;

    c.   PRON(H^l→μ_{ST}): assign a violation mark to a candidate in which an association line pointing from a weak accent to a stem mora has been removed;

    d.   PRON(H^l→μ_{AFF}): assign a violation mark to a candidate in which an association line pointing from a weak accent to a suffix mora has been removed.

The ranking of the above constraints can be obtained from harmonically aligning (Aissen 2003) the following two prominence scales:

(37)   a.   Stem > Affix
    b.   H > H^l

(38)   PRON(H→μ_{ST}) » PRON(H→μ_{AFF}) » PRON(H^l→μ_{ST}) » PRON(H^l→μ_{AFF})[17]

Importantly, the projection lines pointing from moras to accent units are never severed due to the fact that the constraint PROJECT is undominated:

(39)   PROJECT(μ→H): assign a violation mark to a candidate where the projection line from a mora to an accent has been removed.

The necessity for the projection association lines to always remain intact will become evident below where the Saussurean Accent Shift is derived.

   The first example below shows a derivation where a weak stem is combined with a weak inflectional suffix. Under the revised assumptions, both have weak underlying accents in their URs.

---

[17] I choose to treat the BAPR as a preference for stems over affixes, as opposed to the traditional approach where the leftmost accent wins. The exact reasons behind it require data and theoretical considerations from the domain of verbal derivation. I therefore refer the reader to Kushnir (2019) for a detailed discussion of the complex interplay or roots, prefixes and suffixes (especially participle suffixes) in the verbal domain.

(40)   *kɛ́lm + aá → kɛ́lmaa*

Input: σ[μμ] σ[μμ] → H^l ... H^l	PWHD	CULM(H)	PROJECT(μ→H)	PRON(H→μ_ST)	PRON(H→μ_AFF)	PRON(H^l→μ_ST)	PRON(H^l→μ_AFF)
a. σ[μμ] σ[μμ], H^l ↓ ... H^l ↓		*!					
b. σ[μμ] σ[μμ], H^l ↓ ... H^l ↕						*!	
☞ c. σ[μμ] σ[μμ], H^l ↕ ... H^l ↓							*
d. σ[μμ] σ[μμ], H^l ↕ ... H^l ≠			*!				*
e. σ[μμ] σ[μμ], H^l ... H^l	*!					*	*

In the tableau above, no candidate is viable that has a fully severed association line between a mora and its underlyingly associated accent. Hence, (d) and all similar candidates are out. Candidate (a) is out because it has two peaks in the output string, which is prohibited by CULM(H). Candidate (e) has no surface accent, which is ruled out by PWHD. Association lines that point only downwards in the output violate PRON but satisfy PROJECT(μ→H). Out of the two viable candidates – (b) and (c) – a less severe violation is incurred by (c) because the accent of the suffix ends up not being pronounced.

In the subsequent tableaux, candidates such as (a), (d) and (e), as well as the constraints ruling them out, will no longer be shown since they are ruled out systematically by PWHD, CULM(H) and PROJECT(μ→H). Why exactly it happens to be of particular importance to not violate PROJECT(μ→H) will become evident in Section 3.3 when the Saussurean accent shift is dealt with.

The above output *kɛ́lmaa* corresponds to Generalization B of the BAPR. As far as Generalization A is concerned, the accent of a suffix will win if the suffix is strong and the stem is weak. This is demonstrated in the next tableau.

(41) *kɛ́lm + aí̋ → kɛlmaí̋*

	PRON(H→μ$_{ST}$)	PRON(H→μ$_{AFF}$)	PRON(H^l→μ$_{ST}$)	PRON(H^l→μ$_{AFF}$)
☞ a. (σ μμ σ μμ / H^l H)			*	
b. (σ μμ σ μμ / H^l H)		*!		

Due to the fact that it is more important to pronounce a strong accent than an accent associated with the stem, the correct output form has the surface accent on the inflectional suffix. Thus, the entire essence of the BAPR is virtually reduced to the relative ordering of the PRON(OUNCE) constraints.

A significant advantage of this approach is the complete absence of the need to rely on extraprosodicity. Consider the following two weak nouns:

(42) a. kɛ́lmas 'stump' ↔ kɛlmaí 'stumps'
      b. vaíkas 'child' ↔ vaikaí 'children'

While the accentuation pattern is identical in the plural, there is a difference in the placement of the accent in the singular. In the system proposed in Blevins (1993), both stems have no underlying accents whatsoever. The nominative singular suffix *-as* also lacks underlying prosody (unlike the accented plural *-aí*). With the resulting phonological words having no underlying accents, the default accentuation rule inserts an epenthetic accent as close to the left edge of the word as possible. However, the first noun in the example above is accented on its first mora, while the 'default' accent in the second noun is on the second mora. Blevins's solution is to deem the initial moras of stems such as *vaík-* extraprosodic:

(43) v<a>ik- 'child', d<a>in- 'song', l<ɛ>nt- 'board' etc.

This stipulation suffers from a significant disadvantage when longer stems are taken into consideration. In these instances, chains of multiple word-initial moras would have to be rendered extraprosodic. Instead, Blevins ends up introducing a further complication into the system: floating H-tones. The analysis proposed here does not need any of this machinery. This is further discussed in Section 3.6.

In the system developed here, the difference between the stems *kə̃lm-* and *vaĩk-* is the position of the pre-linked weak underlying accent. For any nominal root/stem, its surface accent (in those instances when it does have one) can always be predicted unambiguously by referring to the underlying representation. Whether or not accentless roots exist in the system will be addressed below. In the following subsection, however, we will see that it is necessary to postulate accentless suffixes, thus having a three-way distinction:

(44)   a.   suffixes with a strong underlying accent: *-ế* LOC.SG;
         b.   suffixes with a weak underlying accent: *-ú* INS.SG;
         c.   suffixes with no underlying accent: *-as* NOM.SG.

3.3 The accent shift: when the edge conspires with a clash

Compare the behavior of two weak inflectional suffixes: the weak non-attracting suffix in the nominative singular and the acctracting one in the accusative plural.

(45)   *Weak non-Saussurean vs weak Saussurean suffix:*
         a.   bűt + as → bútas 'apartment.NOM.SG'
         b.   rañk + ás → rankás 'hand.ACC.PL'

A straightforward way to account for the asymmetry is to assume that non-attracting weak suffixes have no underlying prosody at all, unlike the weak Saussurean suffixes which do have a weak underlying accent. As I said previously, what unifies all the Saussurean suffixes and makes them 'special' is the fact that they are all light syllables. In case a word-final light suffix contains an underlying accent (strong or weak), it will always have the surface accent if the stem's accent is on its final mora. In other words, the final mora of a word will always be stressed if the last two moras have two underlying accents in the input. We have already formulated the Saussurean Accent Shift in synchronic terms in (21). Below is a refined version of the definition:

(46)   *The Saussurean Accent Shift (new definition):*

> Whenever two accents coincide on two subsequent moras word-finally, the right-hand accent survives in the surface representation, regardless of whether its strength is equal to or lower than that of the other accent.

I believe this phenomenon should be treated as a *right-edge effect*. Specifically, I claim that the accent shift arises due to a cumulative effect in Lithuanian grammar where a clash of two accents at the right edge of the phonological word leads to the observed output.

For many languages, the preferred position of the main accent within a phonological word/phrase is one of its edges (Czech, Sorbian, Latvian, Finnish, French, Icelandic etc). This has to do with the fact that edges are phonologically prominent positions (Hyman 1977; McCarthy & Prince 1993; Beckman 1998; Kager 2006). I would therefore like to use the following constraint which prefers surface accents to be aligned with the right edge of the phonological word (Gordon 2002):
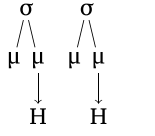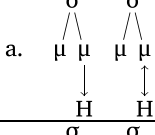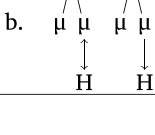
(47) (ALIGN)R(IGHT):
      The right edge of a phonological word must coincide with a surface accent.

In most situations, this preference for accents to be right-aligned doesn't manifest itself by affecting outputs because it is low-ranked in the grammar of Lithuanian (while it is inviolable in languages like French). In some highly specific configurations, however, its effect does become visible on the surface.

At this point in the analysis, it is quite obvious that R alone cannot override any of the constraint protecting stem accents. For instance, when the strong stem *iñd-* combines with the strong suffix *-aí*, the surface accent will be on the stem, violating R (and also PRON(H→μ$_{\text{AFF}}$)), but satisfying PRON(H→μ$_{\text{ST}}$). Even though retaining the suffix's accent on the surface would satisfy R, it is not ranked high enough in the hierarchy of constraints.

(48) *iñd + aí → iñdai*

σ σ $\mu\mu$ $\mu\mu$ H H	PRON(H→μ$_{\text{ST}}$)	PRON(H→μ$_{\text{AFF}}$)	PRON(H$^{\text{l}}$→μ$_{\text{ST}}$)	PRON(H$^{\text{l}}$→μ$_{\text{AFF}}$)	R
a. σ σ $\mu\mu$ $\mu\mu$ H H	*!				
☞ b. σ σ $\mu\mu$ $\mu\mu$ H H		*			*

In the tableau above, R alone is too low-ranked to cause a positive effect. Also, it does not 'conspire' with any of the constraints shown in the tableau in order to override PRON(H→μ$_{\text{ST}}$). The constraint R is also not capable of doing much in case the root is accented on its final mora and the suffix has no accent at all:

(49)   ińd + ε → ińdɛ 'dish.VOC.SG'

This is because the constraint against re-associating accents with neighboring moras (i.e. NOFLOP(H), not shown in the tableaux) is ranked above R, as well.[18]

　　If, however, there is a cluster of adjacent accents at the right edge of the prosodic word, the right-hand one will surface even if it is the weaker one of the two:
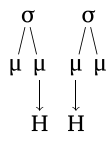
(50)   ińd + ú → indú 'dish.INS.SG'
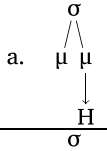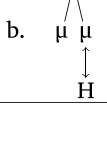
The constraint ranking in (48) obviously predicts the incorrect output *ińdu. Evidently, another constraint is needed to assist R in ensuring that the surface accent is placed on the word-final mora.

　　When two accents are located on two adjacent accent-bearing units, the ensuing configuration is called a Clash (Selkirk 1984). Following the principle of Turbidity Theory outlined above, the constraint CLASH penalizing such structures can be split into CLASH(PROJ) and CLASH(PRON).

(51)   a.   CLASH(PROJ): assign a violation mark to a candidate containing two linearly adjacent moras with association lines projected from these moras to accent units.
　　　　 b.   CLASH(PRON): assign a violation mark to a candidate containing two accent units with association lines projected from these accents to linearly adjacent moras.

Obviously, CLASH(PRON) is never violated in Lithuanian (at least in non-compounds), since every prosodic word has exactly one phonetic peak (due to CULM(H)). On the other hand, CLASH(PROJ) is violated every time a stem with a final accent is combined with a suffix bearing an initial accent. Alone, this constraint is not capable of much:
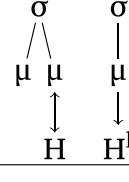
(52)   *ińd + ́ams → ińdams*

σ σ μ μ μ μ H H	PRON(H→μ_{ST})	PRON(H→μ_{AFF})	PRON(H^l→μ_{ST})	PRON(H^l→μ_{AFF})	R	CLASH(PROJ)
a.	*!				*	*
☞ b.		*			*	*

In (52), every viable candidate violates both R and CLASH(PROJ). The decision is, once again, made by the PRON constraints. However, going back to the input [ińd + ú], there is a major difference between it and what we saw in (52). Specifically, since the suffix contains only one mora, the constraint R can be satisfied in case 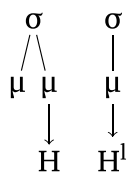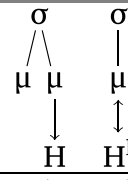the suffix's accent is pronounced on the surface. Still, under the ranking we needed to correctly derive (52), an incorrect output is predicted:

(53)   *ińd + ú → indú*

	$\textsc{Pron}(H\to\mu_{ST})$	$\textsc{Pron}(H\to\mu_{AFF})$	$\textsc{Pron}(H^l\to\mu_{ST})$	$\textsc{Pron}(H^l\to\mu_{AFF})$	R	CLASH(PROJ)
☹ a.	*!					*
☞ b.				*	*	*

In (53), candidate (a) violates only CLASH(PROJ), while candidate (b) violates both R and CLASH(PROJ). Since (a) is the correct surface form, we need a system where the cumulative violation of R and CLASH(PROJ) is effectively worse than a violation of $\textsc{Pron}(H\to\mu_{ST})$. Local Constraint Conjunction (LCC) is a type of derived constraint that is triggered when two constraints already active in the system are violated by one candidate (Prince & Smolensky 2004). For the phenomenon in question, I assume that the local conjunction [R & CLASH(PROJ)] is ranked above $\textsc{Pron}(H\to\mu_{ST})$ in Lithuanian.[19] Since the conjunction forms an independent constraint, it can be freely ranked relative to the PRON constraints, while being ranked higher than both R and CLASH(PROJ).

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[19] The analysis in Kushnir (2019) uses the Harmonic Grammar framework (Legendre et al. 1990). It also discusses the necessity to employ LCC for certain types of cumulative effects, such as the one discussed here (see also Mueller 2017 and Shih 2017 for discussions of phenomena where the gang effect of HG does not work).

(54) *ińd + ú → indú*

	R&Clash(Proj)	Pron(H→μ_ST)	Pron(H→μ_AFF)	Pron(H^l→μ_ST)	Pron(H^l→μ_AFF)	R	Clash(Proj)
☞ a.		*					*
b.	*!				*	*	*

The conjunction R&Clash(Proj) has no implication for (52) because it is violated by both candidates and thus does not participate in the crucial decision-making process. It is also irrelevant for all inputs with no clash, such as (48).

The entire system of nominal accentuation in Lithuanian has thus been reduced to the following two effects:

- the relative ranking of Pron constraints emerging from the harmonic alignment of two prominence scales;
- a high-ranked language-specific constraint conjunction disfavoring non-final accents in configurations where two underlying accents clash.

An anonymous reviewer asks if there is any independent evidence for the constraint R being active in the system. Generally, word-final falls are dispreferred in Lithuanian. Most monosyllabic forms are accented on the last mora, and words with an accented final heavy syllable also tend to have the accent at the right edge (Ambrazas 2006; Stundžia 2009). An interesting effect can be observed in Lithuanian verbs. While many verbs in the future tense have a heavy stem augment accented on its first mora, the accent shifts to the second mora in the third person where the personal ending is zero and the verb augment forms the nucleus of the final syllable:

(55) a. važiúosiu 'drive.FUT.1SG', važiúosi 'drive.FUT.2SG'
      b. važi**uó**s 'drive.FUT.3'

As far as CLASH(PROJ) is concerned, the only evidence for the active status of this constraint in Modern Lithuanian is the Saussurean Accent Shift. While it may be questionable per se (since it doesn't have an effect elsewhere in the grammar), the assumption made in this article basically follows the intuition in Blevins (1993): the leftmost principle is overridden in the case of an accent clash.

3.4 Restricting the input

While developing the analysis above, I made specific assumptions about the underlying representations of stems and suffixes in Lithuanian. Thus, nominal stems are assumed to have two types of underlying representations:

(a) Stems with a weak accent pre-linked to a designated mora;

(b) Stems with a strong underlying accent pre-linked to a designated mora.

As far as the inflectional suffixes are concerned, there were three possible types:

(c) suffixes with no underlying accent, including items like -as NOM.SG, -is NOM.SG, -a VOC. SG etc;

(d) suffixes with a weak underlying accent: -ú INS.SG, -ús ACC.PL etc. The difference between these suffixes and the ones in the previous group was crucial for the application of the Saussurean Shift: it only applies when a short word-final suffix has an underlying accent clashing with the stem-final accent of a stem. I also assumed that long weak suffixes have an underlyingly weak accent: -aá ACC.SG, -iís NOM.PL etc. The fact that they contain two moras makes these suffixes unable to trigger the Saussurean Shift. In case their second mora has the underlying accent, the first mora will intervene between the last mora of the stem and the second mora of the suffix. In case the first mora has the underlying suffix, a clash is obtained, but no viable output candidate can satisfy R;

(e) suffixes with a strong underlying accent: -ė́ LOC.SG, -ã́ NOM.SG, -ṹ GEN.PL, -ã́ms DAT. PL etc. Whether or not these trigger the application of the Saussurean Shift depends on their weight: the short ones trigger the rule because, after a stem with a final accent, a word-final clash will result. The obvious prediction made by this analysis is that <u>all</u> underlyingly strong short suffixes will be subject to the Saussurean Shift. I will address this issue in Section 3.5.

There are two types of morphemes that the above list does not include:

(f) Stems with no underlying accent: Cμ(μ)C-;

(g) Long suffixes with no underlying accent: -μμ.

As far as the latter are concerned, they would behave exactly like the long suffixes with a weak underlying accent. If, say, the accusative singular suffix -aá does have H[1] on either one of its moras, it will lose the competition to any stem: after a strong stem, the stem will be favored following the first principle of the BAPR; after a weak stem, the stem will, again, be favored following now the second principle of the BAPR. By the virtue of being heavy syllables, these suffixes can also never trigger the Saussurean Shift. As a result, they will never surface stressed. The exact same prediction is made about an underlyingly unaccented accusative singular suffix: -aa. This is not an unwelcome result. Since the short suffixes have a three-way distinction which influence their behavior, it is desirable to show that the system works even if long suffixes had three underlying types, with the surface contrast reduced to two behaviors due to how the Saussurean Shift works.

Having seen that the exact specification does not make a difference within the given analytical apparatus, my final assumption regarding the weak long suffixes is that they are underlyingly accent-free. The reason I say this is because these suffixes are never accented under any circumstances. For a speaker acquiring the language, there is really no reason to assume that these morpheme have any underlying prosody at all.

(56)   *Accent-free inflectional suffixes:*
        -as NOM.SG, -is NOM.SG, -a VOC.SG, -aa ACC.SG, -oos NOM.PL *etc*

The one remaining group of morphemes that we have yet to address is accent-free stems. We saw above that, unlike inflectional suffixes, Lithuanian nominal stems fall into two major categories regarding their prosodic behavior. I have proposed that the weak stems have a weak underlying accent, and the strong ones a full accent. While there is no real evidence for positing a third category of stems, we will now see what results the introduction of accent-free nominal stems leads to.

In **Table 3**, the behavior of two hypothetical accent-free stems (one monomoraic and one bimoraic) is shown in the currently developed analysis. When two accent-free morphemes are concatenated, there is a well-formedness requirement on surface outputs which demands that they all have a pronounceable accent. Therefore, in these instances, epenthesis is the last resort option for salvaging the derivation (e.g. the intersections of rows (i) and (ii) with column (a) in **Table 3**).[20] In all other instances, the only underlying accent (i.e. the one on the suffix) will be pronounced in the SR.

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[20] This is because PWHD outranks DEP(H).

		(a)	(b)	(c)	(d)	(e)	(f)
		σ	σ	σ	σ	σ	σ
		|	/\	/\	/\	|	|
		μ	μ μ	μ μ	μ μ	μ	μ
				H	H	H^l	H
		-as	-aa	-ams	-uu	-u	-ε
		NOM.SG	ACC.SG	DAT.PL	GEN.PL	INS.SG	LOC.SG
(i)	σ | μ	μ́μ	μ́μμ	μμ́μ	μμμ́	μμ́	μμ́
(ii)	σ /\ μ μ	μ́μμ	μ́μμμ	μμμ́μ	μμμμ́	μμμ́	μμμ́

Table 3: Hypothetical stems combined with existing suffixes.

The final result of these interactions is that the short accent-free stem behaves just like the short weakly accented stem we have seen above. What does, however, raise a concern is the long accentless stem, as in row (ii), where an unattested output is predicted at the intersection of row (ii) and column (e). In case there is only one underlying accent within a phonological word, the system will realize this accent faithfully in the output. Since the suffix has a weak H^l-accent and the stem has no accent at all, we expect the form to be accented on the suffix, e.g. *CVRCú. If one looks at the entire row (ii), it becomes evident that, because of the highlighted cell, it deviated from the pattern found with weakly accented stems, such as *kɛ́m-*. This hypothetical accent-free stem yields a new, unattested, pattern.

In order to provide an explanation of how one can avoid concatenating accent-free stems with inflectional suffixes, I would like to adopt the assumption that phonological optimization proceeds in a cyclic manner, not all in one step (Chomsky & Halle 1968; Chung 1983; Halle & Vergnaud 1987b; Bermúdez-Otero 2011; Bermúdez-Otero 2018). Furthermore, I would like to propose that there is a root optimization cycle (Trommer 2011), which exists in order to fulfill minimal well-formedness requirements on morphological bases before they are concatenated with suffixes in the morphology. The output of this initial cycle is inserted into the structure and concatenated linearly with the inflectional suffix, whereupon the next optimization cycle begins.

At this time, however, the root already has an accent in the input and thus behaves like a normal weak root. The requirement for every root to have at least a weak accent may have to do with the cross-linguistically privileged status of roots (Revithiadou 1999). Complex bases which contain a root and a range of suffixes will naturally have an accent supplied either by the root or by one of the suffixes, depending on these accents' properties.

3.5 The strong nominative singular suffixes

There are *two* inflectional suffixes in the nominal domain whose behavior cannot be accounted for by the analysis presented above. These suffixes are the nominative singular formatives of Class III and IV nouns: -ís and -űs. These two inflectional markers are strong morphemes, and both are light syllables. If the analysis we have discussed so far is on the right track, then these two suffixes would be expected to trigger the Saussurean Accent Shift. However, they do not display this behavior.

(57) *The behavior of the strong short suffix -űs:*
   a.   ắmži + űs → ámžius *'age'*
   b.   **tuŕg + űs → tuŕgus, *turgús** *'market'*
   c.   súun + űs → suunús *'son'*
   d.   puík + űs → puikús *'wonderful'*

The suffix behaves unexpectedly in (57b). It contains two equally strong underlying accents clustering at the right edge of the word. This should normally trigger the Saussurean Accent Shift. However, the shift does not take place. The dilemma that we are facing is to either say that, indeed, this suffix (as well as the nominative suffix -ís in Class III) is the normal case, and the Saussurean suffixes are a group of exceptional morphemes; or to deem these two suffixes somehow exceptional. I opt for the latter solution for the following reasons:

• There are a total of twelve Saussurean suffixes (nine weak and three strong ones), and only two short suffixes with an underlying accent that do not cause the accent shift. It makes more sense to say that the nine strong Saussurean morphemes are regular and the other two are exceptions, rather than the other way around;

• These nominative singular suffixes occur with a limited set of nominal stems. It makes sense to deem those inflectional suffixes exceptional which occur in closed, unproductive declension classes.

If we do treat these two morphemes as exceptions, there are several ways to formalize it. Following the general spirit of this article, instead of employing lexically indexed constraints, I would like to enrich the underlying representations of these suffixes by stating that they have a defective floating mora:

(58) *A suffix with a defective mora:*

σ
|
μ μ
|
H

Why this defective mora cannot be associated with the vowel later on might be due to several factors. My proposed solution concerns the quality of the high vowels, as opposed to mid and low vowels. There are four vowels that contrast in length: /a(ː) ɛ(ː) i(ː) u(ː)/. The other vowels in the native inventory are always long. The former two – the back and front low vowels – can sometimes be lengthened even when they are underlyingly short. This happens in plenty of nominal and verbal forms in non-final stressed syllables (Pakerys 1995; Dambriūnas et al. 1998; Girdenis 2003; Ambrazas 2006).[21]

(59)   a.   kás + a → kaása '(s)he digs'
         b.   nɛ́š + a → nɛɛ́ša '(s)he carries'

If we assume that the morphemes that contain the underlyingly short /a/ and /ɛ/ which, in turn, can be lengthened (not all morphemes with /a/ and /ɛ/ display this behavior) have a floating mora, I believe that this floating mora may associate with the vowel in particular environments (namely, non-final stressed positions).

What sets the short high vowels /i/ and /u/ apart from their long counterparts is that they have a distinct, very lax articulation. Their precise phonetic qualities are actually [ɪ] and [ʊ]. Notably, speakers of some dialects and most urban varieties who shorten final unstressed long vowels still do distinguish between /-uː,-iː/ and /-ʊ,-ɪ/ by the means of their quality. If [±ATR] is an active disctinctive feature in the grammar of Lithuanian, one can imagine a constraint which would ban vowels which are overtly [-ATR] from being linked to two moras.

If this is the case, then the floating mora in (58) cannot be associated with the lax vowel specified as [-ATR], and must remain floating.[22] However, it prevents the constraint R from being satisfied even if the inflectional suffix is stressed. Therefore, there is no way for the Saussurean Accent Shift to apply.

3.6 The 'special' place names

Blevins (1993) mentions a group of Lithuanian village and town names which behave like weak rising stems (i.e. the Saussurean Shift is observed in their paradigms) but contain more than two root moras. The accent in these nouns alternates between the final mora of the stem and the inflectional suffix.

Making the first mora extraprosodic would not yield the desired outcome: the stem accent would then be on the second mora and not the last one (the actually attested pattern). In order

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[21] The lengthening is blocked in some morphosyntactic environments, such as infinitives and conditionals.

[22] Alternatively, the second mora of the suffix may be analyzed as being linked with the consonant /s/ in the coda. Normally, coda obstruents do not add weight and therefore do not project moras, but it might be exceptionally the case with these two morphemes.

to derive their behavior, Blevins resorts to using floating tones which are associated with such stems, but not pre-linked with any TBUs in the lexicon.

We have seen above that all roots have an underlying accent by the time they enter the derivation in the morphological component. I will take the lake name *Galuonai* as an example here (this name always appears in the plural). In this noun, the accent is always on the inflectional suffixes:

(60)   *The declension of the lake name 'Galuonai':*
    a.   Nom. Galuonaí
    b.   Gen. Galuonuú
    c.   Dat. Galuonám(s)
    d.   *Acc. Galuonús*
    e.   Ins. Galuonaís
    f.   Loc. Galuonuosɛ́, Galuonuós

In all of the non-highlighted cases, the inflectional suffixes are strong. Thus, the logical conclusion is that this stem is weak. In the highlighted example, however, the inflectional suffix is weakly accented (a weak Saussurean suffix).

In order for this weak accent to win over the weak stem accent, the stem accent must be on the final mora of the stem. In the system we have developed, there is nothing that would make this impossible. Therefore, the following is the underlying representation of the stem *Galuon-*:

(61)   *The Galuon- /ga.luo.n-/ stem:*

$$
\begin{array}{ccc}
\sigma & & \sigma \\
| & & /\backslash \\
\mu & \mu & \mu \\
& & | \\
& & H^{l}
\end{array}
$$
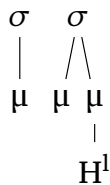
I have already made a similar assumption for the weak adjectival stem *nuostáb-* above, which is directly parallel to the lake name discussed here. Consider also the place name *Aniikščiaí* where the root accent is neither initial nor final, so the Saussurean Accent Shift does not apply in the accusative:

(62)   *The declension of the town name 'Aniikščiai':*
    a.   Nom. Aniikščiaí
    b.   Gen. Aniikščiuú
    c.   Dat. Aniikščiám(s)
    d.   Acc. Aníikščius
    e.   Ins. Aniikščiaís
    f.   Loc. Aniikščiuosɛ́, Aniikščiuós

The solution with the floating accents would barely work here, and it is equally unclear why an epenthetic accent would be inserted into the middle of the morpheme, avoiding both edges.

4 The prosody of adjectives

The accentuation of adjectives is virtually the same as the patterns observed in nouns. One striking feature of Lithuanian adjectives is that all native adjectival roots are weak (Stundžia 2009). This can be seen by comparing the accusative singular (weak suffix -aa/-uu) with the genitive plural (strong suffix -uű):

(63) a. sɛɛ́naa ↔ sɛnuú 'old'
      b. báltaa ↔ baltuú 'white'
      c. graážuu ↔ gražiuú[23] 'beautiful'

The Saussurean Accent Shift applies in exactly the same manner as it does in nouns:

(64) a. bált + ú → báltu 'white.M.INS.SG'
      b. sɛ́n + ú → sɛnú 'old.M.INS.SG'[24]

When an adjective is definite (see below), it looks at the first glance that the Saussurean Accent Shift applies word-internally and not at the right edge:

(65) a. sɛnú 'old.M.INS.SG' → sɛn**ú**oju 'old.DEF.M.INS.SG'
      b. sɛnús 'old.M.ACC.PL' → sɛn**ú**osius 'old.DEF.M.ACC.PL'

In this section, I will show that there is no Saussurean Accent Shift in these forms and that the accentuation of definite adjectives follows the BAPR.

The so-called definite forms constitute an entire subsystem of adjectival morphology. The definite adjectives go back to a formation in Baltic and Slavic where the third-person demonstrative/personal pronoun was cliticized to an already inflected adjectival base, akin to definite nouns in Scandinavian (Stang 1966; Kazlauskas 1968). A morphologically transparent example can be found below.

(66) a. Dúo-k   mán   raudóon-aa   pieštúk-aa!
          give-IMP 1SG.DAT   red-M/F.ACC.SG   pencil.M-ACC.SG
          'Give me a/the red pencil!'

      b. Dúo-k   mán   raudóon-aa-j-ii   pieštúk-aa!
          give-IMP 1SG.DAT   red-M/F.ACC.SG-3SG-M.ACC.SG   pencil.M-ACC.SG
          'Give me THE red pencil!'

---

[23] In U-adjectives, the stem-final consonant alternates between being palatalized and not (e.g. ž~ži) in an idiosyncratic manner, depending on the morphosyntactic feature specification. I take this to be contextually conditioned allomorphy.

[24] As we saw previously for the root *nám-*, the /n/ of *sɛ́n-* is always in the onset of the second syllable.

The output in (66) is readily segmentable into the original morphemes:

(67)   [raudoon + aa] + [j + ii] 'red.M/F.ACC.SG + him/it.ACC'

The boundary between the adjective's original inflection and the pronominal element is frequently blurred, with some of the segmental material deleted or changed:

(68)   a.   gráž + iãm + j + am → gražiáajam   [/m/ lost, /a/ lengthened]
        b.   jáun + ĩems + j + iems → jauníesiems   [/m/ lost]

This is especially true with U-adjectives (Class II), where some of the original U-stem suffixes are replaced with the more productive O-stem suffixes before the pronominal element (the changes affect not only the segments, but also the prosody of the suffixes, so they are complete swaps):

(69)   a.   gráž + u͞os͟ →íe + j + ie → gražíeji 'handsome.M.NOM.PL.DEF'
        b.   gráž + a͞us͟ →ioo + j + oo → graážioojoo 'handsome.M.GEN.SG.DEF'

Some of the inflectional suffixes restore their historic heavy form before the pronominal element:

(70)   a.   gɛ́r + ú + j + uo → gɛrúoju 'good.M.INS.SG.DEF'
        b.   gɛ́r + á + j + a → gɛráaja ~ OL *gɛranjan 'good.F.INS.SG.DEF'
        c.   gɛ́r + ús + j + as → gɛrúosius ~ OL *gɛrunsiuns 'good.M.ACC.PL.DEF'
        d.   gɛ́r + ás + j + as → gɛráasias ~ OL *gɛransians 'good.F.ACC.PL.DEF'
        e.   gɛ́r + í + j + ie → gɛríeji 'good.M.NOM.PL.DEF'

The nominative plural suffix -í appears only after weak stems. There are diachronic reasons to believe that it was once Saussurean. However, due to its distribution and the fact that it is always strong, the question is synchronically irrelevant. The other four suffixes (-ú M.INS.SG, -á F.INS. SG, -ás F.ACC.PL and -ús M.ACC.PL) are weak in their short form. Due to being short and having a weak underlying accent, these suffixes trigger the Saussurean Shift.

(71)   gɛ́r + ú/á/ús/ás → gɛrú, gɛrá, gɛrús, gɛrás

The analysis proposed above treats the shift as a right-edge effect with two accents clashing, crucially, at the very right edge of the word. However, in a form like *gɛrúoju* (cf. (70)), the end-of-the-word context is destroyed. So, either the lengthening of the suffix and the addition of the pronominal element happens post-cyclically, or the pronominal inflections are underlyingly different from their non-pronominal siblings.

My proposal is to pursue the latter option. We have already seen that the segmental strings of the definite adjectival suffixes deviate from simple combinations of the indefinite suffixes with an inflected form of the personal pronoun in the third person. Instead of assuming a whole set of readjustment rules which would derive the correct strings for all the pronominal adjectives, we can simply say that these long suffixes are fully lexicalized in the modern language and are stored as single units. Supporting evidence for this comes from prosodic effects. For instance, while the

instrumental singular suffixes are weakly accented when indefinite, they have strong underlying accents in their definite variants:

(72)   a.   M.INS.SG: -ú ↔ -űoju
       b.   F.INS.SG: -á/-έ ↔ -ãaja

To illustrate this behavior, let us take a look at the adjective *paskutínis* 'last'.[25] This adjective has a strong stem *paskutíńⁱ-* accented on its final mora containing the vowel /i/ (this mora is last because the resonant /nʲ/ is always resyllabified into the next syllable):

(73)   a.   paskutíńʲ + uű → paskutíniuu 'last.GEN.PL'
       b.   paskutíńʲ + ãms → paskutíniams 'last.M.DAT.PL'

As a consequence, it is only accented on the inflectional suffix when the suffix triggers the application of the Saussurean Accent Shift:

(74)   paskutíńʲ + ú → paskutiniú 'last.M.INS.SG'[26]

If this stem is combined with pronominal suffixes, then the stem acts as if it were weak:

(75)   a.   paskutíńʲ + aajaa → paskutíniaajaa 'last.F.ACC.SG.DEF'
       b.   paskutíńʲ + uűjuu → paskutiniu**ú**juu 'last.GEN.PL.DEF'
       c.   paskutíńʲ + uősiuosɛ → paskutiniu**ó**siuosɛ 'last.M.LOC.PL.DEF'
            [cf. paskut**í**ńʲ + uosέ → paskut**í**niuosɛ 'last.M.LOC.PL.INDEF']

As far as the heavy variants of the light Saussurean suffixes in (72) are concerned, they are also accented after *paskutíńʲ-* (as expected for strong suffixes following weak stems):

(76)   a.   paskutini**úoju** 'last.M.INS.SG.DEF'
       b.   paskutini**áaja** 'last.F.INS.SG.DEF'

Since it is evident that the base becomes weak in all definite contexts, we can assume that the definite adjectival suffixes for INS.SG in the above examples are accented because they are strong, not because there was an application of the Saussurean Shift that was later obliterated in a later cycle or post-cyclically.

    Why the stem *paskutińʲ-* happens to alternate between a strong and a weak allomorph is a question discussed extensively in Kushnir (2019). The short answer is that the definite adjectival

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[25] I have chosen this adjective since it is one of the few commonly used adjectives with a strong stem. As I mentioned above, root adjectives are universally weak (I am personally not aware of exceptions). Adjectives such as *raudóonas* 'red', which are optionally stong or weak in Modern Lithuanian, as well as *paskutínis*, which is always strong, are all derived from simplex roots via suffixal morphology. An example of an optionally strong adjectival root could perhaps be *riĩžas* 'red-haired', which a borrowing from Slavic not recognized in the standard language. This adjective behaves exactly like *paskutínis* if declined like a strong stem. However, for many speakers, it is also weak, as it is listed here.

[26] The 'i' in '-niu' is not moraic: it merely indicates palatalization, as is the case in every CiV[+bk] combination in the language.

formatives introduce a floating feature that lenites the accent associated with the base prior to introducing their own segmental material and prosody.

In addition to the weak Saussurean suffixes that become strong heavy ones when definite, the strong Saussurean suffix -ǎ (F.NOM.SG) restores its original heavy form, as well: -őoji. The -őoji allomorph also replaces the feminine suffixes -ée, -í in the nominative singular of the other inflectional classes.

(77)   a.   baltá → balt**óoji** 'white.F.NOM.SG'
           b.   paskutínee → paskutini**óoji** 'last.F.NOM.SG'
           c.   graží → graži**óoji** 'beautiful.F.NOM.SG'

Again, the surface accent is on the suffix because it is strong and the base is weak (either inherently in *bált* and *gráž-*, or prosodically lenited in *paskutín^j-*), not due to an application of the Saussurean Accent Shift.

One final remark concerns the nominative singular suffixes in the masculine gender. While the suffixes -as and -is are always unaccented, the marker - űs has a strong accent (when combined with most stems). In the definite form, all three are strong:

(78)   a.   gɛɛ́ras → gɛr**ás**is 'good.M.NOM.SG'
           b.   paskutínis → paskutin**iísis** 'last.M.NOM.SG'
           c.   droovús → droovúsis 'timid.M.NOM.SG'

The example shows also that -is is lengthened, while the vowel /a/ in the first suffix resists the otherwise automatic lengthening of short low vowels (this lack of lengthening is dictated idiosyncratically by the morphosyntactic environment).

Because of their idiosyncratic segmental inventory and prosody, I conclude that, synchronically, the definite suffixes of Lithuanian adjectives are indivisible units in the mental lexicon. In other words, items such as -ǎsis, -(i)őoji, -iísis etc. are independent morphemes with their own featural specifications.

5 A recap of Blevins's account of the Saussurean Accent Shift

This section summarizes in one place the comments I made about the analysis in Blevins (1993) in Section 3, which is the most recent formal analysis of the Lithuanian accentuation system that I am familiar with. The analysis maintains the system observed in Old Lithuanian and applies it to the modern language. Historically, all Saussurean suffixes go back to bimoraic morphemes accented on their initial mora, e.g. the instrumental singular suffix -ú « -űo. Thus, all of the above suffixes were strong morphemes with the falling tonal contour in Old Lithuanian. The Saussurean Accent Shift in Old Lithuanian had the following definition (Kazlauskas 1968):

(79) *The Saussurean Accent Shift in Old Lithuanian:*
In a complex word, an accent is deleted from a stem-final mora before a heavy suffix beginning with an accented mora:

```
   σ    σ              σ    σ
  /\   /\             /\   /\
 μ μ  μ μ      →     μ μ  μ μ
  |   |              ǂ    |
  H   H              H    H

  *ińd + úo           *indúo
```
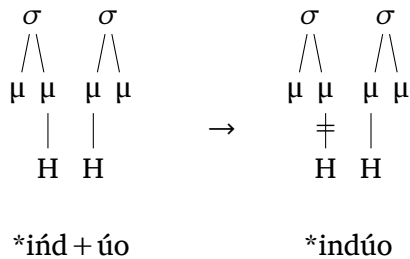
In order to derive the accent shift, Blevins assumes that every morpheme in the set of Saussurean suffixes still contains an underlying accent, i.e. it is strong. This correctly derives the data for strong rising stems:

(80) *Blevins's account for the Saussurean Accent Shift in Modern Lithuanian (ińd + ú):*

```
   σ    σ              σ    σ
  /\   |              /\   |
 μ μ   μ      →      μ μ   μ
  |    |             ǂ     |
  H    H             H     H

  iń.dú               in.dú
```
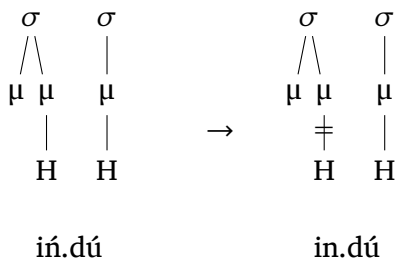
Weak final (daínaa) and strong non-final stems (víiraa) pose no challenge to the analysis, either. However, assuming that, for instance, the modern instrumental suffix -ú is inherently accented will yield the wrong result for a weak non-final stem, such as *kɛlm-* (assumed to be accent-free):

(81) *Suffixal stress overgenerated I (kɛlm + ú):*

```
   σ    σ
  /\   |
 μ μ   μ
       |
       H

 ☞kɛl.mú
 ☹kɛ́l.mu
```
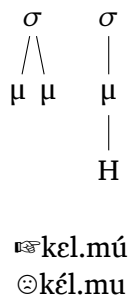
Additionally, we saw in Section 3 that, in Modern Lithuanian, multiple bimoraic inflectional suffixes are inherently accented on their first mora, for instance, -áms for DAT.PL in Class I. Their prosodic specification matches that of the suffixes that used to trigger the accent shift in

Old Lithuanian: -ц́μ.[27] Thus, for strong final stems, the analysis in Blevins (1993) incorrectly predicts an application of the Saussurean Accent Shift, yielding an accented suffix in the surface representation:

(82) *Suffixal stress overgenerated II (ińd + áms):*
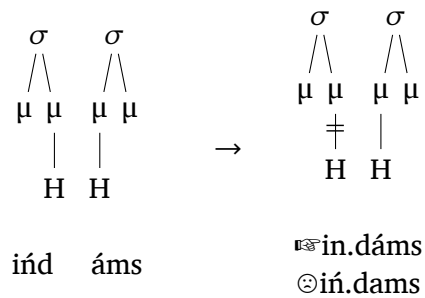
The main problem with Blevins's approach is that the diachronic evolution of the inflectional morphemes has obliterated the formerly straightforward process of stress shifting. In Old Lithuanian, there was most likely no underlying accent strength. Morphemes were either accented or not. The two prosodic types were enough to yield the entire system observed at that stage. In Modern Lithuanian, the Saussurean Accent Shift has nothing to do with tonal contours or syllable weight. It is the result of underlying accents clashing at the right edge of a phonological word. The former dichotomy into weak (= accent-free) and strong (= accented) morphemes has yielded to a new system with a three-way distinction: accent-free, weakly accented and strongly accented.

A final remark concerns weak non-initial stems. For weak final roots such as *daín-* 'song' or *Galuón-* (lake name), the analysis in Blevins (1993) assumes either extraprosodicity of initial moras or floating accents. However, the system still does not predict the correct behavior of weak internally stressed roots, such as *sɛptíin-* 'seven'.

5.1 Blevins's approach: summary

i. Blevins (1993) correctly accounts for the BAPR (except for roots like *sɛptiin-*, see comment above), albeit with the use of additional representational options.

ii. Her treatment of the Saussurean suffixes based on Old Lithuanian fails to capture the following facts:

a. most of the suffixes in the Saussurean set have become weak in Modern Lithuanian;

b. there are suffixes with an inherent accent on their first mora which do not belong to the above-mentioned set since they do not trigger any prosodic effects deviating from the BAPR.

iii As a result, the system produces more outputs with accented suffixes than what is actually found in the language.

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[27] In the analysis proposed in this paper, the specification would naturally be -áms (-ц́μ).

6 The bigger picture

The concept of strength in grammar has been applied successfully to multiple phenomena, primarily in the domain of phonology. Goldrick & Smolensky (2016) discuss the variable pronunciation of final consonants in French (aka *liaison*) in terms of the underlying strength of final and initial segments in the language. The discussion of the typology of ghost segments has continued in Zimmermann (2019). Zimmermann (2021) also applies the concept of strength (in the shape of gradient symbolic representations) to the phenomenon of reduplication.

In at least a subset of the phenomena discussed in these and other papers, the variation in the strength of underlying elements is manifested on the surface as a dichotomy: the element is either fully pronounced or not pronounced at all. This is exactly the case with accent in Lithuanian. The (at least) threefold underlying distinction maps onto a morpheme being either fully accented or fully accent-free in the SR.

The analysis proposed here is not the only work on lexical accent systems employing the concept of variable strength of underlying elements. Zimmermann (2018) applies gradient symbolic representations to lexical accents in Moses Columbian Salishan. A very promising prospect is the application of accent strength in the domain of Slavic accentuation, especially East Slavic. Ukrainian has multiple accentual paradigms in the nominal domain alone, with the number of the distinct root/stem types exceeding the one found in Russian (E. Medvedeva, p.c.). While Lithuanian has two accent strengths in stems and three possible prosodic profiles for inflectional affixes, Ukrainian has more interaction types. In Zimmermann et al. (2022), it is discussed how the system can be captured with a more fine-grained set of underlying representation, as can be the patterns found in Japanese and other languages.

As far as further inquiry into the realm of Lithuanian is concerned, a cross-dialectal study of Lithuanian accent is something that has not yet been carried out within the generative framework. Lithuania is a small country, yet the language boasts impressive diversity when it comes to dialectal variation. Different Lithuanian dialects have distinct prosodic systems. The varieties spoken in the Northwest of the country are probably best described as properly tonal, while the standard language is based on central vernaculars displaying the system that has been addressed in this paper. There exist a range of urban sociolects, especially among younger people in and around the capital city of Vilnius, where the rising/falling distinction on bimoraic monophthongs tends to be neutralized. An anonymous reviewer asks whether this leveling of accent types has any ramifications for the status of the Saussurean Accent Shift. While I have not yet done any field work, my personal impression is that the application of the accent shift is much more inconsistent in words with stem monophthongs than those with diphthongs, which confirms the reviewer's intuition. Urbanavičienė (2014) conducted a sociolinguistic study, which shows that the correct application of the Saussurean Accent Shift seems to actually be on the rise among educated young inhabitants of Vilnius, which may have to do with the social pressure created by the prescriptive norm. Whether monophthongal stems that display the shift and those those

that do not also differ representationally in terms of which mora the accent is on underlyingly, remains an open question. When the stem vowel is accented, there seems to be no phonetic difference between rising and falling syllables for the speakers in question (this final statement is, once again, based on my intuition and not on actual field work).

7 Conclusions

In this article, I have addressed the main issues in the domain of nominal accentuation in Modern Lithuanian: the Basic Accentuation Principle and the Saussurean Accent Shift. I have shown that the analysis in Blevins (1993) – while being fully suitable for Old Lithuanian – does not predict all the data correctly in the modern language. It does not recognize that the suffixes in the Saussurean set can be either strong or weak from a synchronic viewpoint, and adopts the assumption that they are all strong, as they actually were in Old Lithuanian.

In order to distinguish weak Saussurean from truly accent-free suffixes (which can never be accented), I have proposed that underlying accents can vary in strength (H vs H^l). In the analysis put forward in this paper, weak Saussurean suffixes are assumed to have an underlying accent with an l-diacritic, which distinguishes them from both strong suffixes and fully weak suffixes which have no underlying prosody at all.

The stress-shifting pattern triggered by the Saussurean suffixes is viewed as a cumulative right-edge effect, whereby a normally low-ranked preference to align surface accents with the right edges of phonological words is capable of manifesting itself in configurations where two underlying accents (of any strength) clash word-finally. There is nothing per se that makes these suffixes 'Saussurean' (e.g. random diacritics or lexically indexed constraints sensitive to them): it is a mere coincidence of having an underlying accent (weak or strong) and containing only one mora, thus providing a right-edge position for the surface accent.

8 Appendix: the accentual properties of nominal suffixes

Nouns and adjectives in Lithuanian are divided into four accent classes. There are two dichotomy lines of nominal stems: strength and accent location. The four accent paradigms are therefore the following:

- Paradigm 1: strong bases with a non-final accent;
- Paradigm 2: strong bases with a final accent;
- Paradigm 3: weak bases with a non-final accent;
- Paradigm 4: weak bases with a final accent.

Four of the five inflectional classes include nouns of all accent types. The tables provided below show combinations of inflectional class and accent type.

All instances of the Saussurean Accent Shift are highlighted in gray. Only those cells are marked where the BAPR would otherwise predict the stress to be on the stem. In other instances, such as the Loc.Sg form *vaikɛ́*, both the BAPR and the Saussurean Accent Shift would place the stress on the suffix. As is evident from the tables, the Saussurean Accent Shift only occurs in nouns with a stem-final accent.

Class I.b is only minimally different from Class I.a. The NOM.SG formative has two allomorphs. If accented, it is long, and short otherwise. The same holds for VOC.SG.

All nouns in Class I.b have a palatalized stem-final consonant. Nouns in Class I.a may have any stem-final consonant (cf. Class II.a and Class II.b below):

(83)   mɛɛ́las 'lie' ~ kɛɛ́lias 'road'.

The only significant differences between classes II.a and II.b is the nominative singular formative -eɛ́ in Class II.b, which is heavy and does not trigger the Saussurean Accent Shift in Paradigm 2. All nouns in Class II.b have a palatalized stem-final consonant (Šereikaitė & Kushnir 2022), while those in Class II.a may have any consonant stem-finally.

The only Saussurean suffix in Class III is ACC.PL. The NOM.SG suffix -ı́s is an exceptional non-trigger, as discussed above. In the table, the DAT.SG formative has two segmental strings: this depends on gender (M: -ui, F: -ai).

The NOM.SG marker in Class IV is an exceptional non-trigger, as it is in Class III. The Saussurean Accent Shift is observable only in ACC.PL.

Nouns in Class IV with a palatalized stem-final consonant have Class I suffixes in the plural (e.g. *stalčius* in the table).

The GEN.SG suffix -s in Class V is pre-accenting. It has a floating strong accent that docks onto the final mora of the stem.

Because of the stem augment -ɛn-/-ɛr- intervening between the root and the inflectional formative in all cases but NOM.SG, the Saussurean Accent Shift is not possible because two underlying accents can never be adjacent in these nouns. Accent Paradigms 2 and 4 are hence impossible in this class.

The only exception is *šuó* (ext.stem *šún-*) 'dog': the stem extender is just the resonant /n/, resulting in the mora linked to /u/ being the final mora of the stem, once the nasal has re-syllabified. This noun thus exceptionally belongs to Accent Paradigm 4:

(84)   ACC.SG: šúnii, INS.SG: **šuniú**, GEN.PL: šunuú

I am not aware of a strong nominal root belonging to Class V. Therefore, the table only shows Accent Paradigm 3.

	Paradigm 1			**Paradigm 2**		
	viiras 'man'			**indas 'dish'**		
Nom.Sg	víːr	as	víiras	ińd	as	ińdas
Gen.Sg	víːr	oo	víiroo	ińd	oo	ińdoo
Dat.Sg	víːr	ui	víirui	ińd	ui	ińdui
Acc.Sg	víːr	aa	víiraa	ińd	aa	ińdaa
Ins.Sg	víːr	ú	víiru	ińd	ú	indú
Loc.Sg	víːr	ɛ́	víirɛ	ińd	ɛ́	indɛ́
Voc.Sg	víːr	ɛ	víirɛ	ińd	ɛ	ińdɛ
Nom/Voc.Pl	víːr	aí	víirai	ińd	aí	ińdai
Gen.Pl	víːr	uǘ	víiruu	ińd	uǘ	ińduu
Dat.Pl	víːr	ắms	víirams	ińd	ắms	ińdams
Acc.Pl	víːr	ús	víirus	ińd	ús	indús
Ins.Pl	víːr	aís	víirais	ińd	aís	ińdais
Loc.Pl	víːr	uosɛ́	víiruose	ińd	uosɛ́	ińduosɛ
	Paradigm 3			**Paradigm 4**		
	kɛlmas 'stump'			**vaikas 'child'**		
Nom.Sg	kɛ́lm	as	kɛ́lmas	vaík	as	vaíkas
Gen.Sg	kɛ́lm	oo	kɛ́lmoo	vaík	oo	vaíkoo
Dat.Sg	kɛ́lm	ui	kɛ́lmui	vaík	ui	vaíkui
Acc.Sg	kɛ́lm	aa	kɛ́lmaa	vaík	aa	vaíkaa
Ins.Sg	kɛ́lm	ú	kɛ́lmu	vaík	ú	vaikú
Loc.Sg	kɛ́lm	ɛ́	kɛlmɛ́	vaík	ɛ́	vaikɛ́
Voc.Sg	kɛ́lm	ɛ	kɛ́lmɛ	vaík	ɛ	vaíkɛ
Nom/Voc.Pl	kɛ́lm	aí	kɛlmaí	vaík	aí	vaikaí
Gen.Pl	kɛ́lm	uǘ	kɛlmuú	vaík	uǘ	vaikuú
Dat.Pl	kɛ́lm	ắms	kɛlmáms	vaík	ắms	vaikáms
Acc.Pl	kɛ́lm	ús	kɛ́lmus	vaík	ús	vaikús
Ins.Pl	kɛ́lm	aís	kɛlmaís	vaík	aís	vaikaís
Loc.Pl	kɛ́lm	uosɛ́	kɛlmuosɛ́	vaík	uosɛ́	vaikuosɛ́

Table 4: Class I.a.

	Paradigm 1			Paradigm 2		
	broolis 'brother'			**žoodis 'word'**		
Nom.Sg	brőolʲ	is	bróolis	žőődʲ	is	žoódis
Gen.Sg	brőolʲ	oo	bróolioo	žőődʲ	oo	žoódžioo
Dat.Sg	brőolʲ	ui	bróoliui	žőődʲ	ui	žoódžiui
Acc.Sg	brőolʲ	ii	bróolii	žőődʲ	ii	žoódii
Ins.Sg	brőolʲ	ú	bróoliu	žőődʲ	ú	žoodžiú
Loc.Sg	brőolʲ	iijɛ́	bróoliijɛ	žőődʲ	iijɛ́	žoódiijɛ
Voc.Sg	brőolʲ	i	bróoli	žőődʲ	i	žoódi
Nom/Voc.Pl	brőolʲ	aɪ́	bróoliai	žőődʲ	aɪ́	žoódžiai
Gen.Pl	brőolʲ	uɯ́	bróoliuu	žőődʲ	uɯ́	žoódžiuu
Dat.Pl	brőolʲ	ắms	bróoliams	žőődʲ	ắms	žoódžiams
Acc.Pl	brőolʲ	ús	bróolius	žőődʲ	ús	žoodžiús
Ins.Pl	brőolʲ	aɪ́s	bróoliais	žőődʲ	aɪ́s	žoódžiais
Loc.Pl	brőolʲ	uosɛ́	bróoliuose	žőődʲ	uosɛ́	žoódžiuosɛ
	Paradigm 3			Paradigm 4		
	veežiis 'crayfish'			**garniis 'heron'**		
Nom.Sg	véežʲ	iɪ́s	veežiɪ́s	gaŕnʲ	iɪ́s	garniɪ́s
Gen.Sg	véežʲ	oo	véežioo	gaŕnʲ	oo	gaŕnioo
Dat.Sg	véežʲ	ui	véežiui	gaŕnʲ	ui	gaŕniui
Acc.Sg	véežʲ	ii	véežii	gaŕnʲ	ii	gaŕnii
Ins.Sg	véežʲ	ú	véežiu	gaŕnʲ	ú	garniú
Loc.Sg	véežʲ	iijɛ́	veežiijɛ́	gaŕnʲ	iijɛ́	garniijɛ́
Voc.Sg	véežʲ	iɪ́	veežiɪ́	gaŕnʲ	iɪ́	garniɪ́
Nom/Voc.Pl	véežʲ	aɪ́	veežiaɪ́	gaŕnʲ	aɪ́	garniaɪ́
Gen.Pl	véežʲ	uɯ́	veežiuɯ́	gaŕnʲ	uɯ́	garniuɯ́
Dat.Pl	véežʲ	ắms	veežiáms	gaŕnʲ	ắms	garniáms
Acc.Pl	véežʲ	ús	véežius	gaŕnʲ	ús	garniús
Ins.Pl	véežʲ	aɪ́s	veežiaɪ́s	gaŕnʲ	aɪ́s	garniaɪ́s
Loc.Pl	véežʲ	uosɛ́	veežiuosɛ́	gaŕnʲ	uosɛ́	garniuosɛ́

Table 5: Class I.b.

	Paradigm 1			Paradigm 2		
	varna 'crow'			ranka 'hand/arm'		
Nom.Sg	vắrn	ắ	várna	rańk	ắ	ranká
Gen.Sg	vắrn	oős	várnoos	rańk	oős	rańkoos
Dat.Sg	vắrn	ai	várnai	rańk	ai	rańkai
Acc.Sg	vắrn	aa	várnaa	rańk	aa	rańkaa
Ins.Sg	vắrn	á	várna	rańk	á	ranká
Loc.Sg	vắrn	oojế	várnoojɛ	rańk	oojế	rańkoojɛ
Voc.Sg	vắrn	a	várna	rańk	a	rańka
Nom/Voc.Pl	vắrn	oos	várnoos	rańk	oos	rańkoos
Gen.Pl	vắrn	uű	várnuu	rańk	uű	rańkuu
Dat.Pl	vắrn	őoms	várnooms	rańk	őoms	rańkooms
Acc.Pl	vắrn	ás	várnas	rańk	ás	rankás
Ins.Pl	vắrn	oomế	várnoomis	rańk	oomế	rańkoomis
Loc.Pl	vắrn	oosế	várnoosɛ	rańk	oosế	rańkoosɛ
	Paradigm 3			Paradigm 4		
	žmoona 'wife'			daina 'song'		
Nom.Sg	žmóon	ắ	žmooná	daín	ắ	dainá
Gen.Sg	žmóon	oős	žmoonoós	daín	oős	dainoós
Dat.Sg	žmóon	ai	žmóonai	daín	ai	daínai
Acc.Sg	žmóon	aa	žmóonaa	daín	aa	daínaa
Ins.Sg	žmóon	á	žmóona	daín	á	dainá
Loc.Sg	žmóon	oojế	žmoonoojế	daín	oojế	dainoojế
Voc.Sg	žmóon	a	žmóona	daín	a	daína
Nom/Voc.Pl	žmóon	oos	žmóonoos	daín	oos	daínoos
Gen.Pl	žmóon	uű	žmoonuú	daín	uű	dainuú
Dat.Pl	žmóon	őoms	žmoonóoms	daín	őoms	dainóoms
Acc.Pl	žmóon	ás	žmóonas	daín	ás	dainás
Ins.Pl	žmóon	oomế	žmoonoomís	daín	oomế	dainoomís
Loc.Pl	žmóon	oosế	žmoonoosế	daín	oosế	dainoosế

Table 6: Class II.a.

	Paradigm 1			Paradigm 2		
	mɛilee 'love'			upee 'river'		
Nom.Sg	mɛ́ilʲ	eɛ́	mɛ́ilee	úpʲ	eɛ́	úpee
Gen.Sg	mɛ́ilʲ	eɛ́s	mɛ́ilees	úpʲ	eɛ́s	úpees
Dat.Sg	mɛ́ilʲ	ɛi	mɛ́ilɛi	úpʲ	ɛi	úpɛi
Acc.Sg	mɛ́ilʲ	ɛɛ	mɛ́ilɛɛ	úpʲ	ɛɛ	úpɛɛ
Ins.Sg	mɛ́ilʲ	ɛ́	mɛ́ilɛ	úpʲ	ɛ́	upɛ́
Loc.Sg	mɛ́ilʲ	eejɛ́	mɛ́ileejɛ	úpʲ	eejɛ́	úpeejɛ
Voc.Sg	mɛ́ilʲ	ɛ	mɛ́ilɛ	úpʲ	ɛ	úpɛ
Nom/Voc.Pl	mɛ́ilʲ	ees	mɛ́ilees	úpʲ	ees	úpees
Gen.Pl	mɛ́ilʲ	uɛ́	mɛ́iliuu	úpʲ	uɛ́	úpiuu
Dat.Pl	mɛ́ilʲ	ɛ́ems	mɛ́ileems	úpʲ	ɛ́ems	úpeems
Acc.Pl	mɛ́ilʲ	ɛ́s	mɛ́ilɛs	úpʲ	ɛ́s	upɛ́s
Ins.Pl	mɛ́ilʲ	eemɛ́s	mɛ́ileemis	úpʲ	eemɛ́s	úpeemis
Loc.Pl	mɛ́ilʲ	eesɛ́	mɛ́ileesɛ	úpʲ	eesɛ́	úpeesɛ
	Paradigm 3			Paradigm 4		
	giesmee 'hymn'			varlee 'frog'		
Nom.Sg	gíesmʲ	eɛ́	giesmeɛ́	vaŕlʲ	eɛ́	varleɛ́
Gen.Sg	gíesmʲ	eɛ́s	giesmeɛ́s	vaŕlʲ	eɛ́s	varleɛ́s
Dat.Sg	gíesmʲ	ɛi	gíesmɛi	vaŕlʲ	ɛi	vaŕlɛi
Acc.Sg	gíesmʲ	ɛɛ	gíesmɛɛ	vaŕlʲ	ɛɛ	vaŕlɛɛ
Ins.Sg	gíesmʲ	ɛ́	gíesmɛ	vaŕlʲ	ɛ́	varlɛ́
Loc.Sg	gíesmʲ	eejɛ́	giesmeejɛ́	vaŕlʲ	eejɛ́	varleejɛ́
Voc.Sg	gíesmʲ	ɛ	gíesmɛ	vaŕlʲ	ɛ	vaŕlɛ
Nom/Voc.Pl	gíesmʲ	ees	gíesmees	vaŕlʲ	ees	vaŕlees
Gen.Pl	gíesmʲ	uɛ́	giesmiuú	vaŕlʲ	uɛ́	varliuú
Dat.Pl	gíesmʲ	ɛ́ems	giesmɛ́ems	vaŕlʲ	ɛ́ems	varlɛ́ems
Acc.Pl	gíesmʲ	ɛ́s	gíesmɛs	vaŕlʲ	ɛ́s	varlɛ́s
Ins.Pl	gíesmʲ	eemɛ́s	giesmeemɛ́s	vaŕlʲ	eemɛ́s	varleemɛ́s
Loc.Pl	gíesmʲ	eesɛ́	giesmeesɛ́	vaŕlʲ	eesɛ́	varleesɛ́

Table 7: Class II.b.

	Paradigm 1			Paradigm 2		
	ietis 'javelin'			**geluonis 'stinger'**		
Nom.Sg	ǐetʲ	ǐs	íetis	geluő̃nʲ	ǐs	geluónis
Gen.Sg	ǐetʲ	iě̃s	íeties	geluő̃nʲ	iě̃s	geluónies
Dat.Sg	ǐetʲ	ʲai	íečiai	geluő̃nʲ	ʲui	geluóniui
Acc.Sg	ǐetʲ	ii	íetii	geluő̃nʲ	ii	geluónii
Ins.Sg	ǐetʲ	imǐ̃	íetimi	geluő̃nʲ	imǐ̃	geluónimi
Loc.Sg	ǐetʲ	iijě̃	íetiijɛ	geluő̃nʲ	iijě̃	geluóniijɛ
Voc.Sg	ǐetʲ	iě̃	íetie	geluő̃nʲ	iě̃	geluónie
Nom/Voc.Pl	ǐetʲ	iis	íetiis	geluő̃nʲ	iis	geluóniis
Gen.Pl	ǐetʲ	uű̃	íečiuu	geluő̃nʲ	uű̃	geluóniuu
Dat.Pl	ǐetʲ	ǐ̃ms	íetims	geluő̃nʲ	ǐ̃ms	geluónims
Acc.Pl	ǐetʲ	ís	íetis	geluő̃nʲ	ís	geluonís
Ins.Pl	ǐetʲ	imǐ̃s	íetimis	geluő̃nʲ	imǐ̃s	geluónimis
Loc.Pl	ǐetʲ	iisě̃	íetiisɛ	geluő̃nʲ	iisě̃	geluóniisɛ
	Paradigm 3			Paradigm 4		
	viltis 'hope'			**naktis 'night'**		
Nom.Sg	vǐltʲ	ǐ̃s	viltís	nákt	ǐ̃s	naktís
Gen.Sg	vǐltʲ	iě̃s	viltiés	nákt	iě̃s	naktiés
Dat.Sg	vǐltʲ	ʲai	vílčiai	nákt	ʲai	naákčiai
Acc.Sg	vǐltʲ	ii	víltii	nákt	ii	naáktii
Ins.Sg	vǐltʲ	imǐ̃	viltimí	nákt	imǐ̃	naktimí
Loc.Sg	vǐltʲ	iijě̃	viltiijé	nákt	iijě̃	naktiijé
Voc.Sg	vǐltʲ	iě̃	viltié	nákt	iě̃	naktié
Nom/Voc.Pl	vǐltʲ	iis	víltiis	nákt	iis	naáktiis
Gen.Pl	vǐltʲ	uű̃	vilčiuú	nákt	uű̃	naktuú
Dat.Pl	vǐltʲ	ǐ̃ms	viltíms	nákt	ǐ̃ms	naktíms
Acc.Pl	vǐltʲ	ís	víltis	nákt	ís	naktís
Ins.Pl	vǐltʲ	imǐ̃s	viltimís	nákt	imǐ̃s	naktimís
Loc.Pl	vǐltʲ	iisě̃	viltiisé	nákt	iisě̃	naktiisé

Table 8: Class III.

	Paradigm 1			Paradigm 2		
	stalčius 'drawer'			**turgus 'market'**		
Nom.Sg	stắlčʲ	űs	stálčius	tuŕg	űs	tuŕgus
Gen.Sg	stắlčʲ	aűs	stálčiaus	tuŕg	aűs	tuŕaus
Dat.Sg	stắlčʲ	ui	stálčiui	tuŕg	ui	tuŕgui
Acc.Sg	stắlčʲ	uu	stálčiuu	tuŕg	uu	tuŕguu
Ins.Sg	stắlčʲ	umĭ́	stálčiumi	tuŕg	umĭ́	tuŕgumi
Loc.Sg	stắlčʲ	ujĕ́	stálčiuj ɛ	tuŕg	ujĕ́	tuŕgujɛ
Voc.Sg	stắlčʲ	aű	stálčiau	tuŕg	aű	tuŕgau
Nom/Voc.Pl	stắlčʲ	aí́	stálčiai	tuŕg	uus	tuŕguus
Gen.Pl	stắlčʲ	uű	stálčiuu	tuŕg	uű	tuŕguu
Dat.Pl	stắlčʲ	ắms	stálčiams	tuŕg	űms	tuŕgums
Acc.Pl	stắlčʲ	ús	stálčius	tuŕg	ús	turgús
Ins.Pl	stắlčʲ	aí́s	stálčiais	tuŕg	umĭ́s	tuŕgumis
Loc.Pl	stắlčʲ	uosĕ́	stálčiuosɛ	tuŕg	uosĕ́	tuŕguosɛ
	Paradigm 3			Paradigm 4		
	suunus 'son'			**alus 'ale'**		
Nom.Sg	súun	űs	suunús	ál	űs	alús
Gen.Sg	súun	aűs	suunaús	ál	aűs	alaús
Dat.Sg	súun	ui	súunui	ál	ui	aálui
Acc.Sg	sun	uu	súunuu	ál	uu	aáluu
Ins.Sg	súun	umĭ́	suunumí	ál	umĭ́	alumí
Loc.Sg	súun	ujĕ́	suunujé	ál	ujĕ́	alujé
Voc.Sg	súun	aű	suunaú	ál	aű	alaú
Nom/Voc.Pl	súun	uus	súunuus	ál	uus	aáluus
Gen.Pl	súun	uű	suunuú	ál	uű	aluú
Dat.Pl	súun	űms	suunúms	ál	űms	alúms
Acc.Pl	súun	ús	súunus	ál	ús	alús
Ins.Pl	súun	umĭ́s	suunumĭ́s	ál	umĭ́s	alumĭ́s
Loc.Pl	súun	uosĕ́	suunuosĕ́	ál	uosĕ́	aluosĕ́

Table 9: Class IV.

	Paradigm 3		
	akmuo 'stone'		
Nom.Sg	ákm	uő	akmuó
Gen.Sg	ákmɛn	ᴴs	akmɛ́s
Dat.Sg	ákmɛn	ʲui	aákmɛniui
Acc.Sg	ákmɛn	ii	aákmɛnii
Ins.Sg	ákmɛn	ʲú	aákmɛniu
Loc.Sg	ákmɛn	iijɛ̋	akmɛniijé
Voc.Sg	ákmɛn	iɛ̋	akmɛnié
Nom/Voc.Pl	ákmɛn	iis	aákmɛniis
Gen.Pl	ákmɛn	uű	akmɛnuu
Dat.Pl	ákmɛn	ı̋ms	akmɛníms
Acc.Pl	ákmɛn	ís	aákmɛnis
Ins.Pl	ákmɛn	imı̋s	akmɛnimís
Loc.Pl	ákmɛn	iisɛ̋	akmɛniisé

Table 10: Class V.

8.1 The dual suffixes

The dual, which has largely fallen out of use in Modern Lithuanian (but is still listed in some grammars and used productively in some dialects, cf. Zinkevičius 1994; Bacevičiūtė et al. 2004), has nominative-accusative markers that also belong to the Saussurean set:

(85) *Feminine dual forms:*
   a.   gálv + í → (dví) gálvi 'two heads'
   b.   daín + í → (dví) dainí 'two songs'

(86) *Masculine dual forms:*
   a.   vı̋ir + ú → (dú) víiru 'two men'
   b.   soőd + ú → (dú) soodú 'two gardens'

All the other dual suffixes do not trigger the Saussurean Accent Shift because they are bimoraic.

8.2 Adjectival suffixes

Most adjectival suffixes match or resemble those of nouns. Some forms use pronominal suffixes, and their segmental strings and/or prosody may be different:

(87) a. vaík + ui → vaíkui 'child.DAT.SG'   [nominal suffix: weak]
b. laísv + ắm → laisvám 'free.M.DAT.SG'   [adjectival suffix: strong]
c. vaík + ɛ̃ → vaikɛ́ 'child.LOC.SG'   [nominal suffix: monosyllabic]
d. laísv + amɛ̃ → laisvamɛ́ 'free.M.LOC.SG'   [adjctival suffix: bisyllabic]

This is expected because adjectives have (partially) their own inflectional classes, and each suffix has its own independent prosodic properties. When adjectives and nouns have segmentally identical suffixes, they tend to have identical prosody:

(88) a. vaík + ú → vaikú 'child.INS.SG'   [accent shift]
b. laísv + ú → laisvú 'free.M.INS.SG'   [accent shift]

An interesting observation is that the all native adjective roots are weak, i.e. they have either Paradigm 3 or Paradigm 4, depending on accent finality. I take this to be accidental grouping, as is the tendency of certain segmental strings to have certain prosodic properties in Lithuanian verbs (Kushnir 2019).

Abbreviations

1 = first person, 2 = second person, 3 = third person, μ = mora, σ = syllable, φ = phi feature(s), ω = prosodic word, ACC = accusative, attr = attracting, BAP = Basic Accentuation Principle, BAPR = Basic Accentuation Placement Rule, DAT = dative, EP = epenthetic, F = feminine, GEN = genitive, GSR = gradient symbolic representation(s), HG = Harmonic Grammar, INS = instrumental, LCC = Local Constraing Conjuction, LOC = locative, M = masculine, NOM = nominative, OL = Old Lithuanian, OT = Optimatlity Theory, PF = phonological form, PL = plural, SG = singular, SR = surface representation, str = strong, UG = universal grammar, UR = underlying representation, wk = weak.

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Competing Interests

The author has no competing interests to declare.

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