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Prosodic Patterns in Lithuanian Morphology

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Yuriy Kushnir

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Gutachter:

Prof. Dr. Jochen Trommer (Universität Leipzig)

Prof. Dr. Gereon Müller (Universität Leipzig)

Prof. Dr. Donca Steriade (Massachusetts Institute of Technology, Cambridge, MA)

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In loving memory of my grandparents,
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Foreword and acknowledgements

Exactly eleven years ago, I moved to New York City from my home country in order to start a new life with my partner, who is today my husband. Even though he was born and raised in the US, his family's language was Lithuanian. Having left their homeland behind during World War II, they wanted to preserve the linguistic and cultural aspects of the home they had been so cruelly forced to leave. When I came to America, I made a pilgrimage into the world of the Lithuanian language: it became my primary task to become fluent in my family of choice's mother tongue. Over the next few years, I had the honor to teach practical Lithuanian to native English speakers at the Maironis Lithuanian School in New York.

Now, years later, I am in Leipzig, Germany, typing these words and feeling grateful for having the opportunity to fuse my passion for formal linguistics with my passion for Lithuanian in this single project. What fascinated me about this language from the first day was the elegance of its sound system, with the velars unaffected by any of the palatalization processes which occurred so robustly in Slavic after Proto-Baltic and Proto-Slavic had parted ways. The archaic declension paradigms, the intactness of the original vowels and diphthongs, the theoretically challenging double passives, the vast layer of ancient vocabulary – the list of interesting and intriguing things about this language can go on and on.

Worthy of particular attention is the notoriously complex accentuation system. Non-native learners must face the challenge of not only memorizing multiple inflectional paradigms for each inflected word class, but also multiple accentual classes, which exist independently from the segmental content of roots and inflectional markers. Old Lithuanian inherited the accentual system of Late Proto-Balto-Slavic, which was already quite complicated, having developed pitch contrasts which replaced segmental gaps created when the PIE laryngeal consonants were eliminated from the system. This development is yet another attestation of how tonal patterns salvage a phonological system when segmental inventories are reduced, springing into action in order to avoid homophony.

Over the course of its independent evolution, Lithuanian remodeled the system of its accents and actually made it even more complicated in some respects. While traditional Lithuanian grammars still employ the terms 'acute' and 'circumflex' to refer to the two pitch contrasts observed in heavy syllables, the actual pronunciation of the two contours is nowadays more or less the mirror image of what is observed in varieties such as Old Štokavian (a dialect of Bosnian/Serbian/Croatian/Montenegrin) or Latvian. While the contrasts might have been more tonal in Old Lithuanian, the modern realization of the two accents is more grounded in the relative intensity of the two moras necessarily present in a heavy syllable. It looks as if modern Lithuanian possesses an accent system akin to those found in Russian or Greek, with the additional feature of having distinctive left- versus right-hand accent positioning in

bimoraic syllables. Dynamic accent was already found in Proto-Balto-Slavic. However, at that stage, all long syllables had their inherent pitch contour regardless of whether they were accented or not. This is not the case in Modern Lithuanian. If a syllable loses the iktus (the primary dynamic accent within a word), the acute/circumflex distinction is also inevitably lost. This further confirms that what is still attributed to pitch distinctions is merely the surface realization of left- and right-hand prominence within a syllable.

Lithuanian accentuation has received some attention in formal linguistic literature. Thus, the famous rightward accent shift from non-acute to acute syllables was thoroughly described by Ferdinand de Saussure and up to this day bears the name Saussure's Law. In Modern Lithuanian, Saussure's Law is manifested in a different way. [Blevins \(1993\)](#) provides an elegant tonal analysis for the system of nominal accentuation in Lithuanian. The analysis does, however, fail to capture Saussure's Law. While it seems like a straightforward generalization, its exact mechanism is quite intricate if we look at it from a strictly synchronic perspective. A significant, if not the most important, part of this dissertation is dedicated to the phenomenon of Saussure's Law. I will also be discussing other challenging aspects of Lithuanian grammar, such as dominance and the very complex system of verbal accentuation where both finite and non-finite forms display their own unique behavioral patterns which, at the first glance, are hard to tackle using just one basic mechanism. I will show how, having made the assumption about underlying representations that I will be pursuing in this work, the whole plethora of accentual patterns is easily derivable.

The idea to write this dissertation goes back to 2016 when our graduate school was honored by the presence of Prof. Donca Steriade who was visiting from MIT and teaching a compact course on cyclicity at Leipzig University. A passionate linguist, she has a special appreciation for Indo-European languages, their history, and their formal description. She encouraged my idea to work on Lithuanian and assured me that it is indeed a very interesting and, most importantly, under-researched language. We spent long hours talking about Lithuanian morpho-phonology, which resulted in me becoming solidly persuaded that this was the right topic for my dissertation project.

Since I started working on Lithuanian prosody, I have received valuable feedback and comments from many talented linguists. First and foremost, I would like to express my gratitude to my supervisor, Prof. Jochen Trommer at Leipzig University. He has invested a lot of time and energy not only into sharing his profound knowledge in the fields of phonology and morphology, but also into listening to what I had to say, approaching it with an open mind and providing me with a lot of advice and guidance along the way.

I also owe so much to each and every member of the IGRA Graduate School. Being a graduate student here has been an honor for me. Stimulating, challenging and extremely diverse – these are the three terms I would use to best describe the environment. The amount of input

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I honestly do not know if I would have been able to complete this program without my amazing husband, Ray Kirstein, who has been supportive of me every step of the way. Thank you very much for your wisdom, your gentleness and your patience. I love you and am humbled to be your spouse.

Finally, a lot of my gratitude goes to my beloved mother and aunt, Vladlena Kushnir and Galina Kušnirová. Thank you for always being on my side! You did so much to make the pursuit of my big dream possible. I am immensely grateful and obliged to both of you for this. Thank you!

Chapter 1

Introduction

1.1 Problems

This dissertation is about *lexical accent* and its distribution in a language with free accent placement. I will present and back my central claim that underlying accents in Lithuanian can be strong and weak. Allowing for the existence of gradient symbolic representations in phonology will allow us to capture the distribution of surface accents across the major parts of speech in Lithuanian in a clear and straightforward manner. In particular, I will address and answer the following questions:

- The *Basic Accentuation Principle* and the application of *Saussure's Law* in its synchronic state;
- The (in)famous concept of *Dominance* and the related phenomenon I call *Fortification*;
- The distribution of accents in verbal forms, which will provide very clear evidence in favor of adopting a *cyclic model* of phonology where optimization phases track the morphological structure of words.

In a Lithuanian word, any of its moras may bear the main surface accent (which is always unique), regardless of how many syllables/moras the word contains:¹

- (1)
- áažuolas ‘oak tree’
 - póostingauti ‘to philosophize’
 - pérsirašineeju ‘it was being re-written’
 - kaĩbarii ‘room.ACC.SG’
 - nuostaábuu ‘wonderful.M.ACC.SG’
 - nepasimaátee ‘they did not see each other’
 - tėbėsitaasiitumeete ‘you would still be wandering around’
 - Galuonáms ‘PN.DAT.PL’
 - nuostabiuú ‘wonderful.GEN.PL’

While it looks quite chaotic at the first glance, the distribution of surface accents follows a system of strict rules, albeit quite a large number thereof. Thus, for inflected nominal, the behavior can be largely predicted by identifying whether the stem and the respective inflectional morpheme are *strong* or *weak*. If one of the two morphemes is strong (marked in bold in the examples below) and the other one is weak, the strong morpheme will surface with the main accent. Otherwise, if both morphemes are strong or if both are weak, the morphologic head, i.e. the stem, will take the main accent.

¹ My transcription of Lithuanian words differs from the standard Lithuanian orthography in several significant aspects. The notation is explained in the appendix.

- (2) a. **varn-** ‘crow’ + -aa ‘ACC.SG’ → várnaa
 b. vaik- ‘child’ + -**uu** ‘GEN.PL’ → vaikuú
- (3) a. **varn-** ‘crow’ + -**uu** ‘GEN.PL’ → várnuu
 b. vaik- ‘child’ + -aa ‘ACC.SG’ → vaíkaa

In (3-b), the surface accent is assumed to be epenthetic, as this is a common assumption for similar Indo-European accent systems, such as Vedic Sanskrit (Halle and Vergnaud, 1987a; Blevins, 1993; Inkelas, 1998). It is believed to be inserted by default because both morphemes are weak and therefore underlyingly unaccented. While such default accents are always aligned with the left edge of the phonological word in languages like Vedic, in Lithuanian, they can show up anywhere along the moraic skeleton of the stem:

- (4) véid-aa, vílk-aa, áažuol-aa, kaĩbar-ii, nuostaáb-uu [all weak stems]

Upon closer scrutiny, the weak stems of Lithuanian nominals do not seem to be that weak after all. The ‘default’ accent always falls onto a designated mora within each stem, with this location being a lexical property. This observation prompts one to assume that these roots are actually underlyingly accented; however, their accent might not be as strong as the accent of the following inflectional morpheme (that is why some inflectional morphemes win over weak stems). Under the assumption that some morphemes have a strong underlying accent (double acute below) and some are endowed with a weak one, the accentuation pattern shown above still holds, but now we do not need to make stipulative assumptions about why different weak stems are accented so differently when they do surface with the main word accent:

- (5) a. várn + aá → várnaa
 b. vaík + aá → vaíkaa
 c. várn + uú → várnuu
 d. vaík + uú → vaikuú

I will model strong and weak accents using Gradient Symbolic Representations in grammar (Goldrick and Smolensky, 2016), with evaluations conducted within the Harmonic Grammar framework (Legendre et al., 1990; Pater, 2009, 2016; Murphy, 2017).

Another advantage of assuming the existence of weak and strong underlying accents in Lithuanian is the fact that it allows to account for the accent shift known as Saussure’s Law. There are a range of short inflectional affixes in Lithuanian which attract the surface accent from any stem that is accented on its final mora. Some of these affixes are synchronically weak. Now, compare the behavior of the following two weak affixes:

- (6) a. rańk + a (?) → rańka ‘hand.VOC.SG’
 b. rańk + a (?) → **ranká** ‘hand.INSTR.SG’

We know that the second suffix is weak because it will be unaccented after a weak stem with its underlying accent on a non-final mora:

- (7) a. žmóon + a (?) → žmóona ‘wife.VOC.SG’
 b. žmóon + a (?) → žmóona ‘wife.INSTR.SG’

If there is no difference in the underlying representations of these two inflectional markers (both accent-free and short), then their different behavior is more or less arbitrary. My proposal is different. I assume that the vocative singular affix is truly accent-free, while the instrumental formative contains a weak underlying accent.

The accent shift in (6-b) is due to the fact that two underlying accents have collided at the right edge of the phonological word. I will argue below that each such configuration results in the surface accent being right-aligned. At the end of Chapter 2, I will arrive at the conclusion that Lithuanian roots mandatorily have at least a weak underlying accent, while inflectional endings may be fully accent-free (while they may of course also be weakly or strongly accented in the UR).

An interesting issue that numerous phonologists (e.g. Halle and Vergnaud 1987b,a; Inkelas 1998; Alderete 2001a) have been discussing over the years is that of Dominance. Dominance is defined as an effect where the addition of a subordinate (i.e. non-head) morpheme causes an erasure of the existing prosody on the head. Let us consider the following complex form:

- (8) [[ěln + ĩen] + ǎ] → [ɛlnĭen + ǎ] → ɛlnĭena ‘deer_meat.NOM.SG’

In the outer bracket, the pattern above is adhered to: the two accents are equal in strength, so the stem wins over the affix. However, in the inner bracket, the base is ěln-, and -ĭen- is a derivation suffix referring to animal meat. According to the principle considered above, the accent of the base should win. However, it does not. Even more peculiar is the behavior of the suffix -ɛn- which is also added to animal names and refers to the respective animals’ skin or fur. This suffix is never accented, so it is believed to be underlyingly accent-free. However, when added to a strong base, it makes the base weak, but without shifting its accent position:

- (9) a. [[ěln + ɛn] + ǎ] → [ɛlnɛn + ǎ] → ɛlnɛná ‘deer_skin.NOM.SG’
 b. [[ěln + ɛn] + aa] → [ɛlnɛn + aa] → ɛlnɛnaa ‘deer_skin.ACC.SG’

Interestingly enough, the mirror image of this effect is also attested in Lithuanian. For in-

stance, the accent-free suffix *-išk-* used to derive adjectives from nouns turns weak nominal stems into strong ones.

- (10) a. vaík + uú → vaikuú ‘child.GEN.SG’
b. [[vaík + išk] + uú] → [vaíkišk + uú] → vaikiškuu ‘child-like.GEN.PL’

In Chapter 3, I will propose an apparatus which treats both dominance and fortification in a uniform manner. Both processes rely on the existence of floating accents introduced as parts of the exponents of certain morphemes. Similarly to what happens during the application of the Saussurian accent shift (see above), a floating accent docks onto the existing accent of the base a dominant/fortifying morpheme is appended to. The weight of the resulting merged accent is the sum of the weights of the two original accents. I assume that dominant morphemes have negatively specified accents, which causes the accent of the base to lose some of its underlying activity as a result. Conversely, a fortifying morpheme has a positively specified floating accent, which reinforces the existing accent on the base.

Finally, in the third and last theoretical part of the current thesis (Chapter 4), I discuss the prosody of Lithuanian verbs. The verb is the part of speech in Lithuanian which displays the highest number of interactions between the prosodic elements of various morphemes. The first peculiarity is that Saussure’s Law applies both locally and non-locally in the verbal domain:

- (11) a. raĩd+ú → randú ‘I find’
b. rád+a+ú → radaú (!) ‘I found’

While this threatens to ruin the analysis proposed in the nominal chapter at the first glance, I will show how this result is actually not at all unexpected if counter-scopal orderings of morphemes are assumed to be possible in natural language (Kiparsky, 2017).

Another curious issue in the behavior of Lithuanian verbs is that, when a preverb is added on the left side of a verbal root, some verbs shift the main word accent to the preverb across the conjugation paradigm (in the present, in the past or even in both).

- (12) a. kaásee ‘(s)he dug’, kasiaú ‘I dug’
b. pákasee ‘(s)he dug under’, pákasiau ‘I dug under’

I will claim that this retraction of the surface stress is an indication that the root allomorph has a weak underlying accent in a given tense form. Why and how exactly prefixes take precedence over roots will be discussed extensively in the respective sections.

Finally, anyone who is familiar with the behavior of Lithuanian participles will notice that there are discrepancies with regard to their stems' strength on the one hand and accent placement on the other. For instance, in the present active participle, the stem is always strong, but the placement of the accent on the preverb with many verbs creates the impression that the stem might have originally been weak (which is confirmed by the fact that the present tense form of these verbs has a weak stem). On the other hand, the past active participle always has a strong stem with the accent never retracted to the preverb, even when the root allomorph in the finite past tense form is weak.

- (13) a. pákalb-, pákalb- 'talk.PRS' ↔ pákalbant- 'talk.PTCP.PRS.ACT'
 b. beér-, pábeer- 'spill.PST' ↔ pabeėrus- 'spill.PTCP.PST.ACT'

I will derive these effects by claiming that both of these participial suffixes have a uniform fortifying effect on the stem they are added to; nevertheless, the timing of their concatenation with the base is crucially different. While the present active participle's stem is formed in a separate cycle following the formation of the finite present-tense form, the suffix of the past participle is concatenated with the verbal root very early, before any preverbs are added. This creates two strong participle stems, but the interactions of the underlying accents differ depending on which of the underlying accents compete at a given moment in time.

- (14) a. [[[pá + kalb] + a] + **H_{+0.5,nt}**]
 b. [pa + [beer + **H_{+0.5,us}**]]

While I do not need to assume different rankings of constraints for the morphology-controlled cycles (i.e. Stratal OT, cf. [Bermúdez-Otero 2010](#); [Kiparsky 2000](#)), I will be adopting a cyclic model of phonology where parts of larger morphological formations are phonologically evaluated before more material is added ([Halle and Vergnaud, 1987a](#)).

By the time the reader has reached the end of this thesis, I hope they become convinced that Lithuanian accentuation is not as chaotic as it seems to be at the first glance. Once the handful of core principles have been established, they can be applied to a wide range of phenomena and derive them relatively unproblematically. Certain accentual patterns look quite opaque on the surface simply because the cyclic nature of phonological derivations is not immediately obvious when looking at surface forms only. However, once every morpheme is in the right place and enters the derivation at the right time, the system actually appears to be quite well-behaved. I have personally not yet come across a number of exceptions substantial enough to question the overall regularity of the accentual system in the language.

1.2 Meet the Lithuanian language

Before I speak extensively about the prosodic properties of Lithuanian nominals and verbs, I would like to briefly introduce the language. Lithuanian is a fascinating blend of ancient segments in the phonology reminiscent of the speech of Proto-Balto-Slavonic tribes, similarly archaic inflectional categories and a vast vocabulary preserving strikingly archaic, as well as completely contemporary terms suitable for use in the technologically advanced world of the twenty-first century, both borrowed and invented using native morphemes.

- (15) a. kompiuter-is ‘computer’
b. var-ikl-is ‘engine’ « var-ii-ti « ‘to drive / move forward’

People often speak of Lithuanian as being the best-preserved Indo-European language. It is enough to open up Google and enter a search string saying something like “Lithuanian oldest language” – and dozens of hits, including articles in reputable news sources, pop up immediately. This is, of course, not quite true. In my opinion, there is no single ‘best preserved’ Indo-European language. Some Indo-European languages have archaic sound inventories, but innovative morphosyntax. Some have conservative morphology, but completely transformed sound inventories. Every living Indo-European language is an amalgamation of old and new features, with some of these new features being original innovations (e.g. the Slavic past participle suffix /-l-/ or the Germanic dental suffix marking the past tense, cf. [Forston 2010](#)), and others being the result of language contact, either with fellow IE languages or with completely foreign ones, such as Finnish, Basque, Arabic, Turkish etc.

Just to illustrate the point I am trying to make, it is noteworthy that Lithuanian has completely restructured the system of its verbal inflections. The set of its agreement markers has been simplified drastically, so that the same formatives are used in all tenses. In [Table 1.1](#) below, the final agreement morpheme is exactly the same for all verbs in all tenses. If we take into consideration the fact that the conditional mood’s marker is highly irregular and that the agreement morpheme is optional in the second person singular, it can be claimed that the series of agreement morphemes is at least partially different in the conditional mood. Whatever the final analysis might be, the conditional forms emerged fairly recently from the fusion of the regular agreement affixes with the optative stem of the auxiliary ‘to be’, which was appended to a supine form of the main verb. In other words, at the time a synthetic conditional was created in the language, there was only one series of agreement formatives left in the system.

The only relics of the other PIE series of person and number endings is the former athematic third-person marker /-ti/ preserved in a handful of forms in the modern language.

	Present	Past	Future	Conditional
1SG	žin-a-u	žin-oo-j-a-u	žin-oo-s-i-u	žin-oo-čia-u
2SG	žin-a-i	žin-oo-j-a-i	žin-oo-s-Ø-i	žin-oo-tum(ε-i)
1PL	žin-oo-mε	žin-oo-j-oo-mε	žin-oo-s-i-mε	žin-oo-tu(mee)-mε
2PL	žin-oo-tε	žin-oo-j-oo-tε	žin-oo-s-i-tε	žin-oo-tu(mee)-tε
3SG/PL	žin-oo-Ø	žin-oo-j-oo-Ø	žin-oo-s-Ø-Ø	žin-oo-tuu-Ø

Table 1.1: *Lithuanian agreement markers.*

(16) snieg-ti ‘it snows’, niež-ti ‘it’s itchy’, (arch.) εεs-ti ‘it is’

The Indo-European system of verbal aspects is also missing, almost without a trace left in the modern language. The passive/middle voice paradigm has also been eliminated (while it survives in languages like Greek and Latin), with the passive voice expressed periphrastically in the modern language.

The original ablaut grades, which were used to distinguish between aspectual forms, are now employed to distinguish between different tense forms, which is a Baltic innovation (partially shared with Germanic, where strong verbs expone the past tense via sound changes based on the old ablaut system). There is no universal relationship between the individual ablaut grades and the tenses they mark. Individual verbs may behave idiosyncratically, so that the modern language has to rely on contextual root allomorph selection when inflecting a finite verb. Thus, in Table 1.1, the additional stem-extending suffix /-oo-/ is the only element distinguishing the past tense from the present. Otherwise, the root allomorphs and theme vowels are identical. Some would say that the past-tense base [žinoo-] is, synchronically speaking, an indivisible root allomorph, for the vocalic suffix has no formal function in the language except for differentiating different allomorphs of one and the same root.

An extensive set of participles survive into the modern language, of which most are used actively not only in the written language, but also in everyday speech. A Baltic innovation – the converb – has the suffix /-dam-/ and is not found in the most closely related language groups – Slavic and Germanic. The converb is used for non-finite predicates in clauses with controlled *PRO* subjects.

Lithuanian nominals also underwent significant modifications compared to the original system. The neuter gender has been largely eliminated, surviving only on generic adjectival predicates, but not as an inherent gender on nouns, which can only be feminine or masculine. Most of the original neuters are masculine nouns in the modern language. The same picture is observed in Latvian, Lithuanian’s closest surviving relative. Numerous other Indo-European languages underwent a similar development whereby the neuter was purged from the system. The dual number has been eliminated almost completely, with dually inflected nouns

Form	Tense	Voice	Meaning
<i>vaalantis</i>	present	active	the one who cleans
<i>vaaloomas</i>	present	passive	the one that is being cleaned
<i>vaakεεs</i>	past	active	the one who cleaned
<i>vaaliitas</i>	past	passive	the one that has been cleaned
<i>valiisiantis</i>	future	active	the one who will clean
<i>valiisimas</i>	future	passive	the one that will be cleaned
<i>valiitinas</i>	future	passive	the one that should be cleaned
<i>valiidamas</i>	present	active	while cleaning [Conv]

Table 1.2: *Lithuanian participles.*

and verbs creating an archaic impression in most contexts. A handful of remote dialects have productive duals.

(17) *The dual on nouns:*

- a. vienas viir-as ‘one man’
- b. du viir-ai/-u ‘two men’
- c. triis viir-ai ‘three men’

(18) *The dual on verbs:*²

- a. mudu ein-a-mε/-va ‘the two of us are walking’
- b. mεεs triis ein-a-mε ‘the three of us are walking’

A clearly distinct dual actually survives only in the nominative/accusative form (these two cases are always syncretic in the dual). In the oblique cases, the dual inflections tend to be leveled with plural ending, thus eliminating the contrast.

(19) *Dual vs plural obliques:*

	Du	Pl
G	varn-uu	varn-uu
D	varn-oom	varn-ooms
I	varn-oom	varn-oomis
L	varn-oose	varn-oose

² The dual form of the personal pronoun – *mudu* – in the example here is the only kind of dual still commonly heard in everyday speech.

The ablative case did not survive into the modern language, having merged with the genitive. What is called the genitive synchronically sometimes bears the old ablative inflections (cf. the identical picture in Slavic, where o-nouns also have the ablative suffixes in the genitive singular). The locative case survives intact in the plural, but the singular has a new inflection going back to a combination of the accusative case with a postposition. Interestingly enough, this new inflection is, in its synchronic shape, very close to what is used in many inflectional classes in Slavic, thus creating the impression of the original ending surviving. Because of the areal proximity to Balto-Finnic languages, Lithuanian (and Latvian) developed a system of secondary locative cases, again, based on accusatives followed by postpositions. All but one of these cases – the illative – fell into disuse and appear only in fixed expressions (Dambriūnas et al., 1998; Zinkevičius, 1994; Kazlauskas, 1968).

- (20) a. miest-uosε ‘in the cities’ [original locative³]
 b. miest-ε ‘in the city’ [new locative]
 c. miest-uos-na ‘to the cities’
 miest-an ‘to the city’ [new illative, still productive]
 d. vεln-ioop ‘to hell (lit. to Devil)’
 rudεn-ioop ‘towards the autumn’ [new allative, no longer productive]

Baltic adjectives share one interesting property with Slavic: the extended or definite forms. These forms were originally constructed by appending a fully inflected form of the corresponding personal pronoun to a fully inflected adjective. Diachronically, these forms became more or less tightly fused in the daughter languages. Thus, in most Slavic languages, the boundary between the original inflectional suffix and the pronominal element is very hard to detect. In Lithuanian, some forms are still very transparent, while others have become quite opaque. I will talk about this in the chapter dedicated to nominal prosody.

- (21) a. li sεεn-aa miest-aa.
 in old-ACC.SG city-ACC.SG
 ‘To an/the old city.’
 b. li sεεn-aa-j-ii miest-aa
 in old-ACC.SG-3-ACC.SG city-ACC.SG
 ‘To THE old city.’

Prepositional government in Modern Lithuanian is simpler than the system found in the earlier stages of the language. Thus, the dative and the locative cases are never found in PPs (although the dative was used with prepositions until fairly recently). The instrumental case is used only with four prepositions. Spatial prepositions have lost the static-dynamic reading

³ Cf. Slavic *mest-ax* « **maist-āsu*. The word-final vowel /-ε/ in the Lithuanian inflection might very well also be the postposition.

distinction and are always used with one case. Most take the genitive case, but not so few take the accusative.

(22) *The loss of the static/dynamic distinction:*⁴

- a. Dɛd-u maist-aa ant staal-oo.
put.PRS-1SG food-ACC.SG on table-GEN.SG
'I am putting the food on the table.'
- b. Maist-as gul-i ant staal-oo.
food-NOM.SG lie.PRS-TH.PRS on table-GEN.SG
'The food is on the table.'

In addition to losing the neuter gender, Lithuanian has also eliminated the animacy distinction. There are not even two distinct wh-words for 'who' and 'what' – both are 'kas'.

- (23) a. Kas čia iira?
who/what.NOM here be.PRS.3
'Who/what is this?'
- b. Su kuo jis važiuo-j-a?
with who/what.INSTR 3SG.M.NOM go.by.vehicle.PRS-EP-TH.PRS
'Who/what is he driving [there] with?'

Lithuanian syntax is quite non-configurational on the surface. There are claims that certain types of scrambling are allowed even though they are disallowed in Russian, a notoriously liberal language as far as word order is concerned. Discontinuous phrases are quite common in both written and spoken Lithuanian. At the same time, there are certain types of non-finite clauses where the objects must be rigidly placed before the verb. Also, embedded genitive DPs almost always precede the embedding noun, with deviations attested practically only in poetic or strongly emotional speech.

I have already said that this work is about what happens with accents in Lithuanian at the morphology-phonology interface. In order to be able to introduce the intricate world of Lithuanian accentuation to the reader, we need to have a basic idea regarding what the phonology of the language looks like in general. I will therefore begin by introducing the segmental inventory of Lithuanian alongside with the most important segmental processes.

⁴ Cf. German, where the first sentence would have the accusative case after 'on', and the second one the dative: *auf den Tisch* vs *auf dem Tisch*.

1.3 The vowels

One of the key characteristics of Lithuanian phonology is the contrast between long and short vowels, reinforcing the crucial contrast between light and heavy syllables. The prosodic behavior of heavy syllables will be of critical importance for virtually all the main parts of this thesis. In this section, I will introduce the vowels and the major vocalic processes.

1.3.1 The monophthongs

The system of Lithuanian monophthongs is shown in Table 1.3, using the notation employed in the rest of the current dissertation.

	Front	Back
High	uu i	uu u
Mid	ee (e)	oo (o)
Low	εε ε	aa a

Table 1.3: *The short and long monophthongs of Modern Lithuanian.*

The short phonemes /e/ and /o/ are peripheral: they appear almost exclusively in loanwords. There is a tendency among many native speakers to lower /e/ and merge it with /ε/ (Pakerys, 1995). The short /o/ remains intact for most speakers (i.e. it does not become lengthened):

(24) telefónas ~ tɛlɛfónas ‘telephone’

It is noteworthy that the vowels /ii/ and /uu/ in Modern Lithuanian do not go back exclusively to the original long /ii/ and /uu/ of Proto-Baltic, and neither do /εε/ and /aa/ originate only from the lengthening of the original short /ε/ and /a/ (see below). The long high and low vowels – /ii uu εε aa/ – have also emerged from absorbing a coda nasal in the following positions:

- word-finally: súunuu « *suunun ‘son (ACC.SG)’, aávii « *avin ‘sheep (ACC.SG)’;
- before a fricative: kεésti « *kensti ‘to suffer’;
- before a liquid or a glide: šaála « *šanla ‘it becomes cold’.

These vowels were pronounced with a nasal quality until fairly recently, and are still pronounced so in some North-Western dialects (Zinkevičius, 1994).

(25) St. Lt. žaasis ↔ dial. žõóⁿsɿ ‘goose’ (cf. Germ. Gans)

These ‘nasal’ vowels are (usually, but not always consistently) written with a hook underneath them in the standard orthography to indicate the former presence of the nasal sonorant: *sūny*, *avj*, *kęsti*, *šqla*, *žqsis*. Sometimes, if a following fricative alternates with a stop or an affricate in the morphological paradigm, the nasal coda may be restored in some forms:

(26) *kę́ėsiu* ‘I will suffer’ ↔ *kęnčiu* ‘I suffer’

1.3.2 The diphthongs

The inventory of diphthongs is presented in Table 1.4, with the frontness/backness determined by the respective feature of the first element.

	Front	Back
High	ie	ui uo
Mid	ei (eu)	(ou)
Low		ai au

Table 1.4: *Lithuanian diphthongs*.

The two items enclosed in parentheses appear exclusively in loanwords and are thus not part of the native inventory:

(27) *nęurologas* ‘neurologist’, *klounas* ‘clown’

In many respects, the diphthongs /ie/ and /uo/ pattern with monophthongs (the latter actually goes back to a monophthong diachronically, cf. [Stang 1966](#); [Forston 2010](#)) and are treated as such by Lithuanian grammarians. The quality of the diphthongs (except for /ie/ and /uo/) is affected significantly by the type of accent they are associated with (see. Section 1.6). Thus, falling diphthongs have a lengthened and tenser first element, with the second element is reduced to a glide:

(28) *ái* [aːj], *áu* [aːw], *ėi* [æːj], *úi* [ʊːj]

Rising diphthongs have a reduced first element, with the second element being longer and more of a true vowel than a glide:

(29) *ái* [ɐiː], *aú* [ɒuː], *ėi* [ɛiː], *úi* [ʊiː]

In unaccented syllables, the diphthongs are generally pronounced like the rising ones, but without lengthening the second element.

Some diphthongs are the result of a vocalization process when a sonorant ends up in a coda position:

(30) $k\epsilon\underline{li}au\text{-}ti$ vs $k\epsilon\underline{li}aav\text{-}oo$

Historically, the original sequence in the example above probably involves /au/, with a historic fortification of the second element before a subsequent vowel.

1.3.3 Major vocalic processes

Underlyingly short low vowels undergo lengthening in almost all stressed positions. This causes length alternations in inflected forms where a low vowel is stressed in some paradigm cells but not in others:

(31) a. $kas+\emptyset+u \rightarrow k\underline{a}s\underline{u}$ ‘I dig’ [unstressed, short]
 b. $kas+a+\emptyset \rightarrow k\underline{a}a\underline{s}a$ ‘(s)he digs’ [stressed, long]

One important environment where this lengthening does not take place is word-final syllables, where underlyingly short vowels must always remain short:

(32) a. $t+a$ bloog+ a lig+ $a \rightarrow t\underline{a}$ bloog\u00e1 lig\u00e1 ‘that bad disease’
 b. $t+as$ gil+ ias up+ $\epsilon s \rightarrow t\underline{a}s$ gili\u00e1s up\u00e9s ‘those deep rivers’

The lengthening of low vowels can also be blocked morphologically. Thus, in infinitives and all the forms derived from the infinitival stem, an underlyingly short low root vowel must remain short:

(33) a. $kas+ti \rightarrow k\underline{a}sti$ ‘to dig’
 b. $kas+s+i+t\epsilon \rightarrow k\underline{a}site$ ‘you (PL) will dig’
 c. $kas+tuu \rightarrow k\underline{a}stuu$ ‘(s)he would dig’
 d. $kas+k+i+t\epsilon \rightarrow k\underline{a}skite$ ‘dig!’

The past passive participle is normally assumed to be based on the infinitival stem. We will see in Chapter 4 that there are some important differences between the stem of the infinitive and the stem of the past passive participle. One such difference is that, in the dialects that

laid the foundation for Standard Lithuanian, the lengthening rule does apply in the participial form:

(34) $kas+t+as \rightarrow ka\underline{a}stas$ ‘dug (M.NOM.SG)’

This rule is actually violated in colloquial speech by most of the speakers that I know personally, and the vowel remains short in order to maintain root identity with the infinitive. I have personally heard radio and TV announcers (who are trained and monitored very strictly as far as their faithfulness to the prescriptive norm is concerned) say *k\u0105stas* with a short [a].

Another process involving low vowels is backness neutralization. Basically, the distinction between front and back low vowels is neutralized after virtually all consonants. Word-initially, the distinction is sound and contrastive:

(35) $\underline{a}a\u017euolas$ ‘oak tree’ vs $\underline{e}\underline{e}\underline{z}eras$ ‘lake’

In post-consonantal positions, only [a] is possible after non-palatalized consonants and only [ɛ] occurs after palatalized ones. This means that, both sequences – /Cɛ/ and /Cja/ – will result in the surface sequence [C^jɛ]. The above example with the deep rivers can thus be made more precise in the following manner:

(36) [t\u0101s gi^j\u026a\u026as up^j\u026as]

The reader might wonder at this point why I then wrote *g\u012blias* and not *g\u012b\u0117s*. Just as it is done in the Lithuanian orthography, I write *g\u012blias* for etymological reasons. The adjective ‘deep’ belongs to a declensional class where a glide is inserted between the final consonant of the root and the inflectional affix. In case the inflectional marker begins with /oo/, /u/ or /uu/, the vowel is not fronted as drastically, and is still transcribed a full back vowel. For paradigmatic uniformity purposes, I maintain the same transcription for all forms:

(37) $gil\text{-}\underline{i}\text{-}as, gil\text{-}\underline{i}\text{-}uu, gil\text{-}\underline{i}\text{-}ooms$ etc

In addition to these morphological considerations, there is also one context in the language where the contrast between the sequences /Cɛ/ and /Cja/ is maintained on the surface despite the fact that the vowel qualities collapse. This context involves the coronal stops /t/ and /d/. We will see below that /t/ and /d/ become affricates when followed by /jV[+bk]/. Therefore, the underlying sequences /tɛ/ and /dɛ/ will surface as simply [t^jɛ], [d^jɛ], but /tja/ and /dja/ will yield the strings [t^j\u026a\u026as], [d^j\u026a\u026as]. Therefore, whenever the latter are pronounced, I will always spell the correct underlying sequence /ia/ after them:

(38) čia [tʃʲɛ] ‘here’, pradžia [pradʒʲɛ] ‘beginning’

Lithuanian vowels are generally not subject to reduction. This holds primarily for the standard language and the West High Lithuanian dialects (spoken around the city of Kaunas) that the standard language is based on. The prescriptive norm requires every unstressed vowel to be pronounced in exactly the same manner as it would sound in a prominent position. Thus, in the following word, all the vowels are expected to be long and clear:

(39) mookiikleélee « mook-iikl-eel-ee ‘little school’

In the actual dialects, unstressed vowels are subject to reduction in almost all of the regions of Lithuania. Some of these phenomena may have to do with the geographically proximate Russian and Belorussian (e.g. the eastern Lithuanian dialects featuring *akanye*), but some are also clearly native in origin (Zinkevičius, 1994). The process of vowel reduction goes very far in some regional vernaculars, where it leads to massive syncretisms in declension and conjugation paradigms due to stress retraction and loss of short vowel in inflectional endings:⁵

- (40) a. Ooná ‘Anna (nom/instr)’, Oónaa ‘Anna (acc)’ [St.Lt]
b. Oón^o ‘Anna (nom/instr/acc)’ [dial]
- (41) a. dírbu ‘I work’, dírbí ‘you work’, dírba ‘(s)he works’ [St.Lt]
b. dírb^o ‘I work, (s)he works’, dírbʲ ‘you work’ [dial]

This work will only be concerned with data from those dialects where vowel reduction is either non-existent or minimal.

As far as other vocalic processes are concerned, some of them will be addressed in the upcoming chapters. Thus, verbal theme vowels shorten or drop out before vocalic agreement affixes in order to resolve hiatus. Another strategy of avoiding hiatus is inserting a glide:

- (42) a. žinoo+oo → žinoojoo
b. mažee+a → mažeeja

Non-low back vowels are somewhat fronted after palatalized consonants, but this is purely a phonetic effect which has no relevance for the phonology. I will not use any marking for this process in my transcriptions: *liooveesi* [lʲɔːvʲeːsʲi] ‘(s)he stopped (doing something)’.

⁵ Exactly the same is found in Latvian dialects.

1.4 The consonants

Lithuanian is a satem language (Forston, 2010), having converted the original phonemes /k^j/ and /g^j/ into /š/ and /ž/ respectively. These phonemes have enhanced the original inventory of fricatives passed down to Lithuanian along the genealogical tree of Indo-European. The full set of Lithuanian consonants is presented below, to the exclusion of the palatalized counterparts (they will be discussed in detail in the following subsection).

	Labial	Dental/Alveolar	Palato-Alveolar	Palatal	Velar	Laryngeal
Stop	p b	t d			k g	
Nasal Stop	m	n			[ŋ]	
Affricate		ts dz	tʃ dʒ			
Fricative	f v	s z	ʃ ʒ		x [χ]	h
Lateral		l				
Trill		r				
Glide				j		

Table 1.5: *Lithuanian consonants*.

The affricates /tʃ/, /dʒ/, /tʃ^j/ and /dʒ^j/ arose mainly either through palatalization (Stang, 1966) or by the virtue of borrowing new words into the language:

- (43) a. pradžia « *prad-j-ā ‘beginning’
 b. kiščioo « *kirt-j-ā ‘stress/accent (GEN.SG)’.
 c. džiažas ‘jazz’, džungles ‘jungle’ etc.

The affricates /ts/ and /dz/ exist in (a) borrowings: [ts]iėlas ‘(dial.) entire’ (from. Slavic *čěl-*); (b) onomatopoeia and expressive words: [ts]iėpti ‘to squeak’; (c) dialectally in place of /tʃ/ or /tʃ^j/: kaá[ts^j]ė ‘cat’ (South Aukstaitian Dzukian), cf. St. Lt. ka[tʃ]eė (Zinkevičius, 1994).

The fricatives /f x ɣ~h⁶/ exist only in loanwords. Even /f/ is not very common; /x/ and /h/ are exceedingly rare:

- (44) a. (coll.) fáinas ‘nice’ (from Eng/Germ ‘fine / fein’), Fórdas ‘Ford’, fónas ‘background’
 b. [x]óras ‘choir’, hímnas ‘hymn’

The velar nasal [ŋ] is an allophone of /n/ before velars (with the latter never being deleted).

⁶ The latter two are in free variation, with some speakers preferring the velar fricative to the acoustically weaker glottal [h].

1.4.1 Palatalization

Palatalization is the most common consonantal process in the Lithuanian language. Indeed, Lithuanian palatalization applies very broadly. In Standard Lithuanian, all consonants (except for the glide, which is inherently palatal) become automatically palatalized before an underlyingly front vowel:

- (45) a. beeg+ti → [b^je:k^jt^ji] ‘to run’
b. tiil+a → [t^ji:la] ‘silence’

The degree of palatalization varies from speaker to speaker, and it also depends on the exact quality of the vowel triggering the palatalization. Surprisingly, the long vowel /ii/, which is the highest front vowel in the system, seems to cause a lesser degree of palatalization than the low vowels /εε/ and /ε/. As of now, this is merely my own perception, which does, however, seem to be confirmed by native speakers if their non-linguistic judgements regarding various degrees of palatalization can be taken into consideration.

In traditional Lithuanian grammars, textbooks and language guides, it is normally stated that, in a string of consonants, every consonant assumes the palatalization status of the last segment in the string (cf. [Ambrazas, 2006](#); [Dambriūnas et al., 1998](#); [Zinkevičius, 1994](#); [Kazlauskas, 1968](#), etc):

- (46) a. sproog+ti → sproó[k^jt^ji] ‘to explode’
b. sproog+st+a → sproó[kst]a ‘it explodes’
c. tilp+ti → ti[^jɫp^jt^ji] ‘to fit (inside)’
d. tɛlp+a → tɛ[ɫp]a ‘it fits’

In colloquial urban vernaculars, this regressive progression of palatalization throughout the string is becoming less prevalent, with the only segment consistently showing palatalization being the lateral approximant /l/. Interestingly enough, if another consonant intervenes, it may resist palatalization, but does not block its expansion.

- (47) tiɫp+ti → (*coll.*) ti[ɫ^jp^jt^ji]

Phonemic palatalization occurs synchronically in former combinations of the type *CjV_[+bk], where the glide was historically absorbed into the onset consonant ([Stang, 1966](#)):

- (48) a. [ɫ^j]úutas « *ɫjū- ‘lion’, [ɫ^j]áudis « *ɫeud- ‘people’
b. bróo[ɫ^j]oo « *brāl-j-ā « *bhrāt-j-ā ‘brother (GEN.SG)’

- c. $\varepsilon\acute{e}[\text{ʒ}^j]\text{oo} \ll *e\check{z}\text{-j-}\bar{a} \ll *h_1eg'hi\text{-}$ ‘hedgehog (GEN.SG)’
- d. $g\varepsilon\acute{e}[\text{n}^j]\text{oo} \ll *gen\text{-j-}\bar{a}$ ‘woodpecker (GEN.SG)’

Two combinations – *pjV- and *bjV- – retain the glide in Modern Lithuanian, but solely in word-initial positions:

- (49) a. [pj]áuti ‘to cut’, cf:
- b. ú[p^j]uu $\ll *up\text{-j-on}$ ‘river.GEN.PL’

Slavic languages frequently insert an epenthetic [ʌ] in these contexts, cf. the Lithuanian *spjau-* vs the Russian *plju-* for ‘to spit’, both going back to **spjau-*.

In the *CjV_[+bk] combinations, the consonants /t/ and /d/ turn into the affricates [tʃ^j] and [dʒ^j] respectively:

- (50) a. marčia $\ll *mart\text{-j-an}$ ‘daughter-in-law (INSTR.SG)’
- b. bríedžioo $\ll *braid\text{+j+}\bar{a}$ ‘elk/moose (GEN.SG)’

In recent loanwords, the palatalized consonants [tʃ^j] and [dʒ^j] are possible before back vowels:

- (51) kostiumas [-tʃ^ju-] ‘costume’, bordiuras [-dʒ^ju-] ‘curb’

The existence of these phones tentatively speaks against treating [tʃ^j] and [dʒ^j] as the surface realization of the abstract phonemes /tʃ/ and /dʒ/ respectively. However, examples of words like the ones in (51) are restricted to literally a handful of borrowed items. Since loanwords already permit segments not found in the native lexicon (e.g. the short /o/), it is not impossible to say that the phonology of loanwords is slightly different from the rest of the language and to postulate a constraint against affrication which is lexically indexed to these relatively few borrowings.

As far as the rest of the system is concerned, assuming that the above affricates are surface realizations of palatalized stops before back vowels does not have fatal consequences for the phonology. The non-palatalized affricates /tʃ/ and /dʒ/ are very rare. The two common words containing the former that come to my mind are *ginčas* ‘argument’ and *iipač* ‘especially’. Such items are so rare that they never (or almost never) enter into the minimal pair relation with otherwise identical words containing the palatalized counterparts, where one might wonder if the latter are underlyingly affricates or stops. Additionally, all the words with /dʒ/ tend to be transitioning towards a more modern pronunciation pattern which does involve palatalization. Perhaps, the underlying representation of a word like *džazas* ‘jazz’, nowadays commonly pronounced as [dʒ^jɛɪzas], is something like /dʒ^jaazas/ for speakers of modern vernaculars.

In this dissertation, I will transcribe these consonants in the manner in which they are pronounced, i.e. I will use the notation *č/dž* before back vowels.

1.4.2 Other consonantal processes

Whether or not Lithuanian has final devoicing is a difficult question. In the standard language, inflected words have a limited inventory of word-final consonants, mainly limited to /n, m, s, r, t/. Other parts of speech, such as adverbs, particles and prepositions, never end in voiced obstruents. The fact that some of them do so orthographically has no implications for the actual phonology: all these sounds may be voiceless underlyingly, and the spelling merely reflects etymology.

(52) kad [kat] ‘that’, lig [lʲik] ‘until’

Another process involving voicing is regressive voicing assimilation, which works exactly like the regressive palatalization we have already discussed above. In a sequence of obstruents, the voicing status of the last one determines the pronunciation of the rest of them:

(53) a. neš+dam+a → ne[ʒ]damá ‘carry (CONV.F.SG)’
b. verž+ti+s → véř[ʲ]tis ‘to erupt’

Before resonants, voiceless obstruent do not become voiced:

(54) ku[p]rá ‘hunchback’, juo[s]muó ‘waist’, puu[sʲ]leé ‘blister’

Similarly to the Slavic languages, the coronal stops /t d/ dissimilate into /s z/ before another coronal stop:

(55) ved+ti → vésti ‘to lead/conduct’

The nasal present-tense suffix /-n-/ metathesizes with a root-final plosive:

(56) a. šlap+n+a → šlanpa ‘it becomes wet’
b. bud+n+a → bunda ‘(s)he wakes up’

The place assimilation of /n/ observed in the example above is a productive process, at least before velars:

(57) giiven+k → giivé[ɲ]k ‘live! (imp)’, rank+a → ra[ɲ]ká ‘hand (NOM.SG)’

Contrary to /n/, an underlying /m/ (i.e. with underlying labial features) resists place assimilation. Cf. the following infinitival and imperative forms:

(58) a. im+k → i[m]k, *i[ɲ]k ‘take!’
b. im+ti → i[m]ti, *i[n]ti ‘to take’

In a string of coronal fricatives, there is regressive assimilation regarding the [±ant] feature:

(59) a. peest+i → peestí ‘pedestrian (M.NOM.PL)’
b. peest+ias → pée[jʲ]čias ‘pedestrian (M.NOM.SG)’

The example above is another good reason for writing /-ias/ and not merely /-es/ for the inflectional formative. Not only does it cause the affrication of /t/, but the preceding /s/ is also shifted. Had the marker been /-es/, the output would be *peestɛs* without any traces of alveo-palatal articulation.

1.5 Syllable structure and weight

Lithuanian has phonologically distinct light and heavy syllables. As far as prosody and distribution are concerned, light and heavy syllables are not much restricted. They can appear in any position within a phonological word, both accented and unaccented. Additionally, any sequences of light and heavy syllables are permitted. I will assume that a light syllable contains one timing unit – a *mora* (Hyman, 1985) – while a heavy syllable contains two (see below).

A light syllable in Lithuanian always contains a single short vowel in its nucleus, followed by either nothing or one or more coda obstruents:

(60) a, ta, juk, lɛs, kask

As for heavy syllables, we will distinguish three different sub-types of these:

- Heavy syllables with long nuclear monophthongs (including the mono-phonemic diphthongs /ie/ and /uo/). These syllables can usually only have a non-resonant coda (because coda resonants are moraic):

(61) ii, ɛ.žii, ɛ.žiis, liisk, lies, nuo, tiek, duok, puošt

- Heavy syllables with bi-phonemic nuclear diphthongs, with an optional non-resonant coda:

(62) au, jau, lai, baik, laukt, mui.tas, kai.tai

- Finally, a heavy syllable may contain a short vowel followed by a coda resonant (which can also be followed by one or two further coda consonants, but this time it must be an obstruent). Only the following coda consonants – /r l m n/ – can be linked to a mora in the prosodic structure. These combinations are known as ‘mixed’ diphthongs in Lithuanian grammars:

(63) tɛn, in.das, im.tis, gal, var.das, bɛrk, burs, springs

The one type of heavy syllable that Lithuanian strongly disprefers is a syllable which contains a long vowel or a diphthong and an additional non-moraic resonant in a coda position. The reason for it is that there is a constraint in the system requiring that coda resonants be licensed by being linked with a mora. However, the highest number of moras in a Lithuanian syllable is two. Therefore, if a syllable already contains a vocalic diphthong or a long vowel, both of its moras are already occupied, and the coda resonant will have no carrier. Therefore, syllables of the type $*(C(C(C)))VVR(C(C))$ are marked and only appear in a handful of morphemes, all of which are adverbs, particles or inflectional markers:⁷

(64) koól ‘while’, -óoms ‘-DAT.PL’

As far as onsets are concerned, they are not obligatory and many a syllable in Lithuanian begins with the nuclear vowel:

(65) áu.ga ‘(s)he grows’, oo.dá ‘skin’, uo.lá ‘cliff’ *etc*

Typical onsets consist of one or two consonants, generally obeying the rising sonority principle (Jespersen, 1904; Selkirk, 1982):

(66) bóo.ba ‘old woman’, tás ‘that’, klóo.ti ‘to lay’, brées.ti ‘to mature’, gniúuž.tee ‘lump’

A classic exception is the /sT/⁸ onset, where a sibilant is followed by a stop:

⁷ These morphemes used to actually be bisyllabic. The loss of the second vowel resulted in the modern pattern where the resonant must dock onto the syllable node directly.

⁸ The sign /T/ stands for ‘generic plosive.’

(67) stóok ‘stop!’, skoó.lin.ti ‘to lend’, spaá.lis ‘October’

The reverse, typical for language like Greek, is virtually not found at all in native vocabulary:

(68) *ps-, *ks-

Triconsonantal clusters of the type /sTR-/ are common, as well:

(69) spréēs.ti ‘to solve’, skrañ.dis ‘stomach’, spjóo.vee ‘(s)he spat’, sklėís.ti ‘to spread’

Onset sequences of two plosives are also not a feature Lithuanian can brag having in its native inventory:

(70) *kt-, *kp-, *pk-

In (69), the syllable boundary in *spréēs.ti* goes between the segments /s/ and /t/. This looks like a violation of the maximum onset principle (Selkirk, 1982). This does, however, appear to be a robustly attested judgement. During my informal elicitations, the native speakers I came in contact with were remarkably consistent in putting the syllable boundary between the consonants (see also Steriade, 1997).

Like I said above, onsets of the type /Cj-/ (which only occur before back vowels) result in the absorption of the glide into the preceding consonant, i.e. [C^j-], unless the preceding consonant is a labial and the syllable is word-initial:

- (71) a. pjáu.ti [pj-, *p^j(j)-] ‘to cut’, bjau.rús [bj-, *b^j(j)-] ‘ugly’
BUT:
b. labiaú [lab^jáu] ‘more’, griebiú [g^jr^jieb^ju] ‘I grab’

1.6 The accentual system

Baltic accent directly continues the system found in Proto-Balto-Slavic which distinguished the acute (rising) and the circumflex (falling) pitch contours on heavy syllables, regardless of whether they had the main dynamic word accent or not. Therefore, two prosodic subsystems co-existed in Proto-Baltic: a system of tonal contours in heavy syllables and a system of lexical accents expressed primarily using expiratory force. This system still exists in some Low Lithuanian varieties (Kazlauskas, 1968). We will, however, focus on Standard Lithuanian, based on a group of dialects where the two prosodic systems have fully merged into one.

The fate of the above two accents was different in the different Baltic languages. In Latvian and, speculatively, Old East Prussian, the system is fairly close to its original shape. The circumflex in Latvian still has the falling contour, and the acute is a steady or slightly rising intonation in the modern language:

(72) *The Latvian pitch accent:*

- | | | |
|----|-----------------------------|--------------------|
| a. | dràugs « *draûg-as ‘friend’ | [sharp fall] |
| b. | sēt « *sé-tei ‘to plant’ | [steady or rising] |

Additionally, Latvian has a glottalized tone, which appeared in positions where accent was retracted from an inflectional affix back to the root. All three tones are differentiated by fairly few speakers of Modern Latvian, with most Latvians only having two.

The dynamic accent always falls onto the first syllable of a word in Latvian. In many instances, this syllable is the root, and the pitch distinctions are thus retained. In unstressed syllables (i.e. in all inflectional suffixes and in the case of some roots if a prefix is added on the left), a distinction may be maintained, with the former acute pattern being realized as glottalization.

In Modern Standard Lithuanian, the system of syllable intonations differs significantly from that found in Latvian and Old Lithuanian (Kazlauskas, 1968). First and foremost, there are no traces of the former pitch contours in unstressed syllables. Whenever a syllable loses the *iktus*, it can no longer differentiate between the acute and the circumflex, with an intermediate quality produced instead.

As far as accented syllables are concerned, the acute is realized as a falling contour in Modern Lithuanian, while the circumflex is steady or rising. It is basically the perfect mirror image of Latvian and Late Proto-Slavic accents:

(73) *The Lithuanian pitch accent:*

- | | | |
|----|-----------------------------|--------------------|
| a. | draũg-as (draúgas) ‘friend’ | [steady or rising] |
| b. | sé-ti (séeti) ‘to plant’ | [falling] |

For the circumflex, Lithuanian grammarians use the tilde, and for the acute, the normal acute accent is employed.

Syllabic intonations are distinguished only on heavy syllables (as is also the case in Latvian). In case a long monophthong is involved, the accent is placed directly above the letter:

(74) būti ‘to be’, ėjo ‘(s)he walked’

In case a syllable contains a diphthong of the vowels /ie, uo/, the acute/circumflex are placed above the first/second element respectively:

(75) v́ienas ‘one’, diēná ‘day’, láukti ‘to wait’, naũjas ‘new’

Finally, in mixed diphthongs, the principle is the same, except that the grave accent is placed above the letters ‘i’ and ‘u’ to indicate their failure to be lengthened (in the prescriptive pronunciation!) under the falling contour:

(76) a. kálti ‘to forge’, véngti ‘to avoid’, BUT: kùrti ‘to create’, pìnti ‘to weave’
 b. kaĩtas ‘guilti’, beĩdras ‘common’, kuĩ ‘where’, kiĩta ‘(s)he changes’

Accented light syllables are always marked with the grave accent:

(77) kàs ‘what’, tik ‘only’, b̀us ‘(s)he will be’

My notation throughout this work will be different from the traditional notation used in Lithuanian grammars. There are several reasons for it. As I said before, I will be using doubled letters for long vowels. Since, in traditional Lithuanian orthography, the placement of the accent mark differs depending on which one of the two contours is used whenever a diphthong (vocalic or mixed) is involved, I see it as absolutely rational to do the same thing with long vowels since my transcription consistently transcribes them using two symbols. The first change is thus the following one:

(78)	a.	láukti, draũgas	[diphthong, traditional spelling]
	b.	láukti, draúgas	[diphthong, new notation]
	c.	búti, siũsti	[monophthong, traditional spelling]
	d.	búuti, siuústi	[monophthong, new notation]

The reason the placement of the accent mark varies on diphthongs in the first place is based on how the two contours are phonetically realized in the language. A diphthong with the falling (acute) pattern is pronounced with a lot more expiratory force on the first element, which is articulated very clearly (Ambrazas, 2006; Girdenis, 2003; Dambriūnas et al., 1998; Stundžia, 2009; Pakerys, 1995). The low vowels are articulated very low, and the high vowels (underlyingly lax) are intermediate between lax and tense. The length of the first element also increases, which is especially obvious with the vowels /a/ and /ε/, less so with /i/ and /u/ (hence the use of the grave accent mark in the traditional orthography in these cases). The second element, on the other hand, is reduced and pronounced with less force and clarity.

(79) kálti [ká·lʲtʲi], spré̃ndi [sʲpʲrʲé̃nʲdʲi], jáunas [já·wnas], víēnaa [ví·ēnaː]

In the case of the circumflex contour, the first element is reduced and assimilated in quality to the second element. The second element, even in those case when it is a resonant and not a vowel, is pronounced with greater energy and length.

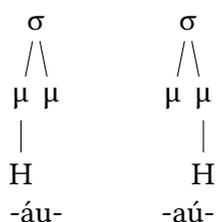
(80) káltas [kə́lʲtas], bẽndras [bẽnʲdras], naújas [nə́jʲes], diēnaa [dʲi̇é·naː]

In fact, in all types of diphthongs, the intensity of the first/second element is the primary cue for distinguishing the acute/circumflex patterns respectively. In monophthongs, the picture is somewhat more blurry. There is still no consensus among Lithuanian scholars as to what exactly the main differentiating quality is. Some say it is the pitch, some attribute it to length (with the circumflex vowels being longer), some claim it's a mixture of both. It is noteworthy that, in many urban varieties, the two contours tend to merge in monophthongal environments, although they are maintained on diphthongs by all native speakers. Whether or not the merger is total and completely undetectable is a very interesting research question. An extensive study should be conducted involving speakers with different backgrounds in order to answer this question comprehensively.⁹

I personally do not have convincing evidence in support of any of the claims regarding acute and circumflex monophthongs. I will therefore base my theoretical considerations and my reasoning on the realization of the diphthongs. The features discussed above are leading me in the direction of saying that the difference between the acute and the circumflex patterns in heavy syllables is attributable to the exact placement of a phonological accent symbol within the syllable boundaries.

In an acute syllable, an accent is linked to the left-hand mora, whereas in a circumflex syllable, the accent is on the right side.

(81) *The two contours of Lithuanian:*



⁹ A curious fact: My father-in-law, who is 89, was born and raised in Tauragė, and is said to speak a very old-fashioned variety of Lithuanian, has a tendency to merge the two contours on monophthongs. At the same, a 45-year-old acquaintance of mine from Vilnius, where the two contours on monophthongs are believed to be long gone, clearly distinguishes them when speaking and when perceiving others' speech.

Since the difference between the two contours is the exact location of the accent and not the essence of the accent itself, it makes sense to use the same notation for the accent and indicate the differences based on where exactly an accent is placed. With the placement always revealing the quality of the resulting segments involved, I see no need to use two different accents marks. They are helpful when long monophthongs are written using one letter only. However, in the current work, they are always written as sequences of two vowels, so using just one accent mark will totally suffice for now. I will actually introduce a second accent notation in the following chapter, but it will be used to distinguish between different underlying strength grades and not between acute and circumflex patterns.

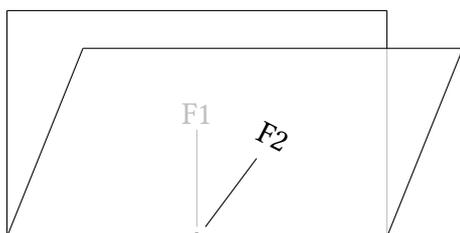
1.7 The theoretical background

Before looking into the distribution of accents in derived and inflected forms of Lithuanian nominals and verbs, I would like to briefly discuss the theoretical assumptions I will base the core of my analysis on.

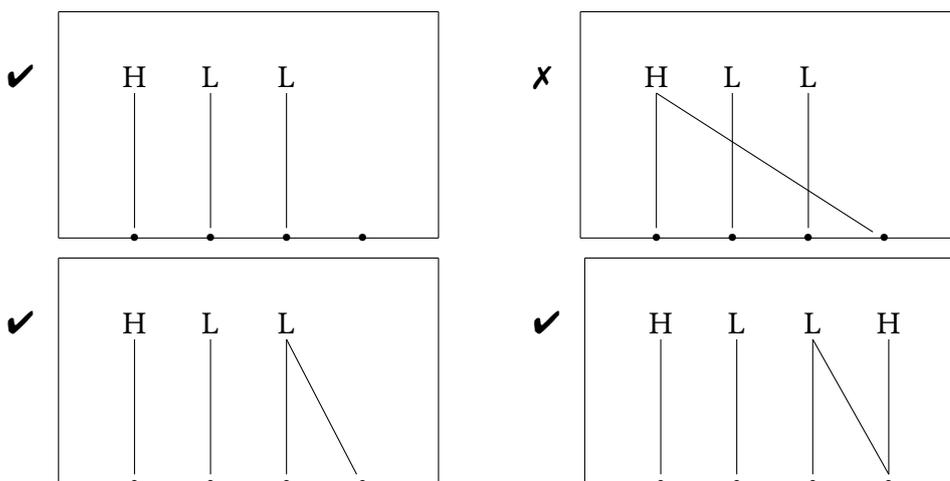
1.7.1 Autosegmental representations

In autosegmental phonology (Goldsmith, 1976, 1990), various features of phonological elements are not located in an unstructured ‘bag’ but occupy their own designated tiers. Each tier has its own abstract plane, with all the planes intersecting along a line representing the flow of speech in time. The nodes along this line (representing abstract segments, vowels and consonants) are linked with feature specifications on different tiers using association lines, which cannot intersect within one tier (however, many-to-one and one-to-many relations are allowed).

(82) *Features located on different tiers:*



(83) *The unavailability of intersecting lines:*



How many features are located on a single tier is subject to debate and obviously makes different predictions. In the most extreme models, every feature occupies a separate autonomous

tier (Hayes, 1990). In my analysis below, the prosodic elements (syllable nodes, moras and accents) will be located on a designated *Prosodic Tier*, as in (81) above.

1.7.2 Syllabic weight and the mora

In order to represent syllabic weight, I will use the concept of the *Mora* (Hyman, 1985). The mora is an abstract timing unit in language, hierarchically embedded after the syllable node (or, in more complex representations, under the rime node). Lithuanian is a weight-sensitive language. For this language, I assume that heavy syllables have two moras and light syllables only one. Tri-moraic syllables are disallowed.

(84) *Light vs heavy syllable:*



Within a Lithuanian syllables, all vowels and coda resonants are moraic. If a resonant is to be licensed in the coda of a syllable, it requires a mora, so the vowel preceding a coda resonant must be short. We saw above that there are almost no exceptions from this principle in Lithuanian grammar.

1.7.3 The accent

I do not believe that Lithuanian has *Tone* in the pure sense of this term (cf. Yip, 2002). Obviously, things are not black and white and most languages are somewhere in between the two extremes: (a) a purely tonal language (b) a pure stress language with regular iambs or trochees and a main stressed aligned with one of the edges. Lithuanian has lexical stress. That alone moves it quite far from the (b)-end of the spectrum. Proto-Baltic with its system of pitch distinctions (which had replaced previously existing laryngeals) on both accented and unaccented syllables was much closer to (a) than Modern Lithuanian.

What Lithuanian does still have nowadays are two distinct contours on heavy syllables which have the iktus. These contours are less tonal in their nature than they are in Latvian or other pitch-accent languages. I attribute the contour distinction to the exact position of the iktus within a heavy syllable.

This brings us to the immediate conclusion: the mora is the host of the accent in Lithuanian. I represent the accent itself using the *H* symbol, also used for the high tone in descriptions of purely tonal languages (Yip, 2002). While the iktus in Lithuanian does involve a rise of the

fundamental voice frequency, it is not the only cue used to identify it phonetically. Intensity and length play a crucial role, as well. A reader who would like to completely divorce the notions of stress and tone might want to imagine an asterisk or any other accent mark in place of the *H* in the analysis developed below.

1.7.4 Optimality Theory and Harmonic Grammar

Both frameworks are based on the idea that the grammar of human language contains violable principles, or *Constraints*, which are ranked according to their importance within a given language (Prince and Smolensky, 2004). These constraints are subdivided into two large groups:

- A. **Faithfulness constraints** attempt to preserve underlying linguistic structures in their original shape;
- B. **Markedness constraints** identify structures as marked and therefore undesirable (because they are difficult to pronounce, unnatural, or simply marked per stipulation).

The phonology in the optimality-theoretic world has the following architecture:

1. The *input structure*, produced by a post-syntactic or lexical (depending on the exact theory of morphology) mechanism, is received by the phonological module and passed along to the **GENERATOR (GEN)**. GEN is in itself not assumed to be a particularly clever device. What it does is clone the input multiple times and create output candidates by performing random manipulations with the clones. In its arsenal are operations such as adding or removing nodes or association lines (or, if one assumes Containment as in Trommer (2011), rendering them invisible), or altering existing feature values. In classic OT, there are no limits to how much GEN is allowed to warp a candidate. An output candidate might be completely unrecognizable; still, it technically does not prevent GEN from creating it. In real analyses, scholars work with limited sets of candidates that are assumed to be viable based on the particular constraint ranking in a given language. Obviously, if GEN produces thousands of candidates each time, that would significantly increase the time of computation for both GEN and EVAL (see below), and waste valuable cognitive resources. A way to restrict GEN so that it limits itself to 'rational' candidates is still an unresolved mystery.
2. The set of candidates, including an obligatory candidate which matches the input, is then passed on to the module known as **EVALUATION (EVAL)**. At this stage, the candidates are compared to each other on how well they perform with respect to the given ranking of constraints. Starting at the top, for every subsequent constraint, in case the candidates split up into two subsets – those that satisfy the constraints and those that do not – only the subset that satisfied the constraint survives and is passed down the hierarchy of constraints. If all surviving candidates at a given stage satisfy or violate the current constraint, the constraint

does not affect the decision-making process, and the entire set moves down one step to the next constraint. This evaluation principle is called *Strict Domination*. This means that a single violation of a given constraint is worse than a multiple violation of all the constraints located below it. This is shown in the following evaluation *tableau*.

(85) *Strict Domination:*

Input	C1	C2	C3	C4	C5
a. Cand 1	*!				
b. Cand 2		*	*	*	*

In (85), Candidate 1 violates a single constraints and satisfies all others. However, the constraint violated by this candidate happens to have the highest priority. With Candidate 2 not violating it, Candidate 1 has no change of surviving, regardless of the fact that it performs better than Candidate 2 with respect to all other constraints in the system. The exclamation mark next to the star indicates a fatal violation. A non-fatal violation is a simple star.

When a child begins acquiring a language, all the markedness constraints (all of most of which are innate) are clustered above the set of faithfulness constraints (also assumed to be innate). This means that, any output candidate that violates any markedness constraint will be filtered out by EVAL. Let us assume that the only type of structure that is not marked (or, at least, better than no output at all) is a sequence of CV-syllables with no coda, a labial plosive onset and the central low vowel as their nucleus. This means, that virtually any string in the output will be converted into a string of [ba]'s. For instance, if the input is /ten/, the onset coronal will be forced to become a labial because the constraint *COR (meaning, coronals are bad) is ranked above the faithfulness constraint IDENTPLACE; the nuclear vowel will have to lose its features [-low] and [-back], again, because these feature values are marked. Finally, the coda consonant will have to be deleted. And even if it weren't, it would have to lose its nasality and become a labial, too. In order to have a coda, we need to demote the NoCODA constraint relative to MAXCONS. Our output will then be [bab]. If we demote the constraint *COR relative to IDENTPLACE, we will get [dad]. In order to get [dan], the constraint prohibiting nasality (let's say for now, only in coda positions) will have to be demoted, as well. The process continues until the winning output for a given input matches the data coming from the surrounding environment. A small child must adjust their grammar to allow the output [ten] if it is a licit string in the language they are exposed to. The adjustments continue until there are no conflicts between what the learner's grammar can generate and what is actually attested.

Not everyone knows that OT had a predecessor in the face of Harmonic Grammar (Legendre et al., 1990). In its essence, Harmonic Grammar is close to OT. It receives an input and creates a set of candidates in the GEN module, which works just like it does in OT. The difference between the two frameworks is in how the candidates are evaluated. Like in OT, there are

constraints in HG. These constraints are also ranked relative to one another. In addition to the ranking, each constraint also has a numeric *weight* assigned to it. If constraint A is ranked lower than constraint B, then its weight must also be lower than that of B. However, there is no explicit requirement in the grammar for how big the difference between the two weights should be. For example, one can have the following rankings:

- (86) a. B » A, $w(B) = 3.0$, $w(A) = 2.999$
 b. B » A, $w(B) = 3000$, $w(A) = 0.001$

If a candidate violates a constraint, the weight of the constraint is subtracted from the candidates overall harmony score (which begins at [0]). In the end, the candidate with lowest cumulative penalty wins in the competition. The advantage of Harmonic Grammar is that, if the sum of the weights of C2 through C5 in (85) is higher than the weight of C1, then Candidate 2 will win. This means that Strict Domination does not apply if the weights of neighboring constraints are close enough to each other. Obviously, Strict Domination is easily attainable if the weight of C1 is [5000], and the weights of the other constraints are in the single digits.

Harmonic Grammar is therefore a little more flexible than Classic OT, because it allows to lift the Strict Domination requirement where cumulative effects are needed. I will talk more about HG in the following chapter. Among other reasons, I adopt Harmonic Grammar in my analysis because it is the preferred evaluation framework in theories involving gradient representation, which I will talk about below.

1.7.5 Gradient symbolic representations

A very important theoretical concept for my dissertation is that of *Strength* in grammar. In traditional analyses, linguistic symbols are assumed to be either fully present or fully absent in/from the underlying representation of lexical entries. Goldrick and Smolensky (2016) suggest a different approach whereby a symbol stored as part of a lexical element can be present to a varying degree, with the degree of its presence represented numerically and referred to as its *activity level/grade*. This has implications for how EVAL computes the violations incurred by different candidates. For instance, if a Candidate A is represented by the string $[t_1e_1n_{0.7}]$ and Candidate B by $[t_1e_1n_{0.3}]$, then the violation of *NoCODA incurred by A is [-0.7] points, while the one triggered by B is only [-0.3].

Conversely, if we have Input A $/t_1e_1n_{0.7}/$ and Input B $/t_1e_1n_{0.3}/$ and furthermore assume that the nasal need to have the activity level of [1.0] in order to be pronounced on the surface, the violation of DEP(N) by the candidate $[t_1e_1n_{1.0}]$ will be [-0.3] point for Input A, and [-0.7] points for Input B.

The framework with gradient symbolic representations allows to distinguish between featurally identical elements based on to what degree they are present in a given phonological representation. We will see shortly how this is very advantageous for deriving the interactions of accents in Lithuanian grammar.

1.7.6 The Cycle

The question of cyclicity and morphological sensitivity in phonology is not a trivial one. OT is a parallel framework, which means that complete structures are expected to be evaluated in one step, without paying much attention to the sequence in which they have been built.

The more permissive cyclic models of phonology do respect the fact that phonology may have access to the morphological structure of words, and that constituents of larger formations may be evaluated separately. A version of OT called *Stratal OT* (Bermúdez-Otero, 2010; Bermúdez-Otero, 2018; Kiparsky, 2000) assumes that morphological derivations are accompanied by cycles of phonological optimization. The individual cycles, or strata, correspond to the morphological composition of words in a given language.

One important component of Stratal OT is that the rankings of constraints may change from one stratum to the next. For each word in a language, the rankings on the individual strata are, however, always the same. This means that rankings cannot be triggered lexically, but they can be triggered by certain types of morphological constituents that the grammar can recognize.

In this dissertation, I will adopt a cyclic model of phonological derivations. For example, in the inflected verbal form *pá-kalb-a-nt-iesiems* ‘to those who talk for a while’, the verbal root *kalb-* and the prefix *pa-* will be combined and evaluated before the suffix of the participle *-nt-* is added. The adjectival inflectional marker *-iesiems* will be added even later, during the final derivational cycle. We will see that this approach will straightforwardly explain why the surface accent is on the prefix and not somewhere else, e.g. on the root.

In my analysis of Lithuanian accentuation, I have not come across any compelling evidence in favor of having different rankings of constraints on different derivational levels. I therefore only need *a very basic cyclic model*, but no adjustments of constraint hierarchies between different cycles (Kastner, 2018).

Chapter 2

Nominal accent

2.1 Introduction

In this chapter, I make and support the central claim of this dissertation:

Underlying accents in Lithuanian can be *strong* and *weak*.

While the surface realization of both strong and weak accents is identical, the indirect evidence for the variation in strength comes from the way accents interact with each other within a phonological word. Lithuanian is therefore one of the languages where 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 particular, I will show that the so-called Basic Accentuation Principle (BAP) follows directly from a preference for realizing strong accents (rather than weak ones) on the surface in the grammar of Lithuanian. In order to capture the phenomenon known as Saussure’s Law in its synchronic state, I make use of the Gradient Harmonic Grammar framework (Goldrick and Smolensky, 2016). I claim that the accent shift to short inflectional affixes results from a cumulative effect in the grammar of the language where a clash of two underlying accents located at the right edge of a phonological word interacts with a low-ranked constraint requiring the surface accent to be right-aligned. The analysis crucially relies on the assumption that, whenever two underlying accents clash in Lithuanian, they must merge into one. Together, the constraint against the merger and the constraint penalizing non-final surface accents are capable of overriding the BAP and producing outputs with the main stress located on the affix, while the BAP would prefer for it to be on the stem.

2.2 The system of Lithuanian nominals

This chapter is dedicated to the accentual properties of Lithuanian nominals, namely, nouns, pronouns and adjectives. As far as prosody is concerned, these three parts of speech form a natural class since their behavior is largely identical.

Lithuanian nouns are inherently masculine or feminine, and they are inflected for number and case. There are three numbers – the singular, the dual and the plural. Currently, the dual is falling into disuse in all urban and most rural vernaculars.

- (1) a. *vienas víir-as* ‘one man’
- b. *dú víir-u / víir-ai* ‘two men’
- c. *triís vír-ai* ‘three men’

There are six grammatical cases and a vocative form. The vocative form only has special

inflections in the singular in the standard language.

	ińd- ‘dish’ (m)			gálv- ‘head’ (f)		
	Sg	Du	Pl	Sg	Du	Pl
N	ińd-as	ind-ú	ińd-ai	galv-á	gálv-i	gálv-oos
G	ińd-oo	ińd-uu	ińd-uu	galv-oós	galv-uú	galv-uú
D	ińd-ui	ińd-am	ińd-ams	gálv-ai	galv-óom	galv-óoms
A	ińd-aa	ind-ú	ind-ús	gálv-aa	gálv-i	gálv-as
I	ind-ú	ińd-am	ińd-ais	gálv-a	galv-oóm	galv-oomís
L	ind-é	ińd-uosε	ińd-uosε	galv-oojé	galv-oosé	galv-oosé
V	ińd-ε	=N	=N	gálv-a	=N	=N

Table 2.1: *Sample paradigms of inflected nouns*

Originally, an inflected noun contained a root, a theme vowel and a case-number marker. In Modern Lithuanian, the theme vowel and the case formative have merged in so many cases that it makes sense to speak of a single inflectional slot following the root/stem. Still, depending on the original theme vowel and also on a certain degree of allomorphy exhibited by the original inflections, Lithuanian nouns fall into five inflectional classes:

Class	Nom.Sg affix	Gen.Sg affix	Gender distribution
I	-as, -is, -iis	-(i)oo	only masculine nouns
II.A	-a	-oos	feminine and a few masculine nouns
II.B	-ee	-ees	feminine and a few masculine nouns
III	-is	-ies	feminine and a few masculine nouns
IV	-us	-aus	only masculine nouns
V.A	-uo	-εn-s	only masculine nouns
V.B	-uo	-εr-s	two feminine nouns

Table 2.2: *The inflectional classes of Lithuanian nouns*

The original differences between the inflectional classes are becoming unified. Thus, nouns of Class IV whose stem-final consonant is palatalized switch to Class I in the plural.

- (2) a. N.Sg. suun-us ‘son’, G.Sg. suun-aus → N.Pl. suun-uus, I.Pl. suun-umis
 b. N.Sg. profesor^[j]-us ‘professor’, G.Sg. profesor^[j]-aus →
 N.Pl. profesor^[j]-ai, I.Pl. profesor^[j]-ais

Nouns of Class V now have endings (following the stem-extending suffix /-εn-/ or /-εr-/) which are largely the same as those of Class III, even though they were more distinct in the past.

Lithuanian DPs display consistent intra-nominal concord: determiners and adjectives accompanying a noun must always agree with the latter in gender and number. Also, all the elements of an extended DP show case. The only systematic exception is the possessive pronoun category, which normally remains uninflected.

- (3) a. t-ás mánoo sĕĕn-as víir-as ‘that old man of mine’ NOM.SG
 b. t-ám mánoo sĕn-ám vír-ui ‘that old man of mine’ DAT.SG
 c. t-uú mánoo sĕn-uú vír-uu ‘those old men of mine’ GEN.PL

Lithuanian nouns can be derived from other various bases (including N-bases) using a range of suffixes. Many of these affixes are inherently accented, causing the base to surface unaccented:

- (4) a. víir-as ‘a man’ → viir-úk-as ‘a small/little/young man’
 b. kiaúl-ee ‘a pig’ → kiaul-ien-a ‘pork’

As is evident from the examples below, the derivational morpheme also determines the inflectional class of the resulting noun. Thus, while ‘pig’ is Class II.B, ‘pork’ is II.A. Similarly:

- (5) lúuš-is ‘a lynx’ (Class III) → luuš-ien-a ‘lynx meat’ (Class IIa.A)

There are further prosodic properties displayed by derivational suffixes. I will talk about derivational affixes which prosodically dominate their bases in the next chapter. In the chapter concerned with verbs, we will also see that some inflectional affixes have this property.

2.3 The Basic Accentuation Principle

Lithuanian nouns and adjectives (as well as all other parts of speech) have mobile surface accent, which makes the system reminiscent of languages like Russian, Modern Greek, Washo etc. There are numerous minimal pairs in the language where the only distinguishing factor is the placement of the main word accent.

- (6) a. várpai ‘ear.DAT.SG’¹ ↔ varpai ‘bells.NOM.PL’
 b. várpaa ‘ear.ACC.SG’ ↔ varpaa ‘bell.ACC.SG’
 c. súunuu ‘son.ACC.SG’ ↔ suunuú ‘son.GEN.PL’
 d. tái ‘that.F.DAT.SG’ ↔ tai ‘that.N.NOM.SG’
 e. galvá ‘head.NOM.SG’ ↔ gálva ‘head.INSTR.SG’

¹ Ear of a plant, such as wheat.

The placement of the word accent depends on the underlying specifications of both the stem and the inflectional affix of every inflected nominal. [Halle and Vergnaud \(1987b\)](#) mention the system of underlyingly accented and unaccented morphemes which Lithuanian (as well as some other IE languages) inherited from its ancestor language. Thus, in Lithuanian, both stems and inflectional affixes are subdivided into two major groups: strong and weak.

If a strong morpheme combines with a weak one, the strong morpheme will retain its accent, regardless of whether it is a stem or an affix:²

- (7) a. $\text{víir} + \text{aa} \rightarrow \text{víiraa}$ ‘man.ACC.SG’
 b. $\text{dain} + \text{á} \rightarrow \text{dainá}$ ‘song.NOM.SG’

If two strong morphemes are combined, the stem will retain its accent, and the affix will give it up (probably due to the general cross-linguistic preference for morphological heads to retain their accent, as formulated in [Revithiadou 1999](#)):

- (8) $\text{vár}n + \text{á} \rightarrow \text{várna}$ ‘crow.NOM.SG’

Finally, if two weak morphemes are combined, an epenthetic default accent will be inserted at the left edge of the phonological word:³

- (9) $\text{k}\epsilon\text{lm} + \text{aa} \rightarrow \text{kélmaa}$ ‘stump.ACC.SG’

These rules are known as the Basic Accetuation Principle (BAP) ([Halle and Vergnaud, 1987b](#)). In the following subsection, I will present the framework I have chosen for my analysis and derive the BAP straightforwardly using a small group of simple constraints.

2.3.1 Gradient symbolic representations in grammar

The core idea behind my analysis of the data presented in the previous section is that the concept of strong and weak morphemes in Lithuanian is not merely reducible to simply the presence / absence of an underlying accent, as in [Blevins \(1993\)](#) (see Section 2.6). Rather, underlying accents (when present) can be strong and weak in Lithuanian.

In the framework with Gradient Symbolic Representations (GSR), a linguistic symbol stored

² In this introductory section, strong morphemes are assumed to have an accent, and all weak morphemes are shown without an underlying accent. This is a traditional approach found in [Blevins \(1993\)](#) and [Halle and Vergnaud \(1987b\)](#). This will be revised in the section presenting my analysis of the data.

³ The terminology here rests on the traditional assumption that weak morphemes have no underlying accents, e.g. [Blevins \(1993\)](#).

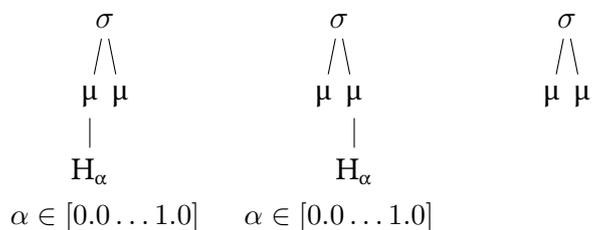
as part of an item in the mental lexicon does not have to be discretely either fully present or not present at all. Instead, it can be present to a certain degree, with the latter represented by its activity level (Goldrick and Smolensky, 2016; Zimmermann, to appear).

The activity level typically varies between 0.0 and 1.0, with the latter corresponding to a fully present, ‘full-fledged’ element. Whether activity levels can also be negative or exceed 1.0 will be discussed in the following chapters. For most instances of basic nominal accentuation, the range between [0.0] and [1.0] is enough. However, we will already in this current chapter that, for some roots, it might be beneficial to assume an extra-high activity value.

Following the logic above, a monosyllabic morpheme in Lithuanian can therefore have one of the following underlying representations:⁴

(10) *Underlying representations of bimoraic morphemes:*

(either the left- or the right-hand mora can be accented, producing falling/rising contours)



In the two diagrams on the left-hand side of (10), the underlying accent pre-linked to one of the moras in a morpheme is obligatorily specified for its activity level. On the right, a syllable without underlying prosody is shown. We will see shortly what the exact assumptions about strong and weak morphemes in Lithuanian look like.

2.3.2 The Harmonic Grammar framework

The numeric nature of the underlying representations in the GSR framework is naturally compatible with the gradient mathematical evaluations in Harmonic Grammar (HG).

Harmonic Grammar is a framework which, with the seminal work by Legendre et al. (1990), was in a way a predecessor of classic OT (Prince and Smolensky, 2004). One huge advantage of HG is its natural ability to capture cumulative effects in grammar. Since classic OT relies solely on strict constraint rankings to evaluate sets of candidates, it naturally poses difficulties to capturing cumulativity-driven phenomena where individual marked configurations are not bad enough to incur a fatal violation and create a suboptimal constraint profile but do create

⁴ The morphemes included in (10) are bimoraic only for convenience (most native nouns in Lithuanian have bimoraic stems). In a morpheme of any length, any of its moras can be pre-linked with an underlying accent.

such a profile if they occur simultaneously. One way to tackle this problem is to use local conjunction of constraints (see [Moreton and Smolensky, 2002](#)).

Local conjunction is, however, considered by many to be an unnecessary addition to OT that makes the framework much too powerful ([Pater, 2009, 2016](#)). In this case, Harmonic Grammar (HG) presents an elegant alternative. In HG, each constraint has a particular weight. A violation of a constraint subtracts this constraint’s weight from the overall harmony value (which is initially equal to zero in all candidates). The candidate with the lowest absolute harmony value wins in the competition.

In the following sections, we will see how gradient representations and evaluations using weighted constraints are advantageous in natural grammar. At the same time, it will become obvious that Local Constraint Conjunction (LCC), or a comparable tool is, despite its greater power compared to other optimality-theoretic devices, a necessary mechanism even in Harmonic Grammar. The reason for this is that some cumulative effects involve configurations where two low-ranked constraints together incur a penalty that is not only greater than the one incurred by a single violation of a certain higher-ranked constraint, but also greater than the penalty incurred by the latter constraint in combination with one of the two lower-ranked constraints. In Harmonic Grammar, this simply leads to the following mathematical paradox (see [Mueller, 2017](#)):

- (11) a. $A > B$
 b. $A > C$
 c. $A < B + C$
 d. $A + B < B + C \rightarrow A < C \odot$

For illustrative purposes, I will now present a toy example of how HG works when capturing classic cumulative effects where the above problem does not arise. Let’s imagine that there is a process P in an imaginary language L which is protected by a faithfulness constraint C1 with the weight [w = 3]. Every time P takes place, it creates a marked configuration which is banned by the markedness constraint *C2 [w = 2]. In context A, P takes place without violating any further constraints, so faithfulness wins over markedness:

(12) *Basic faithfulness vs markedness tension I:*

	Inp: context A	C1 w = 3	*C2 w = 2	\mathcal{H}
a.	☞ P takes place		-1	-2
b.	P does not take place	-1		-3

In context B, the process P violates a further markedness constraint – *C3 [w = 1.5] – but it does not violate *C2:

(13) *Basic faithfulness vs markedness tension II:*

	Inp: context B	C1 w = 3	*C2 w = 2	*C3 w = 1.5	\mathcal{H}
a.	☞ P takes place			-1	-1.5
b.	☞ P does not take place	-1			-3

In (12) and (13), classic OT would have yielded the same results since *C2 and *C3 are both ranked below C1. Consider, however, scenario C where the application of P violates both *C2 and *C3. In classic OT, candidate (a) would win again. In HG, the two constraints – *C2 and *C3 – both influence the harmony value. Together, they create a cumulative value of -3.5, which is crucially worse than that produced by candidate (b):

(14) *The ‘gang effect’ in HG:*

	Inp: context C	C1 w = 3	*C2 w = 2	*C3 w = 1.5	\mathcal{H}
a.	P takes place		-1	-1	-3.5
b.	☞ P does not take place	-1			-3

The only way to solve this in classic OT would be to impose a new constraint whose violation would be triggered if both *C2 and *C3 were violated simultaneously. This constraint would need to outrank C1 while C1 continued to outrank *C2 and *C3 individually:

(15) *Local conjunction of constraints:*

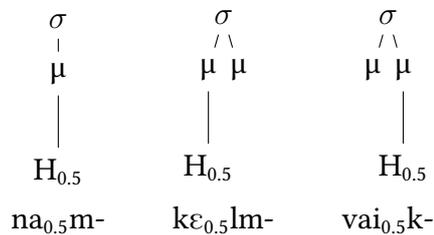
	Inp: context C	*C2 & *C3	C1	*C2	*C3
a.	P takes place	*!		*	*
b.	☞ P does not take place		*		

2.3.3 Deriving the Basic Accentuation Principle

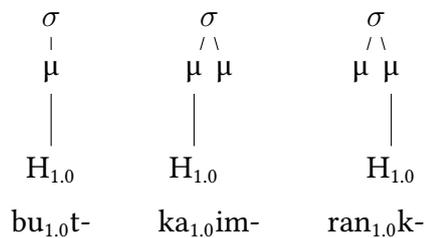
With the above system of possible underlying accents in mind, my assumptions about the distribution of stem and affixal morphemes in Lithuanian declension paradigms are listed below.⁵ Instead of assuming that strong morphemes have an underlying accent and weak ones do not, I will say that, in principle, we can postulate that most morphemes in Lithuanian actually do have underlying accents, but these accents vary in strength, i.e. their activity level.

(16) *Stems and affixes in the nominal domain:*

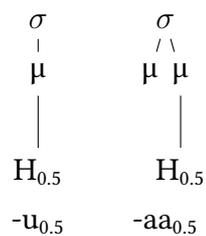
- Weak stems, such as *nám-* ‘house’, *kélm-* ‘stump’ or *vaík-* ‘child’, have a weak underlying accent ($H_{0.5}$):



- Strong stems, such as *būt-* ‘apartment’, *káim-* ‘village’ or *rańk-* ‘hand’, have a strong underlying accent ($H_{1.0}$):⁶



- Weak suffixes, such as *-ú* *INSTR.SG* or *-aá*⁷ *ACC.SG*, have a weak underlying accent:

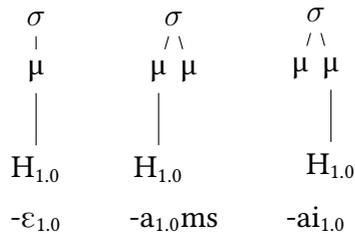


- Strong affixes, such as *-ė* *LOC.SG*, *-áms* *DAT.PL* or *-aí* *NOM.SG*, have a strong underlying accent (same URs as the stem types *káim-* and *rańk-* above):

⁵ I will only be listing mono- and bi-moraic stems. The generalizations made below about the distribution of accents in surface forms will not be different for stems with more than two moras.

⁶ The double acute accent is used to distinguish strong and weak accents from one another.

⁷ I chose the second mora of this affix as the one bearing the underlying accent. However, since this affix 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.



The Basic Accentuation Principle tells us that, every time a strong morpheme combines with a weak morpheme, the strong morpheme surfaces with the main accent, regardless of whether it is the stem or the inflectional affix:

- (17) a. $k\acute{a}im+a\acute{a} \rightarrow k\acute{a}imaa$ [village.ACC.SG]
 b. $n\acute{a}m+a\acute{i} \rightarrow nama\acute{i}$ [house.NOM.PL]

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

- (18) *BAP, 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:

- (19) a. $k\acute{a}im+a\acute{i} \rightarrow k\acute{a}imai$ [village.NOM.PL]
 b. $va\acute{r}l+\varepsilon\acute{\varepsilon} \rightarrow va\acute{r}l\varepsilon\varepsilon$ [frog.ACC.SG]

The second accentuation principle can therefore be formulated as follows:

- (20) *BAP, 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 heaviest constraints in the system are the following ones:

- (21) a. PwHD, $w = 100$: a prosodic word must have a prominent position;
 b. CULM(H), $w = 80$: an output form may contain no more than one accent associated with one of the moras on the timing tier.

In the tableaux that follow, I will exclude the first one of the above two constraints. I will also

exclude all the candidates without a single surface accent because they are always eliminated at the EVAL stage. The reader should be advised that these candidates are, of course, produced by GEN and simply not explicitly mentioned in the tableaux for the sake of economizing space.

As far as CULM(H) is concerned, there are, naturally, several counter-constraints in the system which attempt to preserve the underlying structure. One of them is a constraint requiring that all accents be associated with accent-bearing units, i.e. moras (Trommer, 2011).

(22) ASSOCIATE!(H), w = 50: every accent must be associated with a mora.

For reasons which will become clear in the next section discussing the application of Sausure's Law, I will make the following central assumption about how accents interact in Lithuania. In case two underlying accents are associated with two non-adjacent moras, ASSOCIATE!(H) will have to be violated (due to the higher weight of CULM(H)), and only one association line will survive:

(23) *The behavior of two accents on non-adjacent moras:*



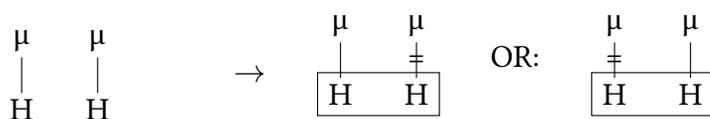
The reason the now floating accent in the output cannot re-associate with the other mora and thus coalesce with the other accent is because this kind of accent flopping is non-local, and thus banned by the following constraint:

(24) *NONLOCALCOAL(H-H), w = 80: two accents linked to moras in the input can only merge into one unit if their sponsors are adjacent (cf. Trommer, 2011).

In case the two underlying accents are located on adjacent moras, they can coalesce. In this case, the violation of ASSOCIATE!(H) will be spared. The coalescence violates the constraint *COAL(H-H). It's ranking is, however, very low compared to the other relevant constraints.

(25) *COAL(H-H), w = 1.5: two distinct H symbols in the output should never be represented by one unit in the output.

(26) *The behavior of two accents on adjacent moras:*



The other constraints relevant for the BAP are:

- (27) a. $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$, $w = 6$: penalizes candidates in which an association line has been removed between a stem mora and an accent;
 b. $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$, $w = 4$: penalizes candidates in which an association line has been removed between an affix mora and an accent.

The first two of the constraints in (27) are violated gradually. The higher the weight of the underlying accent, the more severe the violation. We will see shortly how this is relevant for the interaction between strong and weak accents.

The first example below shows a derivation where a weak stem is combined with a weak inflectional suffix.

(28) $k\acute{e}lm+a\acute{a} \rightarrow k\acute{e}lm\acute{a}a$

		CULM(H)	*NONLOC COAL(H-H)	ASSOCIATE!(H)	MAXASS($\mu_{\text{ST}}\text{-H}$)	MAXASS($\mu_{\text{AFF}}\text{-H}$)	*COAL(H-H)	
	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{0.5} & H_{0.5} \end{array}$	80	80	50	6	4	1.5	\mathcal{H}
a.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{0.5} & H_{0.5} \end{array}$	-1						-80
b.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \vdash & \\ H_{0.5} & H_{0.5} \end{array}$			-1	-0.5			-53
c.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \vdash \\ H_{0.5} & H_{0.5} \end{array}$			-1		-0.5		-52
d.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \vdash \\ H_{0.5} & H_{0.5} \end{array}$		-1			-0.5	-1	-83.5

The example in the tableau above contains two underlying accents of equal weight located on non-adjacent moras in the input. The constraint CULM(H) requires only one of the two moras

remain accent-linked in the output – this explains why candidate (a) is out. The only option to save both accents from floating is to link both of them with one of the two hosts by the virtue of merging them into one. However, this is impossible (as shown in row (d)) due to the high weight of the constraint prohibiting such mergers. The two viable candidates are (b) and (c). Here, it is somewhat less costly to sever the association line between the affixal mora and its accent rather than to do this with the stem mora.

The next tableau shows us what happens when the stem is weak and the suffix is strong.

(29) $kélm+aí \rightarrow kəlmaí$

		CULM(H)	*NONLOC-COAL(H-H)	ASSOCIATE!(H)	MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	*COAL(H-H)	
	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \mu & \mu \\ & \\ H_{0.5} & H_{1.0} \end{array}$	80	80	50	6	4	1.5	\mathcal{H}
a.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \mu & \mu \\ & \\ H_{0.5} & H_{1.0} \end{array}$	-1						-80
b.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \mu & \mu \\ \neq & \\ H_{0.5} & H_{1.0} \end{array}$			-1	-0.5			-53
c.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \mu & \mu \\ & \neq \\ H_{0.5} & H_{1.0} \end{array}$			-1		-1		-54
d.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \mu & \mu \\ & \neq \\ \boxed{H_{0.5}} & \boxed{H_{1.0}} \end{array}$		-1		-1		-1	-87.5

Here, the importance of gradual violations becomes obvious. As in the previous example, candidates (a) and (d) are out due to the top two constraints. The competition between (b) and (c) is similar to the previous example, too. However, there is one crucial difference between the tableaux. In the second example, the accent of the inflectional morpheme is strong. Therefore, if the association line between it and its host mora is severed, a full violation of MAXASS(μ_{AFF} -H) is incurred. While the weight of this constraint is lower than that of MAXASS(μ_{ST} -H), a full violation of the former is worse than half a violation of the latter: $0.5 * 6 = 3.0 < 4.0$. This

interaction of full and partial violations of faithfulness constraints gives us the essence of the BAP.

If the two underlying accents are located on adjacent moras, the BAP will continue applying despite the fact that the two accents coalesce. This is shown in the tableau below. As of right now, it is not quite clear why this type of coalescence is even needed in the system. We will in the next section that it will play a very important role in deriving an accent shift known as Saussure’s Law.

(30) *iñd+ãms* → *índams*

		CULM(H)	*NONLOC-COAL(H-H)	ASSOCIATE!(H)	MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	*COAL(H-H)	
	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ & \\ H_{1.0} & H_{1.0} \end{array}$	80	80	50	6	4	1.5	\mathcal{H}
a.	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ & \\ H_{1.0} & H_{1.0} \end{array}$	-1						-80
b.	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ \neq & \\ H_{1.0} & H_{1.0} \end{array}$			-1	-1			-56
c.	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ & \neq \\ H_{1.0} & H_{1.0} \end{array}$			-1		-1		-54
d.	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ & \neq \\ \boxed{H_{1.0}} & \boxed{H_{1.0}} \end{array}$					-1	-1	-5.5
e.	$\begin{array}{cc} \sigma & \sigma \\ \mu \mu & \mu \mu \\ \neq & \\ \boxed{H_{1.0}} & \boxed{H_{1.0}} \end{array}$				-1		-1	-7.5

In sum, the main principles behind the Basic Accentuation Principle are:

- The explicit requirement to always filter out all but one accent to be pronounced in the surface representation;

- The relative ranking of $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$ and $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$, which results in a preference for morphological heads in phonological derivations;
- The existence of weak and strong underlying accents, with the weak accents being half as strong as full ones. The relative weights of $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$ and $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$ are such that half a violation of $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$ is not as severe as a full violation of $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$. This results in the stem preference being overridden by the preference for strong accents to be pronounced rather than weak ones.

The fact that constraints have weights and can be violated in a gradient manner is clearly advantageous in this approach: only two constraints from the MAX family are doing basically all the work needed to derive the BAP. If the violations were categorical, then more constraints would need to be postulated in order to preserve strong accents over weak ones in the system.

One further and, in my opinion, the most significant advantage of this approach is the completely absence of the need to rely on extraprosodicity. Consider the following two weak nouns:

- (31) a. *kélmas* ‘stump’ ↔ *kélmaí* ‘stumps’
 b. *vaikas* ‘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.

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:

- (32) *v<a>ik-* ‘child’, *d<a>in-* ‘song’, *l<ε>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 2.4.4](#).

In the system developed here, the difference between the stems *kélm-* and *vaík-* 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 affixes, thus having a three-way distinction:

- (33) a. Affixes with a strong underlying accent: *-ė* *LOC.SG*;
 b. Affixes with a weak underlying accent: *-ú* *INSTR.SG*;
 c. Affixes with no underlying accent: *-as* *NOM.SG*.

2.4 The accent shift known as Saussure's Law

The Basic Accentuation Principle is disrupted when a so-called *attracting affix* (*Lith. atrakinė galūnė*) is added (Dambriūnas et al., 1998; Ambrazas, 2006; Blevins, 1993). Attracting affixes can be both weak and strong. What makes them different from regular affixes is that they will be accented after any stem with an accent on its final mora. The behavior of a weak attracting affix is illustrated in (34), with the forms deviating from the BAP highlighted in boldface.

- (34) a. *vīir+ú* → *viiru* 'man.INSTR.SG'
 b. ***iĩnd+ú*** → ***indú*** 'dish.INSTR.SG'
 c. *kėlm+ú* → *kėlmu* 'stump.INSTR.SG'
 d. ***vaik+ú*** → ***vaikú*** 'child.INSTR.SG'

In (34-b) and (34-d), the BAP would require the surface accent to be on the stem. However, the grammatical output shows accent on the final mora because, in purely descriptive terms, the attracting affix does not 'tolerate' an accented mora immediately preceding it.

A strong attracting affix will be accented not in two but in three out of the four cases (after both types of weak stems in accordance with BAP, as in (35-c) and (35-d); and also exceptionally after a strong rising stem in (35-b), just like in (34) above):

- (35) a. *vīir+ė* → *viire* 'man.LOC.SG'
 b. ***iĩnd+ė*** → ***indė*** 'dish.LOC.SG'
 c. *kėlm+ė* → *kėlmė* 'stump.LOC.SG'
 d. *vaik+ė* → *vaikė* 'child.LOC.SG'

Thus, an attracting affix, in addition to its normal weak or strong behavior, will be accented after any stem which has an accent on its last mora, i.e. immediately before the affix. While

this is commonly known as *Saussure's Law* (cf. [Blevins 1993](#)), the actual name of the law refers to a slightly different effect in Old Lithuanian where, in a sequence of two non-final underlying accents on two adjacent moras, the one on the left was deleted, contrary to the BAP.

In Modern Lithuanian, the affixes causing the accent shift are the following ones:

(36) *The set of Saussurian affixes:*

/-ǎ/	SG.NOM (class II)	[strong]
/-ú/	SG.INSTR (class I)	[weak]
/-á/, /-é/	SG.INSTR (class II)	[weak]
/-ė/	SG.LOC (class I)	[strong]
/-ús/, /-ás/, /-és/, /-ís/	PL.ACC (classes I,IIa,IIb,III/V)	[weak]
/-ú/, /-í/	NOM/ACC.DU (M,F)	[weak]

The affixes in the Saussurian set do not form a natural class morpho-syntactically (they realize different case features in all three grammatical numbers and are distributed over multiple inflectional classes), but they do share one phonological commonality: they are all represented by *light syllables*. The coda /s/ does not project a mora, and the vowels in these endings are always short. The initial intuition is, therefore, that Saussure's Law has something to do with the syllable weight of the affixes in question.

With that being said, the following short weak endings do not trigger the shift, even though they are segmentally not any different from some of the Saussurian affixes:⁸

(37) *Weak non-Saussurian affixes:*

/-as/ (?)	NOM.SG (class I)
/-is/ (?)	NOM.SG (class I.b)
/-a/, /-ε/, /-i/ (?)	SG.VOC (classes I and II)
/-a/ (?)	NOM.SG (neut.adj)

(38) *Weak non-Saussurian vs weak Saussurian affix:*

- a. bŭt+as (?)⁹ → bŭtas 'apartment.NOM.SG'
- b. rańk+ás → rankás 'hand.ACC.PL'

⁸ There are also two strong short affixes which do not cause the shift in question. They will be dealt with in a separate subsection. I choose to treat them as exceptional rather than the ones presented in (37).

⁹ The question marks here refer to the currently unclear status of these affixes' underlying prosody.

The following three logical possibilities can help solve this issue:

- One can deem the Saussurian affixes exceptional and lexically index certain constraints in the system to apply only to them, e.g. FAITHAFF(H)^S;
- One can also deem the suffixes in (37) exceptional following the same logic (which probably makes more sense because there are fewer of the latter than the former);
- Finally, one can posit an underlying representational difference between the affixes in (36) and (37). This third option is the one I will be further pursuing in this work.

Specifically, my claim is that the affixes in (37) have no underlying prosody at all, unlike the weak Saussurian affixes, which do have a weak underlying accent. As I said previously, what unifies all the Saussurian endings and makes them special is that they are all light syllables. In case a word-final light affix 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 distinct underlying accents in the input. This prompts me to formulate Saussure's Law in the following terms:

(39) *Saussure's Law (synchronic 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.

In the following subsection, I will explain why a clash of two underlying accents word-finally always results in a word-final surface accent.

2.4.1 Saussure's Law: when coalescence conspires with the edge

We have seen that Saussure's Law effectively overrides both principles of BAP (faithfulness to the stronger accent and stem faithfulness):

- (40) a. ińd+ú → indú [*ińdu expected b/c of accent strength]
b. ińd+é → indé [*ińdε expected b/c of morphology]

I choose to treat this phenomenon 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, it is assumed that the preferred position of the main accent within a

phonological word is one of its edges. This has to do with the fact that edges are phonologically prominent positions (McCarthy and Prince, 1993; Beckman, 1998; Kager, 2006; Hyman, 1977). I would therefore like to postulate the following constraint which prefers surface accents to be aligned with the right edge of the phonological word in Lithuanian phonology:

(41) (COINSIDE)R(IGHT), $w = 1.5$:

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. In some configurations, however, its effect does become visible on the surface.

At this point in the analysis, it is quite obvious that R alone cannot be stronger than the constraint protecting stem accents. For instance, when the strong stem *ińd-* combines with the strong affix *-aĩ*, the surface accent will be on the stem, violating R (and also $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$), but satisfying $\text{FAITHSTEM}(\text{H})$. Even though retaining the affix's accent on the surface would satisfy R, it is not ranked high enough in the hierarchy of constraints. I will assume that the weight of R is [1.5].

(42) $ińd+aĩ \rightarrow ińdai$

		$\text{MAXASS}(\mu_{\text{ST}}\text{-H})$	$\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$	R	\mathcal{H}
$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{1.0} & H_{1.0} \end{array}$		6	4	1.5	
☞ a.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{1.0} & H_{1.0} \\ \neq & \neq \end{array}$		-1	-1	-5.5
b.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ \neq & \\ H_{1.0} & H_{1.0} \end{array}$	-1			-6

The idea is that another constraint violation is needed to 'assist' R in instances when the Saussurian shift takes place. However, this 'assisting' constraint cannot be $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$. This is evident in the tableau above: the cumulative violation of $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$ and R is still not enough to override $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$. In the next paragraph, I will make a suggestion regarding the constraint whose interaction with R yields the accent shift in question.

Every instance of accent coalescence involves a violation of *COAL(H-H). We can thus make the tableau in (30) more precise by including the constraints *COAL(H-H) and R. In the extended tableau in (43), the two viable candidates both violate R and *COAL(H-H), which means that the two constraints are not the decision makers in the current configuration. In fact, since neither one of the two underlying accents is located at the right edge of the word, all the candidates violate R, making it an irrelevant constraint in this particular case.

(43) *ińd+ãms* → *ındams*

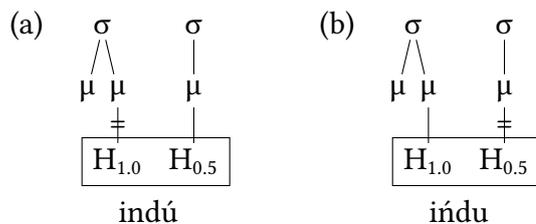
		CULM(H)	*NONLOC COAL(H-H)	ASSOCIATE!(H)	DEP ASS(μ-H)	MAX ASS(μ _{SR} -H)	MAX ASS(μ _{APF} -H)	R	*COAL(H-H)	
		80	80	50	10	6	4	1.5	1.5	\mathcal{H}
a.		-1						-1		-81.5
b.				-1		-1		-1		-57.5
c.				-1			-1	-1		-55.5
d.							-1	-1	-1	-7
e.						-1		-1	-1	-9

The reader should still remember that the new definition of Saussure's Law included a cluster of two underlying accents at the right edge of the word. Unlike the previous example, if any two accents form such a cluster, the right-hand one will surface even if it is the weaker one of the two:

(44) $i\acute{nd}+u \rightarrow ind\acute{u}$

I suggest that this happens because of the cumulative violation of R and *COAL(H-H) incurred by the candidate favoring the stem, i.e. **índu*. Let us assume that, just as in the previous example, the viable candidates are the ones where coalescence has taken place.

(45) *The two candidates in the right-edge cluster configuration:*



Candidate (a) violates the following constraints:

(46) $MAXASS(\mu_{ST}-H) (-1.0*6), *COAL(H-H) (-1*1.5) \gg -7.5$

Candidate (b) has the following profile:

(47) $MAXASS(\mu_{AFF}-H) (-0.5*4), R (-1*1.5), *COAL(H-H) (-1*1.5) \gg -7$

According to this calculation, candidate (b) should be favored. The culprit here is the fact that *COAL(H-H) is violated by both candidates. The desired generalization we are trying to pursue is supposed to rely on an asymmetric trade-off between the two candidates, where (a) is expected to violate only $MAXASS(\mu_{ST}-H)$, and (b) the other three constraints. Indeed, if *COAL(H-H) were not violated by (a), then it would have the harmony score of -6 and be favored as the winner. It is, however, not possible to selectively switch off the violation of *COAL(H-H) by the candidate which also does not violate R. This problem is one of the main shortcomings of Harmonic Grammar. It is discussed quite extensively in [Mueller \(2017\)](#). The conclusion [Mueller](#) draws is that the concept of Local Constraint Conjunction (LCC) is an inevitable component of any optimality-theoretic framework which boasts the ability to capture cumulative effects in grammar.

The lack of the asymmetric trade-off between the relevant constraints is demonstrated in the tableau below.

(48) *iñd+ú* → ?

		MAXASS(μ_{ST-H})	MAXASS(μ_{AFF-H})	R	*COAL(H-H)	
		6	4	1.5	1.5	\mathcal{H}
☹ a.		-1			-1	-7.5
☹ b.			-0.5	-1	-1	-7

Instead of employing a full-fledged version of LCC, I would like to propose a, perhaps, slightly less powerful addition to the system. The concept is called *Constraint Resonance (CR)*.¹⁰ Very much like LCC, CR occurs when two constraints are simultaneously violated within a defined locality domain. When this happens, their multiplier doubles.

Constraint Resonance:

If two constraints are violated simultaneously by one candidate in a given local domain (in this case, both *COAL(H-H) and R must be violated by two adjacent accents at the right edge of the word), their penalty increases by a given factor (in this case, [2.0]).

When the multiplier is doubled, the cumulative violation of R and *COAL(H-H) increases to [-6] points, which can now assist MAXASS(μ_{AFF-H}) in overriding stem faithfulness and placing the surface accent at the right edge.

¹⁰ I am very grateful to Prof. Jochen Trommer (Leipzig University) and my fellow PhD candidate Daniel Gleim (Leipzig University) for helping me formulate and elaborate on this idea.

(49) *ińd+ú → indú*

		MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	R	*COAL(H-H)	
		6	4	1.5	1.5	\mathcal{H}
→ a.		-1			-1	-7.5
b.			-0.5	-2	-2	-8

If the Saussurian suffix is strong, such as *-ė* (*loc.sg*), then the harmony profile of candidate (b) becomes even lower: -10 points.

2.4.2 Restricting the input

While developing the analysis above, I made specific assumptions about the underlying representations of stems and affixes 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 affixes are concerned, there were three possible types:

- (c) Affixes with no underlying accent, including items like *-as NOM.SG*, *-is NOM.SG*, *-a VOC.SG* etc;
- (d) Affixes with a weak underlying accent: *-ú INSTR.SG*, *-ús ACC.PL* etc. The difference between these affixes and the ones in the previous group was crucial for the application of Saussure's Law: it only applies when a short word-final affix has an underlying accent clashing with the stem-final accent of a stem. I also assumed that long weak affixes 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 Saussure's Law. 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 affix, resulting in a configuration with no clash. In case the first mora has the underlying affix, a clash is obtained, resulting in coalescence, but no viable output candidate can satisfy R;

- (e) Affixes with a strong underlying accent: *-ė LOC.SG, -ą NOM.SG, -ų GEN.PL, -ąms DAT.PL* etc. Whether or not these trigger the application of Saussure’s Law 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 all underlyingly strong short suffixes will be subject to the Saussurian shift. I will address this issue in Section 2.4.3.

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

- (f) Stems with no underlying accent: $C\mu(\mu)C-$;
 (g) Long affixes with no underlying accent: $-\mu\mu$.

As far as the latter are concerned, they would behave exactly like the long affixes with a weak underlying accent. If, say, the accusative singular affix *-ą* does have $H_{0.5}$ 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 BAP; after a weak stem, the stem will, again, be favored following now the second principle of the BAP. By the virtue of being heavy syllables, these affixes can also never trigger Saussure’s Law. As a result, they will never surface with a surface stress. The exact same prediction is made about an underlyingly unaccented accusative singular affix: *-aa*. This is not an unwelcome result. Since the short affixes had a three-way distinction which influenced their behavior, it is desirable to show that the system works even if long affixes had three underlying types, with the surface contrast reduced to two behaviors due to how Saussure’s Law works.

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

(50) *Accent-free inflectional affixes:*

-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 affixes, 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 2.3**, 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

	(a)	(b)	(c)	(d)	(e)	(f)
	$\begin{array}{c} \sigma \\ \\ \mu \end{array}$	$\begin{array}{c} \sigma \\ / \backslash \\ \mu \mu \end{array}$	$\begin{array}{c} \sigma \\ / \backslash \\ \mu \mu \\ \\ H_{1.0} \end{array}$	$\begin{array}{c} \sigma \\ / \backslash \\ \mu \mu \\ \\ H_{1.0} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{0.5} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{1.0} \end{array}$
	-as	-aa	-ams	-uu	-u	-ε
	NOM.SG	INS.SG	ACC.SG	DAT.PL	INSTR.SG	LOC.SG
(i)	$\begin{array}{c} \sigma \\ \\ \mu \end{array}$	μμ	μμμ	μμμ	μμμ	μμμ
(ii)	$\begin{array}{c} \sigma \\ / \backslash \\ \mu \mu \end{array}$	μμμ	μμμμ	μμμμ	μμμ	μμμ

Table 2.3: Hypothetical stems combined with existing affixes.

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 2.3). In all other instances, the only underlying accent (i.e. the one on the affix) will be pronounced in the SR.

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). The problematic cell is highlighted 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 affix has a weak H-accent and the stem has no accent at all, we expect the form to be accented on the affix, 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 *kélm-*. 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 affixes, I would like to adopt the assumption that phonological optimization proceeds in a cyclic manner, not all in one step (Chomsky and Halle, 1968; Chung, 1983; Halle and Vergnaud, 1987b). 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 root morphemes before they are concatenated in morphology.

One such minimal requirement for nominal roots is that every single one of them have at least a weak accent. The constraint I call HAVEACCENT(RT,0.5) is ranked above DEP(H) and DEPACT(H), thus producing the desired output.

- (51) a. HAVEACCENT(RT,0.5), w = 40: every root morpheme output must have an accent with the activity value of at least [+0.5] linked to one of its moras.
 b. DEP(H), w = 10: the insertion of new accent nodes is prohibited;
 c. DEPACT(H), w = 10: penalizes epenthetic activity.

Whenever an accent node is inserted into the structure, its starting activity level is [0.0]. In order to have a positive activity grade, epenthetic activity needs to be added to the accent node. Above, I have two separate constraints prohibiting the insertion of H-nodes and H-activity respectively.

(52) *Default accent insertion at the root cycle:*

	HAVEACCENT(RT,0.5)	DEP(H)	DEPACT(H)	\mathcal{H}
$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \end{array}$	40	10	10	
a. $\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \end{array}$	-1			-40
b. $\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \\ \vdots \\ H_{0.5} \end{array}$		-1	-0.5	-15
c. $\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \\ \vdots \\ H_{0.2} \end{array}$	-0.3	-1	-0.2	-24
d. $\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \\ \vdots \\ H_{1.0} \end{array}$		-1	-1	-20

The output of this initial cycle is inserted into the structure and concatenated linearly with the inflectional affix attached to the n-head, 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).

2.4.3 The strong nominative singular affixes

There are two inflectional suffixes in the nominal domain whose behavior cannot be accounted for by the analysis presented above. These affixes are the nominative singular formatives of Class III and IV nouns: *-ís* and *-ús*. 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 affixes would be expected to trigger the Saussurian accent shift. However, they do not display this behavior.

(53) *The behavior of the strong short suffix /-us/ in combination with various types of stems:*

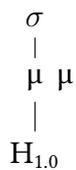
- a. *ámži+ús* → *ámžius* ‘age’
- b. *tuřg+ús* → *tuřgus*, **turgús* ‘market’
- c. *súun+ús* → *suunús* ‘son’
- d. *puík+ús* → *puíkús* ‘wonderful’

The suffix behaves unexpectedly in (53-b). It contains two equally strong underlying accents clustering at the right edge of the word. This should normally trigger the Saussurian shift (see above). 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 */-is/* in the 3rd declension) is the normal case, and the Saussurian affixes are a group of exceptional morphemes; or to deem these two affixes somehow exceptional. I will opt for the second solution for the following reasons:

- There are a total of eleven Saussurian affixes, and only two short affixes with an underlying accent that do not cause the accent shift. It makes much more sense to say that the nine Saussurian morphemes are regular and the other two are exceptions, than the other way around;
- These nominative singular affixes occur with a limited set of nominal stems. It makes sense to deem those inflectional endings exceptional with occur in closed, unproductive declension classes.

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

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



Why this defective mora cannot be associated with the vowel later on might be due to multiple different factors. One idea concerns the quality of the high vowels, as opposed to mid and low vowels. There are four vowels that form length pairs: /a(:) ε(:) i(:) u(:)/. 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. When lengthened (or underlyingly long), the quality of the vowels /a: ε:/ is almost the same as that of the corresponding short vowels (Dambriūnas et al., 1998). For some speakers, they may even be identical.

- (55) a. kás+a → kaása ‘he digs’
 b. néš+a → neéša ‘he carries’

If we assume that the morphemes that contain the underlyingly short /a/ and /ε/ which, in turn, can be lengthened (not all morphemes with /a/ and /ε/ display this behavior) have a floating mora, it is not irrational to assume 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 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 /-u:, -i:/ and /-ʊ, -ɪ/ by the means of their quality. If [±ATR] is an active distinctive 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 (54) cannot be associated with the lax vowel specified as [-ATR], and must remain floating. However, it prevents the constraint R from being satisfied even if the inflectional suffix is stressed. Therefore, there is no way for the Saussurian shift to apply.

2.4.4 The ‘special’ place names

Blevins (1993) mentions a group of Lithuanian village and town names which behave like weak rising stems but contain more than two root moras. In order to derive their behavior,

she 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 the inflectional affixes:

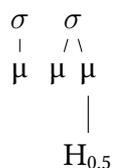
(56) *The declension of the lake name 'Galuonai':*

- a. Nom. Galuonái
- b. Gen. Galuonuú
- c. Dat. Galuonám(s)
- d. Acc. Galuonús
- e. Ins. Galuonaís
- f. Loc. Galuonuosé, Galuonuós

In all of the non-highlighted cases, the inflectional affixes are strong. Thus, the logical conclusion is that this stem is weak. In the highlighted example, however, the inflectional affix is weakly accented (a weak Saussurian 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-*:

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



2.4.5 Extra-strong personal names

In the colloquial Lithuanian language, some given human names resist the application of Saussure's Law even when the context for it is fully present. For example, the female names *Ras-á* and *Ast-á* both contain roots with the underlying short vowel /a/. What is not obvious from the nominative forms above is that *Rás-* is actually a weak root, while *Ást-* is strong. This distinction is visible in the genitive singular:

- (58) a. *Rás+oó̃s* → *Rasoó̃s*
b. *Ást+oó̃s* → *Aástoos* [with automatic lengthening of /a/]

In the instrumental singular, the prescriptive norm requires final stress, just like in the nominative form above (in fact, for these nouns, the nominative and the instrumental syncretize in the singular):

- (59) a. *Rás+á* → *Rasá*
b. *Ást+á* → *Astá*

As far as the colloquial language is concerned, matters are somewhat different here. As my dear friend Asta Z. (who is a history teacher born and raised in Lithuania) says:

- (60) *Mes visados juokdavomės, kai mokytoja sakydavo »Prié lentos eina Astá!«*
Μεές visadoós júokdavoomees, kai móokiitooja sakiídavoo »Prié lēntoós éina Astá!«
We would always laugh when the teacher said »Astá is coming to the chalk board!«

The reason she and her classmates would laugh out loud is the fact that almost no one would ever produce this name with a word-final stress, except for maybe Asta's school teacher who was following the prescriptive norm. I call my friend *Aásta* in both the nominative and the instrumental. Similarly, my sister-in-law is often referred to by other family members as *Ruúta*, not *Ruutá*.

What seems to be happening is the following phenomenon: originally strong roots representing personal names, such as *Ást-* or *Ruút-*, reached such a state in the modern colloquial language in which they resist the Saussurian accent shift, perhaps for paradigm uniformity reasons. I personally do not see a reason for it other than the need to stabilize the accentual patterns of personal names as a separate group of nouns.

I believe that the framework with gradient symbolic representations is an excellent means for capturing this kind of variation in grammar. I raised the question above regarding whether or not an underlying accent's strength may exceed the value [1.0]. If this is allowed, then one

	St. Lt	coll. Lt
N	Ast-á	Aást-a
G	Aást-oos	Aást-oos
D	Aást-ai	Aást-ai
A	Aást-aa	Aást-aa
I	Ast-á	Aást-a
L	Aást-ooje	Aást-ooje

Table 2.4: *The declension of the name ‘Asta’ in the standard variety and in colloquial speech.*

can say that the personal names in question have fortified underlying accents lexically.

(61) $\acute{A}st+\grave{a} \rightarrow A\acute{a}sta$

$\begin{array}{c} \sigma \quad \sigma \\ \quad \\ \mu \quad \mu \\ \quad \\ H_{1.5} \quad H_{1.0} \end{array}$		MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	R	*COAL(H-H)	
		6	4	1.5	1.5	\mathcal{H}
a.	$\begin{array}{c} \sigma \quad \sigma \\ \diagdown \quad / \\ \mu \quad \mu \\ \quad \\ \# \\ \boxed{H_{1.5} \quad H_{1.0}} \end{array}$	-1.5			-1	-10.5
b.	$\begin{array}{c} \sigma \quad \sigma \\ \diagdown \quad / \\ \mu \quad \mu \\ \quad \\ \boxed{H_{1.5} \quad H_{1.0}} \\ \# \end{array}$		-1	-2	-2	-10

The tableau in (61), the stem is very similar to the one in (49) above. The only difference is that the stem-final mora now has a slightly ‘more active’ underlying accent with the activity level of [1.5]. The evaluation of the candidates proceeds in the same manner as before. Thus, the constraints R and *COAL(H-H) enter into a state of resonance in candidate (b). However, even with the resonance in place, deleting the association line between the stem mora and the underlying stem accent produces a penalty of -9 points, which combines with the sole violation of R and thus yields the final harmony score for candidate (a): -10.5. This is lower than that yielded by candidate (b), ultimately resulting in (a) winning in the competition.

The tableau in (61) shows the nominative singular form. In the instrumental singular, the circumstances of candidate (a) are made even more dire because now the deletion of the association line between the mora of the affix and its underlying accent only produces a -0.5

penalty, with the overall harmony score of (b) only amounting to -8 points, while the harmony of (a) remains at -10.5.

(62) *Ást+á* → *Aásta*

	MAXASS($\mu_{ST}-H$)	MAXASS($\mu_{AFF}-H$)	R	*COAL(H-H)	
$\begin{array}{cc} \sigma & \sigma \\ & \\ \mu & \mu \\ & \\ H_{1.5} & H_{0.5} \end{array}$	6	4	1.5	1.5	\mathcal{H}
a. $\begin{array}{cc} \sigma & \sigma \\ / \quad \backslash & \\ \mu \quad \mu & \mu \\ & \\ \text{≠} & \\ \boxed{H_{1.5} \quad H_{0.5}} \end{array}$	-1.5			-1	-10.5
b. $\begin{array}{cc} \sigma & \sigma \\ / \quad \backslash & \\ \mu \quad \mu & \mu \\ & \\ \text{≠} & \\ \boxed{H_{1.5} \quad H_{0.5}} \end{array}$		-0.5	-2	-2	-8

2.5 The adjectival accentuation

The accentuation of adjectives is virtually the same as the patterns observed in nouns. One striking feature of Lithuanian adjectives is that all or nearly all of the native root adjectives are weak. This can be seen by comparing the accusative singular (weak affix *-aá / -uú*) with the genitive plural (strong affix *-(i)uú*):

- (63)
- | | | |
|----|------------------------------------|-------------|
| a. | <i>sė́naa</i> ↔ <i>senuú</i> | ‘old’ |
| b. | <i>bá́ltaa</i> ↔ <i>baltuú</i> | ‘white’ |
| c. | <i>graá̃žuu</i> ↔ <i>gražiuú</i> | ‘beautiful’ |
| d. | <i>gɛltoónaa</i> ↔ <i>gɛltoonú</i> | ‘yellow’ |

Saussure’s Law applies in exactly the same manner as it does in nouns:

- (64)
- | | |
|----|--|
| a. | <i>bált+ú</i> → <i>báltu</i> ‘white.MASC.INSTR.SG’ |
| b. | <i>grá̃ž+iú</i> → <i>gražiú</i> ‘handsome.MASC.INSTR.SG’ |

The actual inflectional endings of the adjectives have a more limited palette than those of nouns. For instance, primary (i.e. root) adjectives only display two inflectional classes: *-as*

and *-us*. Feminine *us*-adjectives decline like *as*-adjectives, but have a palatalized stem-final consonant. Masculine *us*-adjectives are transitional between *us*- and *ias*-nouns.

	AS-adjectives				US-adjectives			
	M.Sg	M.Pl	F.Sg	F.Pl	M.Sg	M.Pl	F.Sg	F.Pl
Nom	-as	-í	-á	-oos	-ús	-uus	-í	-ioos
Gen	-oo	-uú	-oós	-uú	-aús	-iuú	-ioós	-iuú
Dat	-ám	-íems	-ai	-óoms	-iám	-íems	-iai	-ióoms
Acc	-aa	-ús	-aa	-ás	-uu	-iús	-iaa	-iás
Instr	-ú	-aís	-á	-oomís	-iú	-iaís	-iá	-ioomís
Loc	-amě	-uosě	-oojě	-oosě	-iamě	-iuosě	-ioojě	-ioosě

Table 2.5: The inflectional endings of primary adjectives

Specifically pronominal/adjectival are the masculine dative (sg and pl) and locative (sg) endings (since they are never taken by nouns).

The strong nominative singular affix *-ús* (m), the nominative plural *-í* (m), and the nominative singular *-í* (f) are strong. It is impossible to say whether they would or would not trigger Saussure's Law, because the roots are all weak, and Saussure's Law may apply vacuously after roots with a final accent since the BAP would also predict the surface accent on the inflectional affix.

A large group of de-nominal adjectives with the suffix *-in-* decline like nouns of the *-is* (m) and *-ee* (f) groups. Only the dative and locative forms of the masculine singular paradigm have *-iam* and *-iamě*. The rest of the forms match those of the nouns:

	M.Sg	M.Pl	F.Sg	F.Pl
Nom	-is	-iaí	-eě	-ees
Gen	-ioo	-iuú	-eěs	-iuú
Dat	-iám	-íems	-ei	-ěems
Acc	-ii	-iús	-eε	-és
Instr	-iú	-iaís	-é	-eemís
Loc	-iamě	-iuosě	-eejě	-eesě

Table 2.6: The inflectional endings of de-nominal [-IN-is]-adjectives

The derivational suffix *-ín-* itself has a strong underlying accent. If the noun itself is strong, the noun's accent will be retained in the output:

(65) roóż+ín+is → roóżinis 'of roses, rose-like, pink'

If the noun is weak, the suffix will retain its accent:

(66) nám+ín+is → namínis ‘home/house-related’

Naturally, if the suffix *-in-* retains its accent, it becomes stem-final, and the resulting stem is subject to Saussure’s Law:

(67) a. [roož+ín]+iú → roožin+iú → roožiniu
b. [nám+ín]+ú → namín+iú → naminiu

For now, I assume that the root-IN combination is subject to the BAP at the stem level, and that Saussure’s Law does not apply here. Otherwise, the output in (65) would be a stem with its final accent retained. I will say more about derivational suffixes in the following chapter.

2.5.1 Definite adjectives

I will call the adjective forms described in this section ‘definite’, although I must immediately acknowledge the fact that I will not be addressing the semantics of these so-called ‘definite’ forms in this work, as this would be a completely different dissertation. I will just continue calling them definite for convenience – this is what they are known as in most literature on Baltic languages.

The definite adjectives go back to a formation in Baltic and Slavic where the third-person demonstrative/personal pronoun was appended to an already inflected adjectival base. A morphologically transparent example can be found below.

(68) a. Dúo-k mán raudóon-aa pieštúk-aa!
give-IMP 1SG.DAT red-ACC.SG pencil-ACC.SG
‘Give me a/the red pencil!’
b. Dúo-k mán raudóon-aa-j-ii pieštúk-aa!
give-IMP 1SG.DAT red-ACC.SG-3SG-ACC.SG pencil-ACC.SG
‘Give me THE red pencil!’

The output in (68) is readily segmentable into the original morphemes:

(69) [raudoon+aa]+[j+ii] « ‘red.ACC.SG + him/it.ACC’

This is, unfortunately, not always the case. The boundary between the adjective’s original inflection and the pronominal element is frequently blurred, with some of the segmental ma-

terial deleted or changed:

- (70) a. gráž+iám+j+am → gražiáajam [/m/ lost, /a/ lengthened]
b. jáun+īems+j+iems → jauniesiems [/m/ lost]

This is especially true with *us*-adjectives, where some of the original *u*-stem endings are replaced with the more productive *o*-stem affixes before the pronominal element:

- (71) a. gráž+~~u~~is^{→ie}+j+ie → gražieji ‘handsome.MASC.NOM.PL.DEF’
b. gráž+~~u~~is^{→ioo}+j+oo → gražioojoo ‘handsome.MASC.GEN.SG.DEF’

Some of the inflectional endings restore their original heavy form before the pronominal element:

- (72) a. gér+ú+j+uo → gerúoju ‘good.MASC.INSTR.SG.DEF’
b. gér+á+j+a → geráaja « OL *geranjan ‘good.FEM.INSTR.SG.DEF’
c. gér+ús+j+as → gerúosius « OL *gerunsiuns ‘good.MASC.ACC.PL.DEF’
d. gér+ás+j+as → geráasias « OL *geransians ‘good.FEM.ACC.PL.DEF’
e. gér+i+j+ie → geríeji ‘good.MASC.NOM.PL.DEF’

The nominative plural ending *-ī* appears only after weak stems. There are historical reasons to believe that it was once Saussurian. However, due to its distribution and the fact that it is always strong, the question is synchronically irrelevant.

The other four endings – *-u M.ISNTR.SG*, *-a F.ISNTR.SG*, *-as F.ACC.PL* and *-us M.ACC.PL* – are weak in their short form. Due to being short and having a weak underlying accent, these affixes trigger the Saussurian shift.

- (73) gér+ú/á/ús/ás → gerú, gerá, gerús, gerás

The analysis proposed above treats Saussure’s Law as a right-edge effect with two accents coalescing, crucially, at the very right edge of the word. However, in a form like *gerúoju*, the end-of-the-word context is destroyed. So, either the lengthening of the affix 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 endings deviate from simple combinations of the indefinite endings with an inflected form of the personal pronoun in the third person. Instead of assuming a whole set

of adjustment rules which would derive the correct strings for all the pronominal adjectives, we can simply say that these long affixes are fully lexicalized in the modern language and are stored as single units. While the instrumental singular endings are weakly accented when indefinitely, they have strong underlying accents in their definite form:

(74) $-\acute{u}_{0.5} \leftrightarrow -\acute{u}_{1.0}oju$

I mentioned before a group of adjectives with the derivation suffix /-ín-/. We will take a look at one of them now. The normal case with these adjectives is that they are never able to be combined with definite adjectival endings (for semantic reasons). There is one notorious exception: the adjective *paskutínis* ‘last’. This adjective has, as expected for all IN-adjectives, a strong stem:

(75) a. $paskutín+iu\acute{u} \rightarrow paskutíniu\acute{u}$ ‘last.GEN.PL’
 b. $paskutín+iáms \rightarrow paskutíniam\acute{s}$ ‘last.M.DAT.PL’

As a consequence, it is only accented on the inflectional ending when the ending triggers the application of Saussure’s Law:

(76) $paskutín+iú \rightarrow paskutiniú$ ‘last.M.INSTR.SG’

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

(77) a. $paskutín+\epsilon\epsilon+j+aa \rightarrow paskutín\epsilon\epsilonjaa$ [- $\epsilon\epsilon j\epsilon\epsilon$] ‘last.F.ACC.SG.DEF’
 b. $paskutín+iu\acute{u}+j+uu \rightarrow paskutiniu\acute{u}juu$ ‘last.GEN.PL.DEF’
 c. $paskutín+iu\acute{o}\acute{s}\epsilon+j+u\acute{o}\epsilon \rightarrow paskutiniu\acute{o}\acute{s}iu\acute{o}\epsilon$ ‘last.M.LOC.PL.DEF’

As far as the heavy variants of the light Saussurian endings in (73) are concerned, they are also accented after *paskutin-*:

(78) a. $paskutiniú\acute{o}ju$, $paskutiniá\acute{a}ja$, $paskutiniú\acute{o}sius$, $paskutiniá\acute{a}sius$

Since the stem is weak, we can say that the endings are accented because they are strong, not because there was a later obliterated application of Saussure’s Law.

Why the stem *paskutin-* happens to be the only one to alternate between a strong and a weak allomorph is not entirely clear to me. It might very well be an exceptional morpheme in Lithuanian. If other [IN-is]-adjectives were capable of having definite forms, it would be interesting to see if they would also alternate. Alas, such forms are virtually unattested. Per-

haps, a production experiment could be conducted upon native speakers of the language with non-existing, novel stems.

In addition to these weak Saussurian affixes become strong heavy ones, the strong Saussurian affix *-á* FEM.NOM.SG restores its original form, as well: *-óoji*. The *-óoji* allomorph also replaces the feminine endings *-ee*, *-i* in the nominative singular.

- (79) a. baltá → balt**óoji**
b. graži → graž**ióoji**

As far as the prosody of *paskutínis* is concerned, its behavior is completely parallel to the above set of affixes, except that the short version is already strong. Compare the non-pronominal and the pronominal forms below:

- (80) a. paskutín+eė → paskutínee ‘last.FEM.NOM.SG’
b. paskutín+ióoji → paskutinióoji ‘last.FEM.NOM.SG.DEF’

One final remark concerns the nominative singular affixes in the masculine gender. While the endings *-as* and *-is* are always unaccented, the marker *-ús* has a strong accent. In the pronominal form, all three are strong:

- (81) a. gėėras → gėr**ásis** ‘good.MASC.NOM.SG.INDEF/DEF’
b. droovús → droov**úsis** ‘timid.MASC.NOM.SG.INDEF/DEF’
c. paskutínis → paskutin**iúsis** ‘last.MASC.NOM.SG.INDEF/DEF’

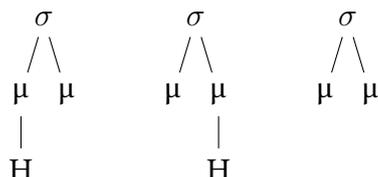
The example shows also that *-is* is lengthened, while the vowel /a/ in the first affix resists the otherwise automatic lengthening of short vowels.

Because of their partly idiosyncratic segmental inventory and prosody, I will treat the pronominal affixes of Lithuanian adjectives as indivisible units in the mental lexicon. In other words, items such as *-ásis*, *-(i)óoji*, *-iúsis* etc. are independent morphemes with their own featural specification.

2.6 Discussion of the analysis in Blevins (1993)

Blevins (1993) is arguably the most contemporary existing analysis of nominal accent in Lithuanian. The analysis is attractive because it is indeed quite minimal. The underlying representations of accent are reduced to simple H-tones linked to underlyingly accented moras. Thus, the difference between the stems *vīr-*, *índ-* and *kəlm-* can be schematized as follows:

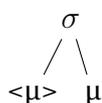
(82) *Accented and unaccented bimoraic morphemes:*



The underlying representations of monomoraic morphemes are exactly the same, except that they contain only one mora, which is trivially stem-final, so all short stems behave like rising stems, i.e. they display the Saussurian shift.

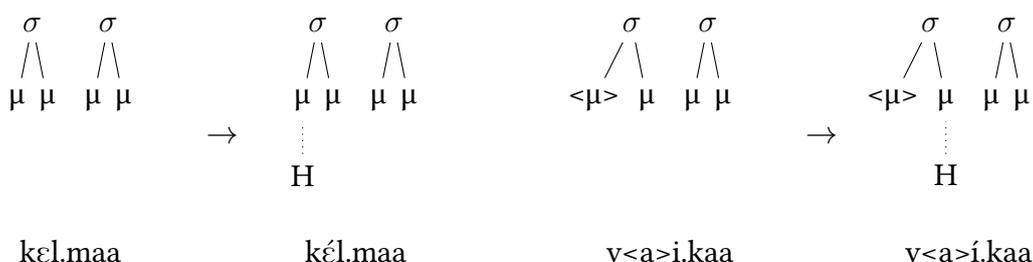
In order to account for the fact that epenthetic accents (see below) are inserted into the second mora of some unaccented stems, Blevins assumes that weak rising stems, such as *vaik-* have an extrametrical left edge:

(83) *Weak rising stems:*



Words without an underlying accent (i.e. weak stem + weak affix) receive an epenthetic default accent. It is inserted because of the inviolable requirement that all words have at least one surface accent. The epenthetic accent is placed as close to the left edge of the phonological word as possible:¹¹

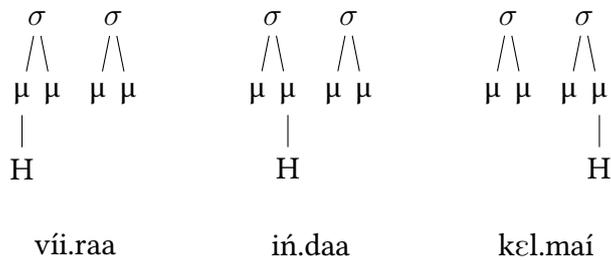
(84) *Epenthesis of a default accent:*



¹¹ In the examples below, the affixes added are *-aa* (ACC.SG, weak) and *-ái* (NOM.PL, strong).

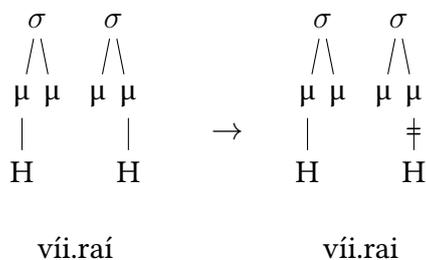
According to the Basic Accentuation Principle outlined above, if there is only one underlying accent after concatenating a stem and an affix, this accent will be preserved on the surface:

(85) *Single underlying accent surfacing faithfully:*



If there are multiple H-tones within a phonological word, all but the leftmost H-tone will be deleted:

(86) *Stem faithfulness under competition:*



The three principles above derive the BAP unproblematically.

2.6.1 Blevins's account of Saussure's Law

In her paper, [Blevins \(1993\)](#) attempts to maintain the system observed in Old Lithuanian and apply it to the modern language. Historically, all Saussurian affixes go back to bimoraic morphemes accented on their initial mora, i.e. the instrumental singular affix /-u/ « /-úo/. Thus, all of the above affixes were strong morphemes with the falling tonal contour in Old Lithuanian.

The accent shift that took place in Lithuanian is reminiscent of the shift known as Dybo's Law in Slavic linguistics ([Forston, 2010](#)). The difference between Old Lithuanian and Proto-Slavic is that Saussure's Law was more selective in terms of what inflectional affixes the accent was shifted to (in Slavic, the accent was shifted from non-acute stems to all inflectional endings, not only acute ones). The Saussurian shift in Old Lithuanian had the following definition ([Kazlauskas, 1968](#); [Stang, 1966](#); [Forston, 2010](#)):

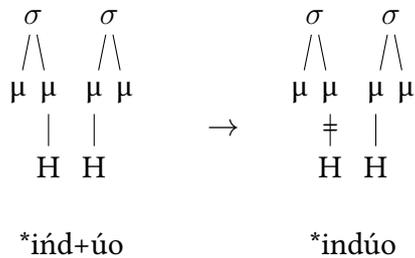
(87) *Saussure's Law in Old Lithuanian (descriptive definition):*

In Old Lithuanian, the main word accent was systematically shifted from non-acute

stems to acute inflectional endings.

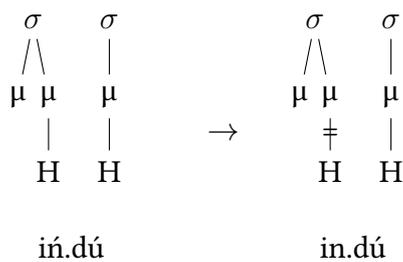
(88) *Saussure's Law in Old Lithuanian (formal definition):*

In a complex word, an accent is deleted from a stem-final mora before a heavy affix beginning with an accented mora:



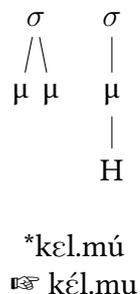
In order to derive the accent shift, [Blevins](#) assumes that the set of Saussure's endings still contains underlyingly accented morphemes with the accent located on the first (or, more accurately, only) mora. This correctly derives the data for strong rising stems:

(89) *Blevins's account for Saussure's Law in Modern Lithuanian (i\acute{nd}+\acute{u}):*



Weak (i.e. unaccented) rising and strong falling stems pose no challenge to the analysis, either. However, assuming that, for instance, the modern instrumental ending /-u/ is inherently accented will yield the wrong result for a weak falling stem, such as /kɛlm-/:

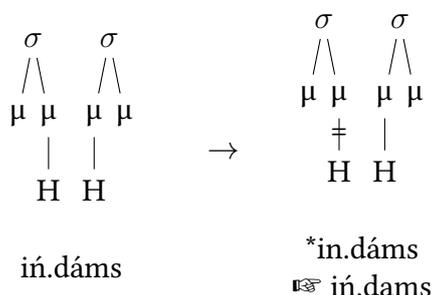
(90) *Affixal stress overgenerated I (kɛlm+\acute{u}):*



Moreover, in Modern Lithuanian, there are several inflectional endings inherently accented on their first mora, for instance, /-áms/ for DAT.M.PL. For strong rising stems (accented on the final mora of the root), [Blevins's](#) analysis incorrectly predicts an application of Saussure's Law,

yielding an accented affix:

(91) *Affixal 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 the modern language. Thus, the instrumental singular affix is weak in the modern language, which can be tested by combining it with a stem like *kelm-*. This affix does, however, still trigger the accent shift. In Blevins’s system, there is no way to have a weak accent capable of doing it.

The dative plural affix in (91) used to have the shape /-amús/ (Stang, 1966) and acquired its current shape /-áms/ fairly recently, after Saussure’s Law was no longer productive in its original form. These facts remain unaccounted for.

2.6.2 Blevins’s approach: summary

1. Blevins’s analysis correctly accounts for the basic accent interactions between stems and affixes, i.e. the BAP, even though it has to use the concept of extraprosodicity and, when the latter does not suffice, roots with floating accents.
2. Blevins’s treatment of the Saussurian affixes, which is entirely based on the application of the accent shift in Old Lithuanian, fails to capture the following facts:
 - (a) most of the affixes in the Saussurian set are weak in Modern Lithuanian;
 - (b) there are bimoraic affixes with an inherent accent on their first mora which do not trigger the Saussurian shift.
3. As a result, the system produces more instances of outputs with accented inflectional affixes than what is actually found in the language.

2.6.3 Alternative: extending Blevins (1993)

As I have pointed out above, the analysis in Blevins (1993) does not recognize the fact that, in Modern Lithuanian, Saussurian affixes can be both strong and weak, just like all other affixes.

This became evident from forms like *kėlmu* where the weak root morpheme surfaces with the main word accent.

If we maintain Blevins's minimal tonal representations, we would have to assume that weak Saussurian endings are underlyingly accent-free, just like all other weak endings. Otherwise, we would expect final stress in forms where these affixes follow weak falling stems, contrary to fact. This assumption would, in turn, entail that the nominative singular affix *-as* (weak non-attracting) and the accusative plural affix *-as* (weak attracting) have identical underlying representations both segmentally and prosodically. Obviously, the system needs to distinguish between them, since they, for example, produce different outputs after stems with a stem-final underlying accent:

- (92) a. *ińd+as* → *ińdas* 'dish.NOM.SG'
b. *rańk+as* → *rankás* 'hand.ACC.PL'

One way of capturing the different behavior of these two weak morphemes is to assume that the nominative singular formative *-as* is extraprosodic and simply cannot bear stress:

- (93) *ińd+<a>s* → *ińdas*

We will see at the end of this subsection how this assumption is indeed viable, but potentially not the most attractive one, and most certainly not completely issue-free.

Let us turn to the featural content and phonological shape of the Saussurian affixes for the time being. Like I said above, they do not form a natural class morpho-syntactically. Segmentally, however, they all have the following shape: */-V(s)/*. Each and every Saussurian affix is represented by a short syllable. The final */-s/* which appears in some of them is an obstruent and thus not linked to a mora.

The generalization about the Saussurian accent shift can be re-stated in the following manner:

- (94) *Saussure's Law (reformulated):*

In Lithuanian, a short word-final affix will attract the stress from the final mora of a stem if this affix is capable of bearing stress (by being so defined in the lexicon).

In reality, given Blevins's representations of strong and weak morphemes, the picture is somewhat more complicated than the surface generalization in (94):

- (95) a. A short unaccented affix will attract the accent from the final mora of an accent stem: *ińd+us* → *indús*;

- b. A short unaccented affix will surface with the primary word accent after an unaccented stem with extraprosodic non-final moras: v<a>ik+us → vaikús;
- c. A short accented affix will win over an accented stem if this stem is accented on its final mora: ínđ+é → indé.¹²

In the above example, the BAP is violated in the following ways:

- (96) a. BAP violation: the single accent is not surfacing faithfully;
- b. BAP violation: the epenthetic accent is not in the leftmost available position;
- c. BAP violation: the stem accent is not the one that surfaces faithfully.

Like in the analysis proposed in the previous sections, what this seems to be is an edge effect, with the following logic behind it:

- (97) *The left/right-edge effect in Lithuanian (speaking in Blevins's terms):*
 - The preferred accent position is the left edge of the phonological word;
 - If this position is not available (see below), the right edge is preferred over the penultimate mora as the locus of the primary word accent;
 - In other words, it is better to stress the right edge of the word than have penult accent in Lithuanian;
 - The right edge is attainable only if it is fully integrated into the prosodic structure.

As far as the motivation for the right-edge effect is concerned, there seems to be evidence for it elsewhere in the language. The argumentation here goes back to Kiparsky (2003) where it is shown that Ancient Greek dispreferred a particular tonal contour across the final two moras of a phonological word.

If one looks more broadly at various data from Modern Lithuanian, the following generalization seems to emerge: a word-final $\acute{\mu}$ -contour seems to be a very marked configuration in the language. Thus, almost all monosyllabic words with two moras in the only syllable have the rising pattern:

- (98) koól, kaí, taí, dziń etc.

In polysyllabic words, if a final heavy syllable is accented, it will have the rising tone, even if it originally had an underlying falling pattern:

- (99) a. miiléeti 'to love' → miiléesiu 'I will love'

¹² The behavior of accented Saussurian affixes in combination with weak stems is absolutely regular.

- b. miiléeti ‘to love’ → miileés, *miilées ‘(s)he will love’

So far, I have only mentioned instances where this contour is not allowed when both moras are contained within the final syllable of a word. I now propose that the behavior of the Saussurian affixes can be accounted for if one extends the above restriction to all instances of $\acute{\mu}\mu$ word-finally, either within the same syllable or across a syllable boundary. The restriction can be formulated in the following optimality-theoretic constraint:

- (100) $*\acute{\mu}(\cdot)\mu\#$: assigns a violation mark to any candidate whose penultimate mora is accented on the surface.

The markedness constraint in (100) gives us exactly what we need: when the stem *ińd-* is combined with the affix *-us*, the resulting string is **ińdus*, with the segments [n] and [u] linked to two subsequent word-final moras, of which the former is accented and the latter is not.

If the constraint $*\acute{\mu}(\cdot)\mu\#$ is ranked sufficiently high (above the respective faithfulness constraints), it will force the underlying accent of the stem to leave its original position and surface somewhere else. We do, however, immediately have to face a challenge: why does the accent hop to the affix and not to the left edge, which is its preferred location according to BAP?

- (101) *ińd+us* → **ińdus*, *indús*

The correct pattern can be derived if one assumes that an underlying accent must cross a morpheme boundary if it is dislocated, i.e. it cannot move too locally. This is essentially a version of anti-locality (Trommer, 2011). With the accent forced to leave its original position and not able to move within the limits of the original morpheme, the only position it can move to is the affix *-us*: *indús*. The reason for this restriction, which is enforced by the constraint $*\text{DOM}(\text{AIN})$, is that moving too locally might warp the shape of the morpheme in a way that would make it less recognizable. Given a situation where the underlying accent of *ińd-* must move, it is better to move it away completely than to reassign it to a different mora within the same stem.

The constraints relevant for deriving the attested patterns are listed below in the order of their relative ranking:

(102) *The constraint ranking:*

- *<μ>: an extraprosodic mora is not allowed to bear an accent;
- HdPW: every prosodic word must have a head;
- CULM(H): there can only be one surface accent within a prosodic word;¹³
- *μ(.)μ#: a falling contour is disallowed word-finally;
- *DOM: when an accent is moved, it should cross a morpheme boundary;
- NoFLOP(H): an accent should surface in its underlying position;
- ALL(H): an accent should be as close to the left edge of the phonological word as possible.

I will begin demonstrating how the system works with the simplest case, which involves a weak stem followed by a weak extraprosodic inflectional affix.

(103) $k\acute{e}lm + \langle a \rangle s \rightarrow k\acute{e}lmas$

$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \\ \langle \mu \rangle \end{array}$	*μ(.)μ#	*DOM	NoFLOP(H)	ALL(H)
☞ a. $k\acute{e}lmas$				
b. $k\acute{e}lmas$				*!

The surface accent is epenthetic, and its position is controlled by ALL(H). What is crucial here is that the markedness constraint *μ(.)μ# is not triggered when there is an extraprosodic mora separating the word edge from the final accentable position. Otherwise, one would end up with the surface form * $k\acute{e}lmas$.

Thus, extraprosodicity must be defined in this analysis as merely the inability of a given mora to bear an accent, not a complete failure to be integrated into the metrical structure of the word. I will return to this point at the end of the subsection.

The configuration becomes slightly more complicated if the ending is weak, short and accentable (in other words, a weak Saussurian affix): there are now three possible stress locations:

¹³ The first three constraints will not be included in the examples below, alongside with the candidates violating them.

(104) $k\epsilon l m + u \rightarrow k\acute{\epsilon} l m u$

$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \end{array}$	$*\acute{\mu}(\cdot)\mu\#$	*DOM	NoFlop(H)	ALL(H)
☞ a.	$k\acute{\epsilon} l m u$				
b.	$k\acute{\epsilon} l m u$	*!			*
c.	$k\epsilon l m \acute{u}$				**!

In (104), one position is immediately ruled out by Saussure's Law (because it creates a word-final falling contour: $-\acute{I}_m u\#$). In the competition between the other two, the one with its accent at the left edge wins (the alignment constraint resolves the tie).

In the next two examples, the basic principle of retaining the only underlying accent keeps the stress on the affix, even though the alignment constraint is violated:

(105) $k\epsilon l m + \acute{a} m s \rightarrow k\epsilon l m \acute{a} m s$

$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \end{array}$	$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \\ \\ H \end{array}$	$*\acute{\mu}(\cdot)\mu\#$	*DOM	NoFlop(H)	ALL(H)
a.	$k\acute{\epsilon} l m a m s$			*!	
b.	$k\acute{\epsilon} l m a m s$			*!	*
☞ c.	$k\epsilon l m \acute{a} m s$				**
d.	$k\epsilon l m a \acute{m} s$		*!	*	***

(106) žmoon+á → žmooná

	$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ \mu \quad \mu \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H \end{array}$	* $\acute{\mu}(\cdot)\mu\#$	*DOM	NoFlop(H)	All(H)
a.	žmóona				*!	
b.	žmoóna		*!		*	*
c.	žmooná					**

The next stem type I would like to consider is the weak rising stem, e.g. *vaik-* ‘child’. In Blevins’s approach, this stem type contains an extraprosodic initial mora. This means that the only accentable position within the stem is its right edge. The stem itself has no underlying accent. The only two ways the stem-final mora could be accented is by either inserting an epenthetic accent or moving an existing accent to the stem.

In (107) below, where a weak rising stem is followed by a weak extraprosodic affix, only one mora is capable of bearing the main accent, so it naturally gets it:¹⁴

(107) v<a>ik+<a>s → vaikas

	$\begin{array}{c} \sigma \\ \diagdown \quad \diagup \\ <\mu> \quad \mu \end{array}$	$\begin{array}{c} \sigma \\ \\ <\mu> \end{array}$	*< $\acute{\mu}$ >	...
a.	váikas		*!	
b.	vaikas			
c.	vaikás		*!	

The next example is interesting. It involves a weak attracting affix. Since there are no underlying accents, the alignment principle would prefer to insert the epenthetic accent into the stem-final mora (since the stem-initial mora is unavailable). However, this violates the Saussurian constraint because the affix is short and not extraprosodic. As a result, the main word accent surfaces on the affix:

¹⁴ This happens due to an undominated constraint prohibiting accents on extraprosodic material: *< \acute{m} >.

(108) v<a>ik+u → vaikú

 σ <μ> μ	σ μ	*μ(.).μ#	*DOM	NoFlop(H)	ALL(H)
a. vaik <u>u</u>		*!			*
 b. vaik <u>ú</u>					**

In case a weak rising stem is followed by a strong (accented) affix, stress retention on the accent is, again, trivial. The following two examples show it:

(109) v<a>ik+áms → vaikáms

 σ <μ> μ	σ μ μ H	*μ(.).μ#	*DOM	NoFlop(H)	ALL(H)
a. vaik <u>am</u> s				*!	*
 b. vaik <u>ám</u> s					**
c. vaik <u>am</u> s			*!	*	***

(110) d<a>in+á → dainá

 σ <μ> μ	σ μ H	*μ(.).μ#	*DOM	NoFlop(H)	ALL(H)
a. da <u>ina</u>		*!		*	*
 b. da <u>iná</u>					**

In the next four examples, the most resilient stem type shows up: the strong falling stem. This stem is accented on a non-final mora, so it naturally satisfies alignment and never incurs Saussurian violations. That is why any manipulations of the stress location result in a bad optimality profile. The candidates with faithful accents harmonically bind all others.

- (111) a. víir+<a>s → víiras [man.NOM.SG]
 b. víir+us → víirus [man.INSTR.SG]

- c. víir+áms → víirams [man.DAT.PL]
 d. víir+é → víirɛ [man.LOC.SG]

Finally, the strong rising stems will be considered. These stems are inherently accented on the stem-final mora. This means that, if an accentable short syllable is added, Saussure's Law will be triggered and force the faithful string out.

First up is a weak extraprosodic affix. The ALL(H) constraint would prefer the accent to shift to the leftmost mora in the word. However, this shift violates both *COAL(H-H) and, crucially, *DOM because it is too local.

(112) *índ+<a>s → índas*

$\begin{array}{c} \sigma \quad \sigma \\ \diagdown \quad / \\ \mu \quad \mu \\ \\ H \end{array}$ $\begin{array}{c} \sigma \\ \\ <\mu> \end{array}$	* $\mu(\cdot)\mu\#$	*DOM	NoFLOP(H)	ALL(H)
a. <i>índas</i>		*!	*	
 b. <i>índas</i>				*

If the affix is, however, weak but capable of bearing stress, the high-ranked Saussurian constraint will rule the faithful output out:

(113) *índ+u → indù*

$\begin{array}{c} \sigma \quad \sigma \\ \diagdown \quad / \\ \mu \quad \mu \\ \\ H \end{array}$ $\begin{array}{c} \sigma \\ \\ \mu \end{array}$	* $\mu(\cdot)\mu\#$	*DOM	NoFLOP(H)	ALL(H)
a. <i>índu</i>		*!	*	
b. <i>índu</i>	*!			*
 c. <i>indù</i>			*	**

In (113), the alignment constraint once again prefers to move the accent to the left if it has to be moved. However, *DOM prohibits movement within one morpheme, hence the observed stress hopping to the affix. The Saussurian accent shift is therefore the result of two markedness constraints being ranked higher than the faithfulness constraint attempting to produce a faithful output, as well as the alignment constraint driving the primary word accent as far

to the left as possible.

If there are two underlying accents with the first one not being penultimate, the one on the right deletes according to the Basic Accentuation Principle (recall that Blevins's analysis incorrectly predicts stress hopping in this configuration):

(114) iñd+áms → iñdams

	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \\ H_1 \quad H_2 \end{array}$	* $\acute{\mu}(\cdot)\mu\#$	*DOM	NoFlop(H)	All(H)
a.	iñdams H ₁		*!	*	
☞ b.	iñdams H ₁				*
c.	indáms H ₁			*!	**
d.	indaíns H ₁			*!	***
e.	iñdams H ₂			*!	
f.	iñdams H ₂			*!	*
g.	indáms H ₂				**!
h.	indaíns H ₂		*!	*	***

Finally, if the accented affix contains only one mora, the application of BAP would create the marked output violating * $\acute{\mu}(\cdot)\mu\#$, so it is better to delete the stem accent instead:

(115) rañk+à → rankà

	$\begin{array}{c} \sigma \\ \mu \quad \mu \\ \quad \\ H_1 \quad H_2 \end{array}$	* $\acute{\mu}(\cdot)\mu\#$	*DOM	NoFlop(H)	All(H)
a.	ránka H ₁		*!	*	
b.	rañka H ₁	*!			*
c.	ranká H ₁			*!	**
d.	ránka H ₂			*!	
e.	rañka H ₂	*!		*	*
f.	ranká H ₂				**

2.6.4 Interim summary

In the previous subsection, we saw how Blevins’s analysis of nominal accent in Lithuanian can be improved in order to correctly capture the data attested in the modern language. The analysis is still quite minimal, but it also suffers from a couple of shortcomings:

- The extended analysis relies more heavily on extraprosodicity;
- Extraprosodicity must be defined in a way that renders extraprosodic moras unaccentable, yet fully integrated into the prosodic word in order not to trigger the high-ranked Saussurian constraint, which is self-contradictory in a way;
- The nature of the Saussurian constraint is very language-specific. While there is evidence for word-final falling contours being marked and dispreferred Lithuanian, it is hard to motivate the existence of this constraint as part of the universal inventory of constraints. Even in Lithuanian, one finds numerous exceptions, even systematic ones, where word-final $\acute{\mu}(\cdot)\mu$ -contours do occur. These include dative case exponents, imperatives of falling verbs, and truncated infinitives:

- (116) a. tái ‘that.F.DAT.SG’, galvóoms ‘head.DAT.PL’ *etc*
 b. láuk ‘wait.IMP’, búuk ‘be.IMP’ *etc*
 c. láukt ‘wait.INF’, búut ‘be.INF’¹⁵ *etc*

¹⁵ These truncated infinitives without the final vowel /i/ are extremely common in the colloquial language.

An additional argument against the important role of *DOM comes from certain cases of tone stability in Lithuanian. A number of verbs have the following underlying template:

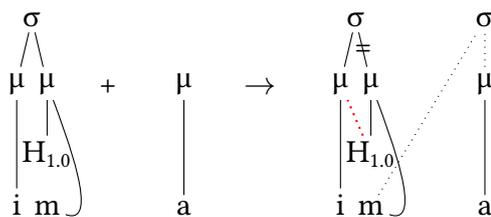
(117) (C)VŘ-ti, e.g. bėřti ‘to pour/spill’, iřti ‘to take’

In the present and past tenses, the accent-bearing root-final consonant re-syllabifies into the onset of the syllable bearing the theme vowel. The underlying accent, having lost its host, docks onto the closest stem mora to its left:

(118) a. iř+a → í.ma ‘he takes’
 b. bėř+ia → bėé.ria ‘he pours/spills’ [automatic lengthening]

If *DOM is active and high-ranked in the system, we might expect the accent to move to the theme vowel (more on theme vowels will be said in the respective chapter). Thus is, however, not the case, and the accent is re-assigned to another mora within the same morpheme:

(119) A violation of *DOM:¹⁶



¹⁶ Why the theme vowel does not project a syllabic node at the moment of concatenation will be discussed below.

2.7 Chapter summary

In this chapter, I have addressed some issues in the domain of nominal accentuation in Modern Lithuanian. I have shown that the analysis in [Blevins \(1993\)](#) suffers from a couple of serious shortcomings. I believe that the biggest issue in the analysis is the failure to recognize that the affixes in the Saussurian set can be both strong and weak from a synchronic viewpoint (while the analysis adopts the assumptions that they are all strong, as they actually were in Old Lithuanian).

In order to distinguish weak Saussurian from truly weak affixes (which can never be accented), I proposed that underlying accents in UG can vary in strength. In Harmonic Grammar with Gradient Symbolic Representations, symbols are represented in the lexicon together with their degrees of activity. In the analysis proposed in this paper, weak Saussurian affixes are assumed to have a partial underlying accent, which distinguishes them from truly weak affixes which have no underlying accent at all. The ‘stress hopping’ effect triggered by the Saussurian affixes is viewed as a right-edge effect, where 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 (partial or full) clash word-finally.

The rest of the accentual properties of Lithuanian nominals can be derived straightforwardly from much simpler interactions involving, on the one hand, a constraint prohibiting insertion of extra activity into underlying symbols, and, on the other hand, a faithfulness constraint protecting stem accents (stem faithfulness over affix faithfulness).

Chapter 3

Dominance

3.1 Introduction

This chapter discusses another very interesting and important phenomenon in Lithuanian phonology: the one of *Dominance*. The phenomenon has been addressed on multiple different occasions in phonological literature (see below). I will argue for a straightforward analysis employing the notions of floating accents and accent coalescence (already familiar to us from Chapter 2). Crucially, my account of dominance does not involve any deletion processes. This fact will allow me to unify the concepts of dominance and its mirror image phenomenon, which I call *Fortification*.

Dominance is usually described as the ability of a morpheme (derivational or inflectional) to erase the prosody of the base it attaches to, with or without imposing its own underlying accent. If the dominant morpheme does bear an accent of its own, then the surface accent will be on this morpheme (Inkelas, 1998; Halle and Vergnaud, 1987a). According to the Basic Accentuation Principle (which is also active in Vedic Sanskrit and other ancient Indo-European languages), the stem is expected to win, but the output is instead accented on the suffix.

(1) *Dominance in Vedic Sanskrit I:*

ráth + ín + e → rathíne [strong dominance]

If a dominant morpheme does not contribute its own prosody, the resulting structure is accent-free and receives a default accent on the surface (in this case, at the left edge of the word):

(2) *Dominance in Vedic Sanskrit II:*

- a. kár + áy → káráy- [strong dominance, derived stem accented on suffix]
- b. káráy + iṣa → kárayiṣa- [weak dominance, derived stem has no accent]
- c. ci + kárayiṣa + ti → cíkārayiṣati [default stress assignment]

In the first step in the above example, the root combines with a strong dominant affix, which results in the affix retaining its accent. In the second step, the weak dominant suffix /-iṣa/ does not contribute an accent of its own, but the prosody of the base has been erased, which results in the surfacing of a default accent in the final step when the phonological word is formed with the addition of non-cyclic affixes.

The above authors, once again, speak in traditional terms where strong morphemes are assumed to be accented and weak ones accent-free underlyingly. In my account of dominance in Lithuanian, I will use the morpheme specifications presented in the previous chapter.

3.1.1 Dominance in Lithuanian

In Lithuanian, dominance is represented by a group of derivational (Stundžia, 2009) and, in my opinion, also a handful of inflectional suffixes (I will elaborate on this in Chapter 4). Using the representations for strong and weak morphemes from the analysis we have developed for inflected nominal forms, the intuition is that a dominant morpheme ‘weakens’ the base it is attached to. We will now consider two such affixes, combined with the strong nominal root *ėln-* ‘deer’. The following example shows the normal behavior of this root when followed by regular inflectional material.

- (3)
- a. $\acute{e}ln+i+as \rightarrow \acute{e}lnias$ ‘deer.NOM.SG’
 - b. $\acute{e}ln+i+ú \rightarrow \acute{e}lniu$ ‘deer.INSTR.SG’
 - c. $\acute{e}ln+i+uú \rightarrow \acute{e}lniuu$ ‘deer.GEN.PL’

A productive strong dominant affix in Lithuanian is the suffix */-ĩen-/*, which can be appended to virtually all animal names in order to refer to these animals’ flesh.

- (4)
- a. $\acute{e}ln+ĩen^{DOM} \rightarrow \acute{e}lnĩen-$ [‘deer meat’]
 - b. $\acute{e}lnĩen+á \rightarrow \acute{e}lnĩena$
 - c. $\acute{e}lnĩen+aa \rightarrow \acute{e}lnĩenaa$

Regardless of what type of stem */-ĩen-/* is added to, the result is always a noun with a fixed accent pattern on the initial mora of this affix.

An example of a weak dominant affix is the suffix */-en-/* which is also appended to animal names in order to refer to their skin or fur:

- (5)
- a. $\acute{e}ln+en^{DOM} \rightarrow \acute{e}lnen-$ [‘deer skin’]
 - b. $\acute{e}lnen+á \rightarrow \acute{e}lnená$
 - c. $\acute{e}lnen+aa \rightarrow \acute{e}lnenaa$

Even though the root has a strong underlying accent, the derived stem is weak. Every time it is combined with a strong inflectional affix, the latter surfaces with the word accent. The whole word thus behaves like a regular weak noun accented on its first mora. Here, it seems like one might be dealing with complete accent erasure (as proposed in the existing analyses) and some kind of epenthetic accent in forms such as $\acute{e}lnenaa$ ‘deer_skin.ACC.SG’. However, we will see below that matters are actually more complicated than this.

Dominant affixes are quite common in the Lithuanian language. Apart from the ones referring to animals' body parts, the following ones may be listed as examples (from [Stundžia 2009](#)):

- -eėl(-is) / -eėl(-is)¹: a very productive diminutive suffix:

- (6) a. bróol + eėl + -is/-iuú → broleėlis/-iuu 'little brother'
 b. vaik + eėl + -is/-iuú → vaikeėlis/-iuu 'little kid'

- apĩi-N(-ee): a prefix with the meaning 'the thing around around N':

- (7) a. apĩi + rańk + -eε/-eė → apĩirankεε/-ee 'bracelet' (lit. 'thing around the arm')
 b. apĩi + kákl + -eε/-eė → apĩikaklεε/-ee 'collar' (lit. 'thing around the neck')

- -(i)ú�(-as): arguably the most productive diminutive suffix:

- (8) a. bróol + iú� + -as/-uú → brooliúkas/-uu 'little brother'
 b. kákl + iú� + -as/-uú → kakliúkas/-uu 'little neck'

- -in(-as): a weak dominant suffix deriving adjectives from nouns:

- (9) a. ámž + in + -as/-uú → ámžinas, amžinuú 'eternal'
 b. laík + in + -as/-uú → laíkinas, laikinuú 'temporary'

- -es(-iis): a weak dominant nominalizer:

- (10) kliéđ + es + -ii/-iuú → kliéđesii, kliéđesiuú 'delirium'

There are several different approaches to the phenomenon of dominance. In the following subsection, I will discuss the main theoretical mechanisms used to capture dominance.

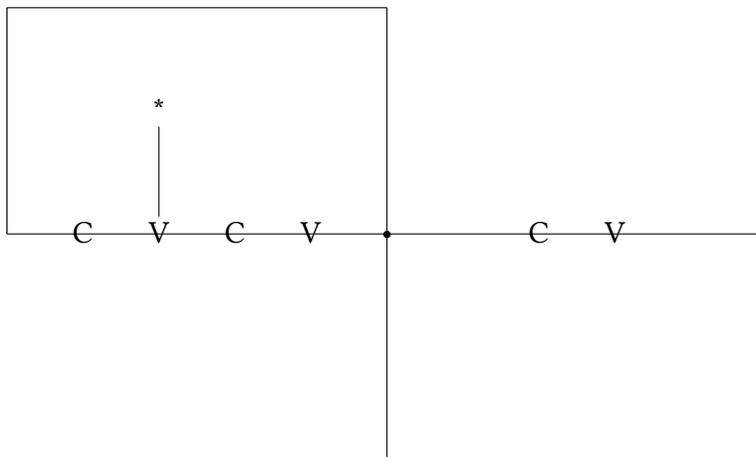
¹ The latter is added to bisyllabic and longer bases.

3.1.2 Some existing approaches to dominance

I will begin with the seminar work by [Halle and Vergnaud](#) on stress and cyclicity. Thus, in [Halle and Vergnaud \(1987b,a\)](#), dominance is analyzed in terms of a *plane-flipping* mechanism within a cyclic model of phonology.

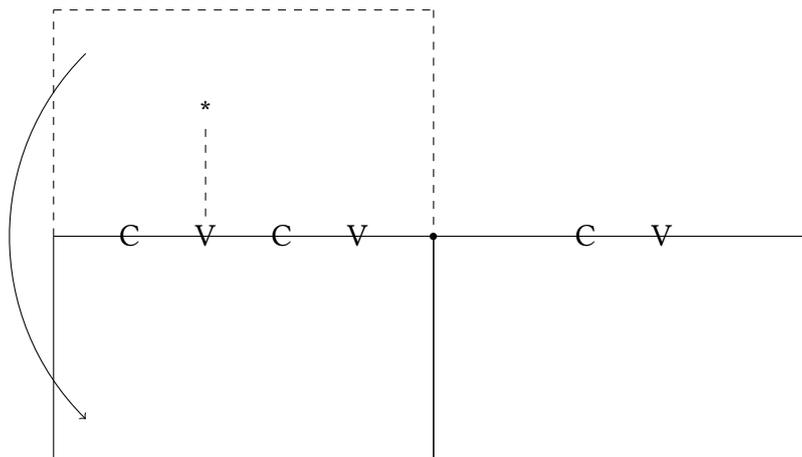
Derivational affixes are subdivided into cyclic and non-cyclic, with the former triggering the above process. This is achieved in the following manner. A cyclic (i.e. dominant) affix is introduced on a separate plane, which intersects with the base's plane along the segmental line. At the moment of concatenation, the base and the affix are therefore on two separate, autonomous tiers. An example is shown below, with an accented CVCV-base and a cyclic accent-free suffix. In the example, the base has the abstract segmental structure CVCV (the precise segmental features are of no essence here) and an accent linked to its first vocalic element. The suffix consists of one syllable and does not contain an inherent accent; however, it is specified in the lexicon as cyclic, so it is merged on a separate plane.

(11) *A cyclic affix on a separate plane:*



When the crucial mechanism of *Tier Conflation* takes place, not all the information is copied onto the dominant tier, which is the tier of the suffix. The assumption made by the authors is that the prosodic information of the base is lost:

(12) *Tier conflation:*



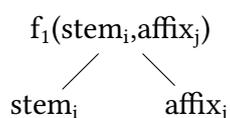
Even though the vast majority of cyclic affixes are supposed to behave in this manner, [Halle and Vergnaud \(1987b\)](#) do make a remark that special rules may be needed in some cases whereby the prosodic information of the base may be made recoverable.

Lithuanian dominance is addressed by [Halle and Vergnaud](#) alongside with Vedic Sanskrit. They point out an important difference between Vedic and Lithuanian. In Vedic, a stem derived by a weak dominant suffix is invariably accented at its left edge, even if the subsequent inflectional morphemes have underlying accents. In Lithuanian, a stem derived by such an affix behaves like a regular weak stem. The authors attribute this to the fact that, in Lithuanian, the stress rules apply at the non-cyclic stratum only, while in Vedic they become active earlier.

In the analysis I will be proposing in this chapter, I will not be making use of complex mechanisms such as tier conflation with variable copying of material. The dominance effect will be derived straightforwardly using floating accents and the mechanism of accent coalescence which has already been discussed in the previous chapter.

[Inkelas \(1998\)](#) addresses the problem of dominance using the framework developed in [Orgun \(1996\)](#). In her approach, the phonological mapping associated with a morphological construction is referred to as a *Cophonology*. Every cophonology is a function that relates the phonology of a mother node to the phonology of its daughters:

(13) *A cophonology function:*



If we now combine stem_i with affix_k , the function f_1 may not be applicable if it does not not

index $affix_k$. Obviously, a given cophonology may apply to many combinations of stems and affixes (or stems and stems in case of compounding). A distinct function is only posited on the basis of positive empirical evidence for its necessity.

For instance, the visible difference in the behavior of dominant and regular affixes will prompt the learner acquiring a language to posit two different functions to handle the two respective sets of morphemes. Without positive evidence for the contrary, the default function should be assumed for a novel morpheme.

Positing distinct cophonologies (even minimally different ones) on a construction-specific basis is a significant enrichment of the grammatical machinery. I do not see how adopting these principles would be advantageous for the current work. In the following section, I will show how dominance in Lithuanian can be captured by adding just one novel concept that was not used in the previous chapter, namely, underlyingly unlinked (i.e. floating) accents. The analysis I am going to propose will not make use of any kind of erasure of prosodic material on stems. We saw in the previous chapter that the weak nominal stems were not completely accent-free as it has previously been assumed. I will say the same about dominated stems. When a dominant affix is added, it merely weakens the accent of its base, but does not cause a complete removal thereof. If, subsequently, the base's accent is in fact de-linked, that will always be due to the standard competition models between stems and affixes.

Before I move on to the next section, I would like to mention *Transderivational Anti-Faithfulness (TAF)*. It is a solution proposed in Alderete (2001a,b). In this framework, dominant affixes are lexically indexed in such a way that they trigger a high-ranked anti-faithfulness constraint requiring that the accent of the base should be de-linked. In this theory, every faithfulness constraint is mirrored by a corresponding anti-faithfulness constraint, for instance:

- (14) a. MAX(H): assigns a violation mark to every output candidate in which an underlying accent has been deleted (de-linked);
 b. \neg MAX(H): penalizes every output candidate that does not violate MAX(H).

I will illustrate how this works using a small example. Say, we have the Vedic base $k\bar{a}r\acute{a}y-$ and the weak dominant suffix $-i\check{s}a-$, with the latter belonging to the set of suffixes which lexically index the constraint \neg MAX(H).

- (15) $k\bar{a}r\acute{a}y + i\check{s}a \rightarrow k\bar{a}rayi\check{s}a$

$k\bar{a}r\acute{a}y + i\check{s}a^{DM}$	\neg MAX(H) ^{DM}	HAVE(H)	MAX(H)
a. $k\bar{a}r\acute{a}yi\check{s}a$	*!		
☞ b. $k\bar{a}rayi\check{s}a$		*	*

While the idea of TAF is attractive for a range of phenomena, I will once again underscore the fact that I do not believe that, in the case of Lithuanian dominance, the process involves any kind of erasure either of accents or association lines between accents and their hosts. It is an accent-leniting, not an accent-deleting effect. In what follows, I elaborate on this view.

3.2 The proposal

One significant shortcoming of the existing theories of dominance is the assumption that the underlying prosody of the base is erased when a dominant affix is appended. I will now show that this is not what happens in Lithuanian. The underlying accent of a strong noun is made weak when a dominant morpheme is added (and an underlyingly weak accent remains weak), but it is not simply deleted without a trace.

Let us consider the following derivation:

(16) *vil̃kas* ‘wolf’ → *vil̃kɛñá* ‘wolf skin’

The noun *vil̃k-as* has a weak rising stem. The fact that the stem is weak can be recognized by its interaction with strong inflectional morphemes:

(17) *vil̃kaí* ‘wolf.NOM.PL’, *vil̃káms* ‘wolf.DAT.PL’

If the weak underlying accent of the root were erased when the suffix */-ɛn-/* is added, we would expect the insertion of a default accent at the left edge of the phonological word whenever the newly formed base combined with a truly weak (i.e. accent-free) inflectional formative. One such marker would be the accusative singular */-aa/*. However, when *vil̃kɛn-* is combined with this ending, the surface accent is on the same mora as it is in the base word *vil̃kas*:

(18) *vil̃kɛnaa*, **vil̃kɛnaa* ‘wolf.skin.ACC.SG’

In the first chapter of this dissertation, I claimed that there was no need to assume extraprosodicity for any of the underlying moras of Lithuanian nouns and adjectives. Following this logic and assume that the initial mora of *vil̃k-* is not extraprosodic, I then have to assume that the base *vil̃kɛn-* contains the same weak accent as the root. If the root were strong, the accent of the base ending in */-ɛn/* would be weak, but the placement of the accent within the root would remain intact:

(19) *zuí̃k + ɛn* → *zuí̃kɛn-*, **zúikɛn-* [‘hare skin’]

The considerations above prompt me to define dominance in the following way:

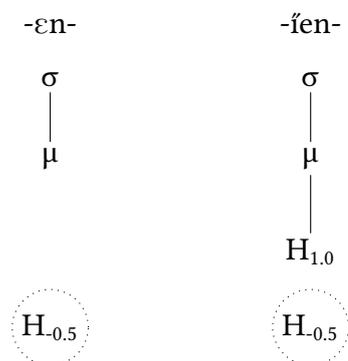
Dominance (new definition):
 A *dominant* affix impacts its base in a manner such that the underlying accent of the base loses some of its activity.

But how do strong stems then become weak when a dominant affix is added? The logic I would like to propose in the current work relies on the following considerations:

(20) *The assumptions about dominant morphemes:*

- Every dominant affix contains a floating (i.e. underlyingly unlinked) accent with a negative activity value;
- At the same time, the affix may or may not contain another, positively specified, accent pre-linked to one of its moras (this produces the difference between strong and weak dominant affixes);
- The floating accent of a dominant affix coalesces with the accent of the base, thus subtracting its activity value from that of the base's accent.

(21) *The underlying specifications of dominant morphemes:*



In the previous chapter, we saw that there was a locality condition on coalescence which required to the two coalescing accents to be adjacent. The question of adjacency is not problematic in case of floating accents, thanks to the very fact that they are underlyingly not linked to anything. In principle, a floating accent is not bounded by an association line and can travel any distance towards its future host.

The central question is, however, why the negatively specified floating accent of the dominant affix does not coalesce with the affix's own accent in case it has one. The requirement for the two coalescing accents to belong to two different morphemes seems to be an *anti-locality* principle (Trommer, 2011; van Oostendorp, 2007). This principle was actually always fulfilled in the previous chapter because the two clashing (i.e. adjacent) accents were always heteromorphemic. I am giving this derived environment principle the following formulation:

- (22) $DE(H)^2$, $w = 80$: an association line cannot be inserted between an underlyingly unassociated accent and a tautomorphemic host. *Additionally, an underlyingly floating accent cannot merge with a fellow tautomorphemic accent.*

As far as the constraint against floating accents is concerned, I already introduced it in the previous chapter. For convenience, I am repeating its definition here.

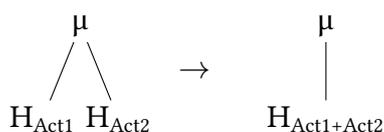
- (23) $ASSOCIATE!(H)$, $w = 50$: every accent in the output must be associated with a mora.

In the case of a dominant morpheme, an accent is floating in the input, and it can directly merge with another accent (which is already linked to a host) without having to project an association line of its own. We have already seen that the constraint prohibiting this is very low-ranked.

- (24) $*COAL(H-H)$, $w = 1.5$: penalizes every application of the operation unifying two input accents into one accentual unit in the output.

The tableau in (27) shows what happens when an accent-free dominant affix combines with a strong nominal root. I am assuming that there are technically two ways for the floating accent to coalesce with the accent of the base. One is to associate the floating accent with the mora hosting the underlying accent of the base. In this case, the result will be similar to what we saw happening in the previous chapter: an automatic mechanism (which probably applies between cycles, just like syllabification) merges these two accents together at a later stage.

- (25) *The inter-cyclic merger of two accents:*



This mechanism per se is not part of EVAL, and its result is virtually the same as that produced by direct coalescence. However, when an association line is inserted, a constraint prohibiting insertion of association lines is violated:

- (26) $DEPASS(\mu-H)$, $w = 10$: penalizes every association line between a mora and an accentual unit in the output if it doesn't have a corresponding association line in the input.³

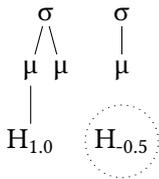
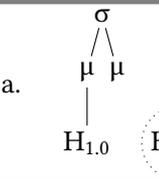
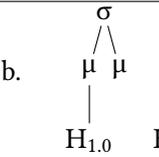
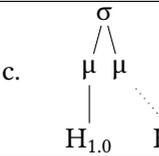
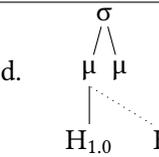
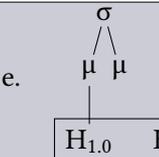
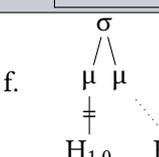
² ... i.e. Derived Environment.

³ Even though the activity level of the underlyingly floating accent is negative, I assume that the violation of $DEPASS(\mu-H)$ is always negative, i.e. it is always a penalty and never a reward (see Goldrick and Smolensky, 2016). Also, the violations of $ASSOCIATE!(H)$ are always calculated on the absolute value of a floating accent's

It is therefore less costly for the system to simply merge the two accents as opposed to first inserting a line, and then invoking an automatic mechanism later on.

In Chapter 2, we saw that the constraint MAXASS(μ -H) was split into two constraints with slightly different weights: MAXASS(μ_{ST} -H) and MAXASS(μ_{AFF} -H). Here, at the stem level, I am keeping it simple for now and assuming that we have only one MAXASS(μ -H) constraint. We will see later on that the splitting of the two constraints will also be needed at the stem level.

(27) $\acute{e}ln+\acute{e}n- \rightarrow \acute{e}ln\acute{e}n-$

		DE(H)	CULM(H)	ASSOCIATE!(H)	DEPASS(μ -H)	MAXASS(μ -H)	*COAL(H-H)	\mathcal{H}
		80	80	50	10	6	1.5	
a.				-0.5				-25
b.		-1	-1		-0.5			-165
c.			-1		-0.5			-85
d.					-0.5		-1	-6.5
e.							-1	-1.5
f.				-1	-0.5	-1		-61

In the system we have set up here, coalescence can place almost at no cost at all. The constraint prohibiting coalescence of two accents has indeed a very low weight. The reader should be reminded that coalescence H does not, however, apply freely in the language due to the fact that activity.

there are very strict locality conditions on it.

After the merger of the two accents, the new stem has a single accent linked to its first mora whose activity level is the sum of the weights of the original accents: $[1.0 + (-0.5) = 0.5]$.

If the root of the noun that the dominant affix is appended to happens to be weak, the resulting weight of the merged accents should be zero: $[0.0]$. This would make wrong predictions regarding the accentuation of the resulting noun at the word level:

(28) $\varepsilon_{0,0}\text{ln}\varepsilon\text{n} + a_{0,5} \rightarrow *e\text{ln}\varepsilon\text{n}\acute{a}$ ‘deer.skin.INSTR.SG’

We talked in the previous chapter about the root-level requirement that every root must have at least one sound (i.e. linke to a mora) accent with the activity level of $[+0.5]$ or higher. If we postulate this requirement not only for the root cycle, but also for every stem cycle, then the zero activity of the coalesced accent will be supplemented with epenthetic activity, thus resolving the issue.

The relevant constraints are HAVEACCENT(ST,0.5) ($w = 40$) and DEPACT(H) ($w = 10$).

(29) $\acute{z}\acute{u}\nu+\varepsilon\text{n}- \rightarrow \acute{z}\acute{u}\nu\varepsilon\text{n}-$

		DE(H)	CULM(H)	ASSOCIATE!(H)	HAVEACCENT(ST,0.5)	DEPACT(H)	DEPASS(μ -H)	MAXASS(μ -H)	*COAL(H-H)	\mathcal{H}
		80	80	50	40	10	10	6	1.5	
a.					-0.5				-1	-21.5
b.						-0.5			-1	-6.5
c.				-0.5		-1	-0.5	-0.5		-43

In the optimal candidate, the two accents do coalesce, and their activity values cancel each other out. However, it is not enough to leave the activity value at $[0.0]$, so some epenthetic ac-

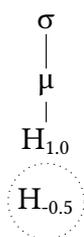
tivity is added, at the cost of violating DEPACT(H), which is not, however, as costly as violating HAVEACCENT(ST,0.5).

3.2.1 The strong dominant morphemes

Our story becomes different when a strong dominant affix is added to a base. We saw in the previous chapter that, whenever two accents coalesced into one unit, the violations of MAXASS(μ -H) were calculated upon the weights of the original accents the association lines linked with their host moras, not the resulting weights after the merger had taken place. In this case, if the entire morpheme in (30) is added simultaneously, the accent of the stem will be weakened, but it will still win over the accent of the affix because, at the moment of evaluation, the association line between the accented stem mora and its accent will react to the original weight of the underlying stem accent, not the weight of the resulting accent after the merger.

(30) *A strong dominant morpheme:*

-ien-



(31) $\text{ɛln} + \text{ien} \rightarrow ??$

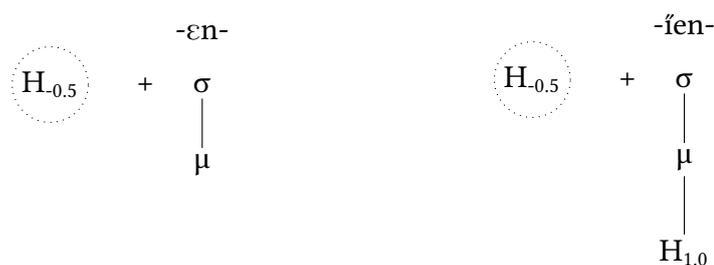
		DE(H)	CULM(H)	ASSOCIATE!(H)	HAVEACCENT(ST,0.5)	DEPACT(H)	DEPAss(μ -H)	MAXAss(μ -H)	*COAL(H-H)	\mathcal{H}
		80	80	50	40	10	10	6	1.5	
? a.				-1				-1	-1	-57.5
? b.				-1				-1	-1	-57.5

One could derive the correct output by saying that, like in the previous chapter, $\text{MAXASS}(\mu\text{-H})$ is split into two constraints – $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$ and $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$ – with the latter having a slightly higher weight than the other. The ranking would be the opposite of what we saw in the analysis of nominal accentuation. This ranking is actually not impossible since we are dealing with a derivation at the stem level, as opposed to the word-level derivations we looked at when discussing the BAP and Saussure’s Law. In the next chapter, we will actually see that this ranking, i.e. $\text{MAXASS}(\mu_{\text{AFF}}\text{-H}) \gg \text{MAXASS}(\mu_{\text{ST}}\text{-H})$, is empirically supported when prefixed verbs are considered (however, this will hold only for prefixes, NOT for suffixes).

However, assuming that the accent will be favored on the dominant morpheme for the sake of sparing a $\text{MAXASS}(\mu_{\text{AFF}}\text{-H})$ violation suffers from another substantial drawback: one completely loses the generalization regarding how dominance works. In fact, if the outcome depends solely on the relative ranking of MAXASS constraints, then the dominant affix need not even have a floating negative accent, since the correct output will be selected even in its absence. That is not at all the goal I am trying to pursue in this analysis. In fact, the prediction we want to make is that the underlying accent of the base is always weakened by a dominant morpheme, regardless of whether this morpheme has an accent of its own or not. This weakening of the root accent should also not depend on the relative ranking of the various MAXASS constraints.

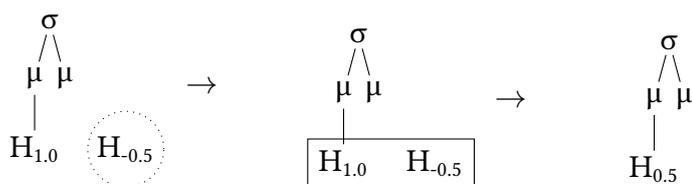
In order to ensure this mechanism of dominance, I would like to suggest that each dominant morpheme consists of two morpho-phonological exponents realizing it: (a) a segment-free exponent containing only the floating accent; (b) the segmental string of the affix, potentially containing its own underlying accent linked to one of the moras.

(32) *The revised underlying specifications of dominant morphemes:*



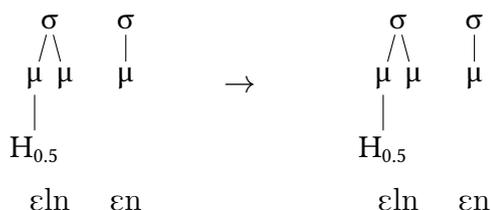
Each exponent in a dominant morpheme triggers its own cyclic evaluation. In other words, the addition of a dominant suffix causes the application of two stem-level optimization cycles. In the first step, the floating accent of the dominant morpheme merges with the underlying accent of the base, just as it did in the examples above. The interim output has an accent with the activity grade of $[+0.5]$ (in case the base has a weak accent, additional activity is epenthesized). Therefore, for both dominant morphemes – $/-\varepsilon n-/$ and $/-\textit{ien}-/$, the first stem in the derivation is the same:

(33) *Dominance: Step 1*

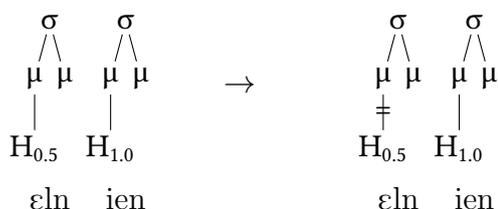


In the second step, the weakened base combines with the rest of the dominant morpheme. In case the dominant morpheme has no accent, the entire formation then inherits the weakened accent of the original base. If it has a strong accent, then the accent of the dominant morpheme survives. As far as dominant affixes with a weak accent are concerned, I assume that some interplay between MAXASS constraints would determine the ultimate winner. However, I cannot say much about this because morphemes of this type seem to systematically be lacking in the system.

(34) *Weak dominance: Step 2*



(35) *Strong dominance: Step 2*



3.3 Anti-dominance, or fortification

At the beginning of this chapter, we encountered a group of derivational morphemes that had a negatively specified floating accent, capable of merging with the linked accent of the base, thus weakening it. An interesting question is whether or not the language also has floating accents that are positively specified. If that is the case, the prediction made by the analysis is that some derivational affixes would be capable of making an underlyingly weak root strong. This prediction is actually borne out. There are about a dozen (!) derivational suffixes creating nouns and adjectives. While they are never accented themselves, they freeze the word accent on the base they attach to, no matter what comes after them. If the base itself is strong, the

story is trivial:

(36) bróol + išk + -as/-uú → bróoliškas/-uu ‘brotherly’

If the base is, however, weak, it becomes strong while retaining the position of its accent:

(37) a. vaik + išk → vaikišk- ‘childish, child-like’
 b. vaikišk + -as/-uú → vaikiškas/-uu

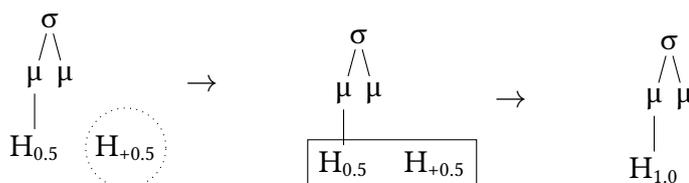
Following the logic presented above, the following underlying representation can be assumed for the suffix /-išk-/:

(38) *The underlying specification of a fortifying morpheme:*



Whenever this suffix is combined with a base, its floating accent coalesces with that of the base, increasing its activity value.

(39) *The process of fortification:*



3.4 Neutrality

Before finishing this chapter up and moving on to the domain of verbs, I would like to briefly mention the so-called neutral morphemes. I will take the adjectival suffix /-ín-/ and the nominal suffix /-inińk-/ as two examples. When these two suffixes combine with a strong base, the base retains its strong accent:

(40) a. júur + ín + -is/-iuú → júurinis/-iuu ‘of the sea’

- b. júur + inińk + -as/-uń → júurininkas/-uu ‘sailor’

When these combine with weak bases, the base’s accent is obliterated, and the suffix takes over, and the stem is strong:

- (41) a. dárþ + ńn + -is/-iuń → darbńnis/-iuu ‘work-related’
b. dárþ + inińk + -as/-uń → darbinińkas/-uu ‘worker’

From the examples in (40) and (41), I conclude that: (a) these suffixes have a strong underlying accent; (b) they do not have a floating accent weakening the stem. Here, the winning accent seems to be picked according to the Basic Accentuation Principle we saw above. This means that we do need to have the following ranking of constraints at the stem level to derive it (i.e. having only the generic MAXASS(μ -H) is not enough):

- (42) MAXASS(μ_{ST} -H), w = 6 » MAXASS(μ_{AF} -H), w = 4

What is interesting is the fact that this ranking seems to hold at both the word level (see Chapter 2) and the stem level in the nominal domain. The only area where this will be different is the domain of verbal prefixes.

3.5 Dominance: summary

In this chapter, my claim was that the effect of Dominance does **not** involve accent erasure, as it is frequently assumed in literature dealing with accentuation systems in various languages. In Lithuanian, there are derivational and, as we will see below, also inflectional, affixes which affect the prosody of the bases they attach to. There are, however, reasons to believe that these interactions do not involve complete cyclic ‘amnesia’ with the prosody of the base being completely obliterated. When a strong Lithuanian stem is weakened by a weak dominant affix, the resulting stem is weak, but, whenever it is accented on the surface, it tracks the position of the original strong accent.

The mechanism for deriving dominance is very simple. Before the segmental and main prosodic material of a dominant morpheme are introduced, it ‘sends’ a negatively specified floating accentual element towards the base. This accent, in search for a host, coalesces with the underlying accent of the base. The strength of the resulting accent is computed based on the activity levels of the two original accents. If the resulting activity is too low, a minimal well-formedness requirement for stems intervenes and supplies epenthetic activity wherever this is necessary.

In the second step, when the segmental material and the prosody of the affix are appended, there is either no changes in the prosody (if the affix has no underlyingly pre-linked accent of its own), or a competition between the two morphemes takes place just like it did in the previous chapter. The following chapter is dedicated to verbal accentuation. It will take a very close look at what happens when stems and affixes compete at the stem level, and make specific remarks about the relative rankings of certain constraints. For the time being, what has been said above suffices for the examples we have so far considered.

Chapter 4

Verbal accent

4.1 Introduction

In the previous two chapters, I developed a system that captures the distribution of accents in inflected nominal forms, and also an analysis which accounts for affixes which have a weakening effect on their bases. This chapter is dedicated to applying the entire system to the verbal domain and seeing what challenges we will stumble over along the way. The following statements reveal the most important findings and conclusions of the current chapter:

- Very much like the nominals, *Lithuanian verbs have idiosyncratic lexical accent*. Verbal forms with short agreement affixes are subject to the application of Saussure's Law.
- *Verbal roots can be strong and weak*. A peculiar restriction applies here: only those roots which are accented on the final mora may be weak. All other roots are strong. Weak verbal roots whose accent is not on their last mora are always derived, i.e. they are not specified as such in the lexicon.
- *Verbal roots interact with prefixal complexes*, which are, in turn, marked as separate units in the structure. The interaction between roots and prefixal complexes is the mirror image of the Basic Accentuation Principle that we saw above, since prefixes take precedence over roots when stem-level evaluations take place.
- In addition to the special behavior of the prefixes, verbal suffixes show their own peculiarities. For instance, there is evidence that the so-called *theme vowels are tucked into the structure during a post-lexical cycle*. The evidence for this comes from the fact that, even though theme vowels are located between the verbal root and the inflectional markers, the locality condition for the application of Saussure's Law is not disrupted.
- In many verbal forms, the suffixes added to the base have *weakening and fortifying effects on the latter*. This neatly expands the empirical range of application of the mechanisms I have proposed above.
- While the formation of the various participles follows the same linear templates, *the internal cyclic constitution may vary from one participle to the other*. Thus, the present active participle introduces a stem-level evaluation after a word-level one has taken place for its base. At the same time, the past active participle's suffix is evaluated during the primary stem-level cycle, i.e. without any interleaving of morphological levels.

In the following section, I will begin the chapter by introducing the reader to the realm of Lithuanian verbs and their major morphological patterns. After that, we will take an in-depth look at verbal prosody.

4.1.1 General remarks

Morphologically, Lithuanian verbs are traditionally viewed as very complex. The (in)famous example of a doubly inflected participle derived from a verb, which is in turn derived from a nominal compound, is shown below.

- (1) Nεβε-pri-si-kišk-ia-koopuustel-iau-j-anč-iais-iais
no.longer-PREV-RFL-bunny-FUG-cabbage-VRBLZ-EP-PPRSA-M.INS.PL-M.INS.PL
'With those who are no longer picking a lot of rabbit cabbage.'

However, it is noteworthy that the verbs in this language have been diachronically transformed much more significantly than nouns and adjectives. For instance, there are almost no traces of the former Indo-European aspectual system (Forston, 2010), with the morphological means previously used to indicate aspect being either lost altogether or reinterpreted as tense markers. Thus, the old sigmatic aorist suffix survives into the modern language as a future tense marker.

- (2) búu-s-iu 'I will be' [cf. Gk. γραφ-s-o 'write-PFV-1SG.NPST']

In the Slavic languages, the sigmatic suffix (with its phonological variants /š/ and /x/ produced by the RUKI rule) became a generalized marker of the past tense, in both the preterite and the imperfect (Corbett and Comrie, 2003). It survives in Sorbian, as well as in numerous South-Slavic dialects (more saliently in the East):

- (3) *The sigmatic suffix in Bulgarian and Bosnian-Serbian-Croatian (BSC):*
a. spa-x-me 'we slept' [Bg]
b. spja-x-me 'we were sleeping' [Bg]

The various stem grades derived in IE via ablaut have been partially grammaticalized to mark tense, not aspect (see below). Like in the neighboring Slavic languages, the collapse of the old aspect distinctions gave way to a newly emerging system of grammatical tenses.

- (4) a. leék-ia 'he flies' [e-Grade]
b. leék-ee 'he flew' [ee-Grade]

In Modern Lithuanian, there are also various verb particles which can, among other semantic functions, make an eventuality telic, thus partially replacing the old system of aspects with a system of lexical derivations with inherent aspectual properties.¹

¹ This is virtually the same as the system of preverbs in Slavic. However, the aspectual readings of particle

- (5) a. rašii-ti 'to write / to be writing' (atel.)
 b. **pa**-rašii-ti 'to write (up)' (tel.)

There are three basic tense forms: the present, the past, and the future.² Unlike Slavic, Lithuanian and Latvian have a dedicated future inflection (namely, the sigmatic affix above) and do not rely on auxiliaries. The future tense is the same for all verbs, regardless of the presence / absence of an aspect-altering preverb.

The agreement affixes are the same for all verbs in all three tenses of the indicative mood (going back to the thematic present-tense active paradigm of PIE, cf. [Pakalnišienė and Jakulytė 2016](#)):

(6) *The agreement suffixes:*

- /-u/ ↔ 1SG
- /-i/ ↔ 2SG
- /-mɛ/ ↔ 1PL
- /-tɛ/ ↔ 2PL
- /-Ø/ ↔ 3SG/PL

A very striking feature of the Baltic languages is the complete absence of agreement morphology in the third person. While the same is observed in the third singular forms of many Slavic languages, the lack of inflectional material in the plural is specifically a Baltic trait:

(7) *Syncretic third-person forms:*

- a. jís maát-oo-Ø 'he sees'
 b. jié maát-oo-Ø 'they see'

Despite the syncretism, the subject can be freely *pro*-dropped in the third person:

- (8) Saák-oo-Ø kád Pétr-as ɛs-aás vɛéd-ɛɛs.
 say-TH-3 that P-NOM.SG be-PPRSA.M.SG marry-PPSTA.M.SG
 '(S)he/they say(s) that Peter is married.'

Since there are no dedicated agreement affixes for the different tenses, the main visible distinction between present and past is due to stem alternations and/or different theme vowels in both tenses. I will elaborate on this below.

and non-particle verbs are somewhat different in Lithuanian..

² Since this work is dedicated to the morpho-phonology of Lithuanian, I will not talk about the numerous periphrastic forms used in Lithuanian. Here, we will only be concerned with synthetic forms.

- (9) a. *dírbu* « *dír-b-a-u* ‘I work’
 b. *dírba* « *dír-b-oo-u* ‘I worked’

In addition to the basic three tenses, there is an inflected conditional with partially idiosyncratic agreement morphemes (which are historically the regular agreement affixes fused with what used to be a finite form of the verb *to be*, which is attached to what used to be the supine of the main verb; Pakalnišiniene and Jakulytė 2016), a past habitual (which happens to be a purely Lithuanian innovation within Balto-Slavic), an imperative and an obsolete optative form which is currently falling into disuse in all styles except for the most formal registers.

- (10) *The Old Lithuanian conditional (equivalent of the modern ‘matūčiau’):*

Matū-tum bi-a-ū
 see-SUP be.OPT-TH-1SG
 ‘I would see.’

	Infinitive	non-finite	<i>kiřs-ti</i>	to chop
	Supine	non-finite	<i>kiřs-tuu</i>	to chop
	Present	finite	<i>keřt-a</i>	he chops
	Present active participle	non-finite	<i>keřt-ant-is</i>	the chopping one
	Present gerund	non-finite	<i>keřt-ant</i>	(while) chopping
	Present passive participle	non-finite	<i>keřt-a-m-as</i>	the one that is being chopped
	Past	finite	<i>kiřt-oo</i>	he chopped
	Past active participle	non-finite	<i>kiřt-us-i</i>	the one who chopped
	Past gerund	non-finite	<i>kiřt-us</i>	having chopped
	Past passive participle	non-finite	<i>kiřs-t-as</i>	the chopped one
	Future	finite	<i>kiřs-s [-rs]</i>	he will chop
	Future active participle	non-finite	<i>kiřs-s-iant-is</i>	the one who will chop
	Future gerund	non-finite	<i>kiřs-s-iant</i>	with chopping to be done
	Future passive participle	non-finite	<i>kiřs-s-i-m-as</i>	the one that will be chopped
	Past iterative	finite	<i>kiřs-dav-oo</i>	he used to chop
	Past it. active participle	non-finite	<i>kiřs-dav-us-i</i>	the one who used to chop
	Conditional	finite	<i>kiřs-tuu</i>	he would chop
	Imperative	finite	<i>kiřs-k</i>	chop!
	Optative	finite	<i>te-keřt-ie</i>	may he chop

Table 4.1: *Finite and non-finite forms of Lithuanian verbs.*

The present and the simple past are based on special dedicated stems (which are distinct for at least some verbs). Additionally, the present participles are also based on the present-tense

stem. The past-tense stem is used for the past active participle, the past gerund, and also the de-verbal action and actor nouns (not included in the list above). The rest of the forms are derived from the infinitival stem, which is probably the elsewhere stem allomorph. A detailed list of the main morphological derivatives of Lithuanian verbs is presented in Table 4.1.

4.1.2 The morphology of the finite verb

A finite form of a verb in Lithuanian usually consists of a core stem (which is most often a modified/extended root, marked as V in the example below), a tense/aspect/mood affix (TAM), a theme vowel and an agreement marker. The root may be preceded by a preverb complex.³

- (11) PREV+V+TAM+TH+AGR
 nɛ+miilee+s+i+mɛ → nɛmiiléesimɛ
 NEG+love+FUT+TH+1PL
 ‘We will not love.’

In the present and simple past tenses, there is no special TAM affix (except for the N- and ST-verbs below), and the theme vowels directly follow the core stem:

- (12) a. žin+Ø+oo+u → žinaú ‘I know’⁴
 b. kas+Ø+ee+tɛ → kaáseetɛ ‘you (pl) dug’

The theme vowels used in the present/past tense depend on the inflectional class of a given verb. The future tense always uses the theme vowel /-i-/. The theme vowels are distributed as follows:

- (13) *The theme vowel inventory:*
1. /-a-/: only in the present tense of primary and some suffixal verbs (see below):
 nɛš-a ‘(s)he carries’, lúp-a ‘(s)he peels’, lińk-st-a ‘it bends’
 2. /-ia-/: only in the present tense of primary and some suffixal verbs:
 vɛis-ia [-s^lɛ] ‘(s)he breeds’, tɛíg-ia ‘(s)he asserts’
 3. /-i-/: in the present tense of some suffixal verbs in ...ée-ti (suffix /-ee-/ in the infinitival and the past tense stems), as well as in the future tense of all verbs:
 gúl-i ‘(s)he is lying down’, míil-i ‘(s)he loves’, gulée-s-i-u [-s^lu] ‘I will lie down’

³ The reflexive particle, not mentioned here, will be discussed below.

⁴ All the surface accent placements will be discussed below.

4. /-oo-/: in the present tense of some suffixal verbs and in the past tense of many verbs:
skaít-oo '(s)he reads', búd-oo '(s)he woke up'
5. /-ee-/: only in the past tense (many primary verbs and most verbs in ...íi-ti):
veéd-ee '(s)he led', maát-ee '(s)he saw'

Before the agreement affixes /-u/ (1SG) and /-i/ (2SG), the theme vowels are either shortened or syncopated altogether. For example, the long theme vowel /-oo-/ is shortened to /-a-/:

- (14) a. mat+oo+u → mataú 'I see'
b. mat+oo+i → mataí 'you (sg) see'

While the retention of the short theme vowel /-a-/ before /-u/ would produce a licit phonological output, it would be indistinguishable from forms with the theme vowel /-oo-/. Therefore, the short theme vowel /-a-/ syncopates:

- (15) a. kas+a+u → kasú, *kasaú 'I dig'
cf.
b. kas+oo+u → kasaú 'I scratch'⁵

(16) *The alternations of the theme vowels:*

- | | |
|------------------------------------|--|
| 1. -a- → Ø / ____ -u, -i | kas+a+u → kasú 'I dig' |
| 2. -ia- [jɛ] → -i- [-j-] / ____ -u | kent+ia+u → kent+[j]+u → kenčiú 'I suffer' |
| 3. -ia- [jɛ] → Ø / ____ -i | kent+ia+i → kentí 'you suffer' |
| 4. -oo- → -a- / ____ -u, -i | mat+oo+u → mataú 'I see' |
| 5. -ee- → -ia- [jɔ] / ____ -u | mat+ee+u → mat+ia+u → mačiaú 'I saw' |
| 6. -ee- → -ε- / ____ -i | mat+ee+i → matéí 'you saw' |
| 7. -i- → Ø / ____ -i | miil+i+i → míili 'you love' |

Additionally, the theme vowel /-i-/ deletes in the future tense before the null third-person ending. This deletion most likely takes place in order to disambiguate the third person and the second person singular forms:

- (17) a. kas+s+i+Ø → kás, *kási '(s)he will dig'
cf.
b. kas+s+i+i → kási 'you will dig'

⁵ These two roots are accidentally homonymous, but the theme vowels are different nonetheless.

In all other cases, the theme vowels remain unaltered. Interestingly enough, stem-extending vowels in suffixal verbs (see Section 4.3 for suffixal verbs) resolve the hiatus with the following theme vowel not by shortening, but by epenthesis of a glide:

- (18) a. *miilee+oo+mε* → *miiléejoomε*
 b. *mažee+a* → *mažéeja*

Table 4.2 shows a verb conjugated in the three primary tenses and in the conditional mood.

	Present	Past	Future	Conditional
1SG	lɛk-i-ú	leek-ia-ú	leék-s-i-u	leék-č-ia-u
2SG	lɛk-Ø-í	leek-ε-í	leék-s-Ø-i	leék-t-um-(ε-i)
1PL	lɛék-ia-mε	leék-ee-mε	leék-s-i-mε	leék-t-u(m-ee)-mε
2PL	lɛék-ia-tε	leék-ee-tε	leék-s-i-tε	leék-t-um-ee-tε
3	lɛék-ia	leék-ee	leék-s	leék-t-uu

Table 4.2: *The conjugation of the verb leék-ti ‘to fly’.*

4.2 PIE ablaut and its reflexes in Lithuanian

Modern Lithuanian is a descendant of Proto-Baltic (PB), an Indo-European language going back to Proto-Indo-European (PIE) (Poljakov, 2015). PB inherited the IE system of vowel gradation in inflectional and derivational processes.

4.2.1 The PIE vowel gradation system

Proto-Indo-European had a system of vowel grades called *ablaut*. The ablaut played an important role in inflectional and derivational processes. Already in the earliest attested forms of ancient Indo-European languages, the various ablaut grades had developed idiosyncratic properties and it is difficult to determine their general semantics (Ringe, 2006). Many of the rules that had once been phonological in nature became fully morphologized.

The following ablaut grades are reconstructable for PIE roots (Forston, 2010):

- C(R)e(R)C – the full grade (the base form), containing the basic vowel /e/ typical for most PIE roots, e.g. *sed- ‘sit’ (cf. Eng. sit);
- C(R)o(R)C – the o-grade, characterized by the vowel /o/, e.g. *sod- (cf. Eng. sat);
- C(R)ee(R)C – the ē-grade, e.g. *seed- (cf. Eng. seat);

- C(R)oo(R)C – the *ō*-grade, e.g. *sood- (cf. Eng. soot, i.e. ‘the sediment of burned particles’);
- C(R)(R)C – the zero-grade, *sd- (cf. Eng. nest ← *ni-sd-o, i.e. ‘where the bird sits’).

Relatively few morphemes contained an underlying /a/ with the long grade /aa/: a ~ ā ~ Ø.

4.2.2 The PB vowel gradation system

In Proto-Baltic, the gradation system survived in a fairly intact form due to the relatively good preservation of original vowel qualities and quantities. The PB alternations take mainly the following shape:

(19) *The Baltic ablaut:*

- e : a (« o)⁶ : ee : oo
- ei : ai (« oi) : i (« Øj)
- eR : aR : iR/uR (with /i,u/ replacing Ø)

Additionally, the Baltic languages added the long vowel /aa/ as the back correlate for /ee/ in the ablaut system (Stang, 1966):

(20) Lith. séesti ‘to sit down’ → soodínti « *saadintei ‘to place, set, plant’

In some instances, the diphthong /ei/ was converted into the vowel /i^e/, creating two pairs of ablauting diphthongs:

- (21) a. Lith. *tiésti* ‘to stretch’ ↔ *taišiiti* ‘to straighten, fix’ [ie ~ ai]
 b. Lith. *kréipti* ‘to bend’ ↔ *kraipíiti* ‘to bend repeatedly’ [ɛi ~ ai]

The quantitative vowel shifts were a very important asset in PB morphophonology, in addition to the qualitative alternations. To the already existing *ee* and *oo* grades, Baltic added new lengthened alternants – *aa*, *ii* and *uu* – thus expanding the original vowel gradation system:

- (22) a. Lith. (su)prásti ‘to comprehend’ ↔ proótas « *praatas ‘the mind’
 b. Lith. píla ‘he pours’ ↔ píilee ‘he poured’
 c. Lith. kúria ‘he creates’ ↔ kúuree ‘he created’

The original vowel grades, combined with the newly created grades discussed above, formed the base for the stem alternations observed in modern Lithuanian verbs.

⁶ Proto-Baltic merged the IE vowels /a/ and /o/ in /a/.

4.3 The segmental stem alternations

This describes the various stem alternations found in Lithuanian verbs. Lithuanian verbs are traditionally divided into primary and suffixal verbs (Arkadiev, 2012; Ambrazas, 2006; Dambriūnas et al., 1998; Ramonienė and Pribušauskaitė, 2008). Primary verbs do not augment their stems with segmentable stem suffixes in any of the three bases, and the root allomorph is followed directly by inflectional material:

- (23) a. (*inf.*) áug-ti, (*prs.*) áug-a, (*pst.*) áug-oo ‘to grow’
b. (*inf.*) puús-ti, (*prs.*) púč-ia, (*pst.*) puút-ee ‘to blow’

Suffixal verbs contain a stem-augmenting suffix in one, two or all of the bases. This suffix always contributes an extra syllable to the resulting word:⁷

- (24) a. (*inf.*) mat-íi-ti, (*prs.*) maát-oo, (*pst.*) maát-ee ‘to see’
b. (*inf.*) miil-ée-ti, (*prs.*) míil-i, (*pst.*) miil-ée-j-oo ‘to love’
c. (*inf.*) giiv-én-ti, (*prs.*) giiv-én-a, (*pst.*) giiv-én-oo ‘to live’
d. (*inf.*) daliiv-áu-ti, (*prs.*) daliiv-áu-j-a, (*pst.*) daliiv-aáv-oo ‘to participate’

Apart from adding the root-extending suffixes, suffixal verbs tend not to undergo any root mutations in any of their forms. Primary verbs, on the other hand, frequently display irregularities in their behavior. The major groups primary verbs are listed below.

4.3.1 Verbs with no segmental alternation

Many primary verbs retain the same segmental string in all the three stems.

- (25) a. (*inf.*) súk-ti, (*prs.*) súk-a, (*pst.*) súk-oo ‘to turn’
b. (*inf.*) kás-ti, (*prs.*) kaás-a « /kas-/, (*pst.*) kaás-ee « /kas-/⁸ ‘to dig’
c. (*inf.*) gréeb-ti, (*prs.*) gréeb-ia, (*pst.*) gréeb-ee ‘to rake’
d. (*inf.*) kėik-ti, (*prs.*) kėik-ia, (*pst.*) kėik-ee ‘to curse’

The verbs in this group are the simplest ones with respect to their segmental content, which

⁷ Some primary verbs add a suffix in the present tense, but this suffix is never syllabic:

- (i) (*inf.*) bús-ti, (*prs.*) buúd-a, (*pst.*) búd-oo

⁸ The low vowel lengthening rule applies in the present and past tenses, but not in the infinitive or the future.

remains intact. A common misconception regarding Lithuanian grammar is that there is no correlation between the segmental stem contents and the theme vowel a particular verb takes. In fact, most verbs' theme vowels are straightforwardly predictable from the phonological strings of the respective stems (Pakalnišienė and Jakulytė, 2016; Ambrazas, 2006).

- Verb with short high vowels in the root take /-a-/ and /-oo-/.

(26)	a.	(<i>inf.</i>) súk-ti, (<i>prs.</i>) súk-a, (<i>pst.</i>) súk-oo	‘to turn’
	b.	(<i>inf.</i>) kíš-ti, (<i>prs.</i>) kíš-a, (<i>pst.</i>) kíš-oo	‘to insert’

Exceptions (in the past tense): gúl-ee ‘he lay down’, múš-ee ‘he struck’;

- Verbs with non-high short vowels take /-a-/ and /-ee-/.

(27)	(<i>inf.</i>) nėš-ti, (<i>prs.</i>) nėš-a « /nėš-/, (<i>pst.</i>) nėš-ee « /nėš-/	‘to carry’
------	---	------------

Exceptions (in the present tense): aár-ia « /ar-/ ‘he ploughs’, taár-ia « /tar-/ ‘he utters’, žaág-ia « /žag-/ ‘he contaminates / makes something nasty’;

- Verbs with long vowels and diphthongs in the root take /-ia-/ and /-ee-/:

(28)	a.	(<i>inf.</i>) ziíz-ti, (<i>prs.</i>) ziíz-ia, (<i>pst.</i>) ziíz-ee	‘to buzz/whine/grumble’
	b.	(<i>inf.</i>) sklėis-ti, (<i>prs.</i>) sklėidž-ia, (<i>pst.</i>) sklėid-ee	‘to unfold/reveal’

There are only two exceptional verbs with diphthongs (both take /-oo-/ in the past; one also takes /-a-/ in the present):

(29)	a.	(<i>inf.</i>) áug-ti, (<i>prs.</i>) áug-a, (<i>pst.</i>) áug-oo	‘to grow’
	b.	(<i>inf.</i>) léis-ti, (<i>prs.</i>) léidž-ia, (<i>pst.</i>) léid-oo	‘to allow’

There are more exceptions among verbs with long monophthongs. Just two out of many possible examples are shown below.

(30)	a.	(<i>inf.</i>) béeg-ti, (<i>prs.</i>) béeg-a, (<i>pst.</i>) béeg-oo	‘to run’
	b.	(<i>inf.</i>) grúus-ti, (<i>prs.</i>) grúud-a, (<i>pst.</i>) grúud-oo	‘to shove’

This leaves us with the conclusion that verbs with long root monophthongs constitute the least ‘well-behaved’ group.

4.3.2 Verbs with root-final /v/ and /j/

Verbs that contain a root-final /v/ or /j/ change them into /u/ and /i/ before consonant-initial affixes. If the root vowel is /u/ or /i/ respectively, a long vowel results:

- (31) a. (*inf.*) griúu-ti « /griúv+ti/, (*prs.*) griuúv-a⁹, (*pst.*) griúv-oo ‘to collapse’
b. (*inf.*) siúu-ti « /siúv+ti/, (*prs.*) siúv-a, (*pst.*) siúv-oo ‘to sew’
c. (*inf.*) gíi-ti « /gíj+ti/, (*prs.*) giíj-a⁸, (*pst.*) gíj-oo ‘to heal’

These verbs always take the theme vowels /-a-/ and /-oo-/. In the cases of *giiti* and *griuuti*, the present tense also features a long version of the underlying vowel, which goes back historically to the infix /-n-/. This alternation will be addressed below.

4.3.3 Shortening in the present tense

Some verbs shorten their underlyingly long vowel in the present tense. The reason I call the base vowel long and the derived one short (and not the other way around) is because it appears in the default stem (which I consider the least marked one). The primary vowel alternations include the following pairs:

- (32) i ↔ ii
u ↔ uu
ε ↔ ee
a ↔ oo

The alternation *a ↔ oo* is the least transparent one synchronically, with the vowel on the right going back to /aa/ historically.

- (33) a. (*inf.*) puús-ti, (*prs.*) púč-ia, (*pst.*) puút-ee ‘to blow’
b. (*inf.*) leék-ti, (*prs.*) leék-ia « /lék-/, (*pst.*) leék-ee ‘to fly, to rush’
c. (*inf.*) voóg-ti, (*prs.*) vaág-ia « /vag-/¹⁰, (*pst.*) voóg-ee ‘to steal’

These verbs universally have the palatalizing theme vowel /-ia-/ in the present tense and the theme vowel /-ee-/ in the past (as do all verbs with length alternations of the above type in any of the stems).

⁹ The long vowel in the present tense is due to an absorbed nasal.

¹⁰ Every time a long surface vowel is shown to go back to an underlying short one, we have an instance of the semi-automatic lengthening described in the introductory chapter of this work.

(34) (inf.) CVVC-ti, (prs.) CVC-ia, (pst.) CVVC-ee¹¹

The long stem allomorphs usually have the rising contour, i.e. their second mora is prominent.

4.3.4 Lengthening in the past tense

A large group of verbs lengthen their stem vowel in the past tense, while the short grade is represented in the present-tense and the default (i.e. infinitival) stem:

- (35) a. (inf.) píl-ti, (prs.) píl-a, (pst.) píil-ee 'to pour'
b. (inf.) kél-ti, (prs.) kél-ia « /kɛl-/, kéel-ee 'to raise/lift'
c. (inf.) bér-ti, (prs.) bér-ia « /bɛr-/, beér-ee 'to pour/spill'
d. (inf.) kúr-ti, (prs.) kúr-ia, (pst.) kúur-ee 'to create'
e. (inf.) kár-ti, (prs.) kaár-ia « /kar-/, kóor-ee 'to execute by hanging'

As I said before, almost all the verbs with monophthongal length alternations (regardless of which stems have the long and which the short grade) have the theme vowels /-ia-/ and /-ee-/.

(36) a. (inf.) CVC-ti, (prs.) CVC-(i)a, (pst.) CVVC-ee

The verb in (35-a) is an exception. Additionally, verbs with a root-final /-n/, take the theme vowel /-a-/ in the present:

- (37) a. (inf.) gín-ti, (prs.) gín-a, (pst.) gíin-ee 'to defend'
b. (inf.) skín-ti, (prs.) skín-a, (pst.) skíin-ee 'to pick (blossoms,leaves)'

The normal accent pattern for these verbs is falling. In the verb *béreti*, the rising pattern in the long root allomorph emerges due to the fact that the originally accented /-r̄-/ loses its coda status and becomes an onset.

4.3.5 Lowering in the present tense

Another group of verbs undergo vowel lowering in the present tense: $i \rightarrow \varepsilon$. Their root syllable contains a rime of the shape /-iRC-/, i.e. with the short high front vowel followed by a coda sonorant, followed by an obstruent (which is later re-syllabified into the onset of the syllable containing the theme vowel). All of these verbs have the rising intonation contour, i.e. the

¹¹ Here and further down, the initial C-element represents an onset, which can contain one, two or three consonants.

primary stress is on the coda sonorant. In the present tense, the vowel is lowered to /ɛ/, and the stem becomes prosodically weak (see below):

(38) (*inf.*) kírp-ti, (*prs.*) kérp-a, (*pst.*) kírp-oo ‘to clip’

All of these verbs have the theme vowel /-a-/ in the present tense and /-oo-/ in the past. That is, the stem-final obstruent is never palatalized. The template can be schematized as follows:

(39) (*inf.*) CiRC-ti, (*prs.*) CɛRC-a, (*pst.*) CiRC-oo

What is synchronically described vowel lowering goes back to the PIE alternation of the short and normal vowel ablaut grades: -er- (the IE normal grade), -ir- « *-r- (the IE short grade).

Lowering in non-diphthongal combinations

A small group of verbs have the above vowel alternation in roots that end in a single consonant, which almost always re-syllabifies into the next syllable. In this case, the theme vowel in the past tense is /-ee-/, not /-oo-/.

(40) (*inf.*) giń-ti, (*prs.*) gén-a « /gen-/, (*pst.*) gín-ee ‘to drive forward’

4.3.6 N-verbs

The next group of verbs have the non-syllabic suffix /-n-/ in the present tense, hence this group does not belong to the class of suffixal verbs (because the syllable count remains the same). The /n/ of the suffix metathesizes with the root-final obstruent to create a better syllable boundary profile. The /n/ is intergrated into the moraic structure and the accent in the present tense moves onto it. Verbs with this suffix always have a strong accent in all forms. The theme vowels are always /-a-/ and /-oo-/.

(41) (*inf.*) búś-ti, (*prs.*) buńd-a « bud-n-a, (*pst.*) búd-oo

(42) (*inf.*) CVC-ti, (*prs.*) CVnC-a, (*pst.*) CVC-oo

N-verbs with a vocalizing V-final root

A subgroup of the previous pattern is constituted by verbs with the root template /C(C)av-/, which alternates with /C(C)oo-(ee)/ in the past tense. Thus, in addition to taking the suffix

/-n/ in the present tense, these verbs also undergo vowel lengthening in the past (note also that the theme vowel in the past is different here).

(43) (*inf.*) šáu-ti « /šáv+ti/, (*prs.*) šáu-n-a « /šáv+n+a/, (*pst.*) šóov-ee

(44) (*inf.*) Cau-ti, (*prs.*) Cau-n-a, (*pst.*) Coov-ee

Absorbed nasal

Originally a subgroup of the N-group, a number of verbs lengthen their stem vowel in the present tense due to the presence of a suffixal /n/, which was later on absorbed into the vowel, lengthening it.

(45) (*inf.*) kíł-ti, (*prs.*) kiíl-a (« *kiíł-a), (*pst.*) kíł-oo ‘to rise’

I have reservations regarding the plausibility of assuming that these verbs still contain an underlying nasal suffix in the present tense (Arkadijev, 2012). In a verb like *skuústis* ‘to complain’, the string /-uus-/ is based on an underlying /-und-/, which is seen in the past tense: *skuńdeesi* ‘he complained’:

(46) skuńd+ti+s → skuństis → skuústis

In a verb form like *kiíla* ‘he rises’, there is never any evidence of a nasal being there. I do not see how young Lithuanian speakers would extend their knowledge of the rule of nasal absorption to cases where there is never a nasal on the surface. I would like to therefore conclude that these verbs constitute a separate group of verbs with vowel lengthening in the present tense. The theme vowels are /-a-/ and /-oo-/, and the stem remains strong throughout the paradigm:

(47) (*inf.*) líi-ti « /líj+ti/, (*prs.*) liíj-a « *lińja, (*pst.*) líj-oo ‘to rain’

(48) (*inf.*) CVC-ti, (*prs.*) CVVC-a, (*pst.*) CVC-oo

We saw above that, in true N-verbs, the accent in the present tense surfaces on the infix. Since the long vowel in the current group goes back to the /-VN-/ string of the above type, the accent is always on the second mora of the lengthened vowel, i.e. in the position where the nasal would have been.

4.3.7 ST-Verbs

The non-syllabic suffix /-st-/ is added to the right edge of the stem in the present tense of some verbs whose theme vowels are /-a-/ in the present and /-oo-/ in the past.

- (49) a. (*inf.*) pamíl-ti, (*prs.*) pamíl-st-a, (*pst.*) pamíl-oo 'to fall in love / to grow fond'
b. (*inf.*) tírp-ti, (*prs.*) tírp-st-a, (*pst.*) tírp-oo 'to melt'
c. (*inf.*) dréek-ti, (*prs.*) dréek-st-a, (*pst.*) dréek-oo 'to become moist/wet'

In (49-a), the core syllable contains a short vowel followed by a liquid, which may or may not re-syllabify into the next syllable, depending on what follows. Thus, in the present tense, the /l/ is in the coda position, thus creating a falling accent pattern on the root syllable. This makes this form immune to the application of Saussure's Law (see below). In (49-b), the liquid in the coda of the root syllable is protected from re-syllabification by the plosive following it.

- (50) a. (*inf.*) CV(V/R)C-ti, (*prs.*) CV(V/R)C-st-a, (*pst.*) CV(V/R)C-oo

In case the root-final consonant is a coronal fricative, cluster simplification takes place:

- (51) tróokš+st+a → tróokšta '(s)he is thirsty'

The verb *gí m-* 'to be born' takes the theme vowel /-ee-/ in the past:

- (52) (*inf.*) gím-ti, (*prs.*) gím-st-a, (*pst.*) gím-ee

4.3.8 Primary verbs: a summary

In the previous subsections, we have seen the possible stem alternations in primary verbs. **Table 4.3** below summarizes them in a comprehensive manner.

Class	Infinitive	Present	Past
I.a	...V _[+hi] ...-ti	...V _[+hi] ...-a	...V _[+hi] ...-oo
I.b	...V _[-hi] ...-ti	...V _[-hi] ...-a	...V _[-hi] ...-ee
I.c	...VV...-ti	...VV...-ia	...VV...-ee
II	...VV...-ti	...V...-ia	...VV...-ee
III.a	...V...-ti	...V...-ia	...VV...-ee
III.b	...Vn-ti	...Vn-a	...VVn-ee
IV.a	...iRC-ti	...εRC-a	...iRC-oo
IV.b	...iC-ti	...εC-a	...iC-ee
V.a	...VC-ti	...V<n>C-a	...VC-oo
V.b	...au-ti	...au-n-a	...oov-ee
V.c	...V...-ti	...VV...-a	...V...-oo
VI	...VC-ti	...VC-st-a	...VC-oo

Table 4.3: *Types of primary verbs in Lithuanian.*

4.3.9 The suffixal verbs

EE-Verbs, subgroup I (EE.I)

These verbs are intransitive derivatives from adjectives and nouns and always have the /-ee-/ stem extension in all the three stems. The theme vowels are uniformly /-a-/ and /-oo-/:

(53) maž- ‘small’ → (*inf.*) maž-ée-ti, (*prs.*) maž-ée-j-a, (*pst.*) maž-ée-j-oo ‘to become small’

(54) (*inf.*) ...-ee-ti, (*prs.*) ...-ee-j-a, (*pst.*) ...-ee-j-oo

The hiatus between the stem extension and the theme vowel is resolved by inserting a glide.

EE-Verbs, subgroup II (EE.II)

These verbs are underived. They show the /-ee-/ suffix in the infinitival and in the past-tense stems. The suffix is, however, not added in the present tense. The theme vowel in the past is always /-oo-/. In the present, most verbs have /-i-/, but /-a-/, /-ia-/ and /-oo-/ are also possible:

- (55) a. (*inf.*) miil-ée-ti, (*prs.*) míil-i, (*pst.*) miil-ée-j-oo ‘to love’
 b. (*inf.*) kalb-ée-ti, (*prs.*) kaĺb-a, (*pst.*) kalb-ée-j-oo ‘to speak’
 c. (*inf.*) kent-ée-ti, (*prs.*) keńč-ia, (*pst.*) kent-ée-j-oo ‘to suffer’
 d. (*inf.*) prival-ée-ti, (*prs.*) privaál-oo, (*pst.*) prival-ée-j-oo ‘to be obligated’

In (55-d), the only thing distinguishing between the present and the past tenses is the stem-extending suffix. Verbs in /-ee-ti/ are the only group of verbs where the theme vowel /-i-/ is ever used in the present tense.

The /uo ~ av/ and /au ~ av/ alternation

Some verbs have the suffix /-uo/ in the infinitival and the present-tense stems, which alternates with the sequence /-av/ in the past:

- (56) (*inf.*) dain-úo-ti, (*prs.*) dain-úo-j-a, (*pst.*) dain-aáv-oo « /-av-/ ‘to sing’

These verbs all behave uniformly and always take the theme vowels /-a-/ and /-oo-/.

A similar group of verbs display the /au ~ av/ alternation in the suffix:

- (57) (*inf.*) kel-iáu-ti, (*prs.*) kel-iáu-j-a, (*pst.*) kel-iaáv-oo « /-av-/ ‘to travel’

This alternation could be considered as a case of the above-mentioned vocalization of /v/ and /j/ in pre-consonantal positions. However, the form in the present tense is not *kel-iaáv-a, as one would expect under this approach. The alternation thus seems to have been morphologized.

II-Verbs

The verbs with the root extender /-ii-/ fall into two subgroups. The first subgroup contains a lot of very common verbs and is recognizable by the fact that the root-extending syllable only shows up in the infinitive. In this case, the theme vowels are /-oo-/ and /-ee-/ in the present and past tenses respectively:

- (58) a. (*inf.*) válgii-ti, (*prs.*) válg-oo, (*pst.*) válg-ee ‘to eat’
 b. (*inf.*) kasíi-ti, (*prs.*) kaás-oo « /kas-/ , (*pst.*) kaás-ee « /kas-/ ‘to scratch’

In the second subgroup, the extending element actually has the underlying representation /-ǰj-/ and happens to be a derivational morpheme forming verbs from nouns and adjectives.

The theme vowels are /-a-/ and /-oo-/ for these verbs:

(59) dal-ís ‘part’ → (*inf.*) dal-íi-ti, (*prs.*) dal-íj-a, (*pst.*) dal-íj-oo ‘to divide’

OO-Verbs

Verbs with the extending element /-oo-/ usually have it in all three stems. In this case, the theme vowels are /-a-/ and /-oo-/:

(60) (*inf.*) kapóo-ti, (*prs.*) kapóo-j-a, (*pst.*) kapóo-j-oo ‘to chop/mince’

A couple of OO-verbs do not feature the extending element in the present tense. In this case, the present-tense theme vowel is /-oo-/:

(61) (*inf.*) žinóo-ti, (*prs.*) žín-oo, (*pst.*) žinóo-j-oo ‘to know’

VN-Verbs

Here, the extending elements /-in-/ and /-ɛn-/ are also mostly derivational morphemes. They are present in all the three stems. The theme vowels are always /-a-/ and /-oo-/.

(62) a. gíiv-as ‘alive’ → (*inf.*) giiv-én-ti, (*prs.*) giiv-én-a, (*pst.*) giiv-én-oo ‘to live’
b. mít- ‘to feed *itr.*’ → (*inf.*) mait-ín-ti, (*prs.*) mait-ín-a, (*pst.*) mait-ín-oo ‘to feed *tr.*’

4.3.10 Irregular verbs

The number of verbs that do not belong to any of the above groups is very small. The verb *búuti* ‘to be’ shows extensive root allomorphy with three phonologically unrelated allomorphs (which is not surprising, at least for Indo-European languages).

- (63) a. (*inf.*) búu-ti, (*prs.1sg*) εs-ú, (*prs.3*) iirá, (*pst.*) búv-oo ‘to be’
b. (*inf.*) šlúo-ti, (*prs.*) šlúo-j-a, (*pst.*) šlaáv-ee ‘to sweep/mop’
c. (*inf.*) aú-ti, (*prs.*) aú-n-a, (*pst.*) aáv-ee « /av-/ ‘to put on shoes’
d. (*inf.*) vír-ti, (*prs.*) vérd-a, (*pst.*) vír-ee ‘to boil/cook’
e. (*inf.*) dúo-ti, (*prs.*) dúod-a, (*pst.*) daáv-ee ‘to give’
f. (*inf.*) dée-ti, (*prs.*) dééd-a, (*pst.*) dée-j-oo ‘to put’
g. (*inf.*) lík-ti, (*prs.*) liék-a, (*pst.*) lík-oo ‘to stay’
h. (*inf.*) mír-ti, (*prs.*) mír-št-a, (*pst.*) mír-ee ‘to die’

A couple of verbs have preserved an athematic ending in the present tense (in the third person):

- (64) (*inf.*) niežée-ti, (*prs.*) niéž-ti, (*pst.*) niežée-j-oo ‘to itch’

The present tense of the verb *búuti* ‘to be’ features two athematic forms (which are nowadays optional and archaic):

- (65) εs-mí ‘I am’, εés-ti ‘(s)he is, they are’

4.4 The prosody of finite verbs

Just like the nominal parts of speech, which we have discussed extensively in the chapters above, Lithuanian verbs have idiosyncratic lexical stress. The primary area of relevance here is the location of the accent within bimoraic roots. We have seen previously that there are many minimal and near-minimal pairs in the nominal domain. This is also true for verbs:

- (66) a. rúug-ti [-kʲtʲi] ‘to become sour’ ↔ ruúk-ti ‘to become foggy’
b. kė́ik-ti ‘to curse’ ↔ kéis-ti ‘to change’
c. šáu-k! ‘shoot!’ ↔ šáu-k-Ø! ‘call!’

Nominals and verbs with common roots frequently differ in accent placement:

- (67) a. láisv-as ‘free’ ↔ láisv-in-ti ‘to free’
b. kéik-sm-as ‘(a) curse’ ↔ kė́ik-ti ‘to curse’
c. aúg-l-ii ‘tumor.ACC.SG’ ↔ áug-ti ‘to grow’

In the domain of nouns and adjectives, it was also crucial whether a given stem was underlyingly strong or weak. I will show below that this is also relevant for verbal forms. In the following subsection, however, I will begin by introducing the application of Saussure’s Law, which affects strong and weak verbs alike, in addition to nominals.

4.4.1 Saussure’s Law and theme vowels

Saussure’s Law operates robustly in the nominal domain (Ambrazas, 2006; Blevins, 1993). We saw in the previous chapter how Saussure’s Law can be accounted for in two different manners. As a quick recap, I reintroduce the law in its historic and present-day form below.

- (68) *Saussure’s Law (diachronic):*

In Old Lithuanian, stress was attracted from the last mora of a stem to the first (underlyingly accented) mora of a long affixal vowel.

- (69) (*reconstructed OL*) ińd+úo → indúo, *ińduo

- (70) *Saussure’s Law (synchronic):*

Whenever two underlying accents of any strength coincide on two subsequent moras word-finally, the surface accent is always aligned with the right edge of the word.

- (71) a. rańk+á → ranká ‘hand.INSTR.SG’

- b. $\text{d}á\text{i}n+\acute{a} \rightarrow \text{d}á\text{i}n\acute{a}$ ‘song.INSTR.SG’
cf.
 c. $\text{v}á\text{r}n+\acute{a} \rightarrow \text{v}á\text{r}n\acute{a}$ ‘crow.INSTR.SG’

There are reasons to believe that the verbal agreement affixes /-u/ (1SG) and /-i/ (2SG) belong to the same subset of morphemes as the instrumental singular morpheme seen above. Both of these endings go back historically to the long vowels /uo/ and /ie/, stressed on the first mora. The parallel behavior to that in nouns can be seen in the example below:

- (72) a. $\text{k}ás+\text{a}+\text{u} (?) \rightarrow \text{k}ás+\emptyset+\text{u} \rightarrow \text{kasú}$ ‘I dig’
 b. $\acute{a}ug+\text{a}+\text{u} (?) \rightarrow \acute{a}ug+\emptyset+\text{u} \rightarrow \acute{a}ugu$ ‘I grow’

The plural affixes do not trigger the shift and always remain unaccented:

- (73) a. $\text{k}ás+\text{a}+\text{m}\epsilon \rightarrow \text{kaásame}$ ‘we dig’
 b. $\text{k}ás+\text{a}+\text{t}\epsilon \rightarrow \text{kaásate}$ ‘you (pl) dig’
 c. $\acute{a}ug+\text{a}+\text{m}\epsilon \rightarrow \acute{a}ugame$ ‘we grow’
 d. $\acute{a}ug+\text{a}+\text{t}\epsilon \rightarrow \acute{a}ugate$ ‘you (pl) grow’

We saw that the Saussurian accent shift is in its nature a cumulative edge effect which arises when two underlying accents clash at the right edge of the word. I claimed that the affixes belonging to the set in question are accented short morphemes, such as the instrumental singular suffix /-ú/ with a weak underlying accent. The same can be assumed for the agreement affixes in the 1st and 2nd person singular. The underlying representations can then be formulated as follows:

- (74) a. Verbal stems have a strong accent by default (although it could also be assumed at this point that they are weak without significant consequences): $\text{k}ás-$, $\acute{a}ug-$;
 b. The agreement affixes in the singular have a weak accent: $-\acute{u}$, $-\acute{i}$;
 c. The agreement affixes in the plural have no accent: $-\text{m}\epsilon$, $-\text{t}\epsilon$.

In this case, the accent shift in verbs happens for exactly the same reasons as it does in nouns and adjectives (the evaluation below only shows the most relevant constraints and their violation profiles).

(75) *rañd+ú* → *randú* ‘I find’

$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{1.0} & H_{0.5} \end{array}$		MAXASS($\mu_{ST}-H$)	MAXASS($\mu_{AFF}-H$)	R	*COAL(H-H)	\mathcal{H}
		6	4	1.5	1.5	
a.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{1.0} & H_{0.5} \end{array}$	-1			-1	-7.5
b.	$\begin{array}{cc} \sigma & \sigma \\ \mu & \mu \\ & \\ H_{1.0} & H_{0.5} \end{array}$		-0.5	-2	-2	-8

However, things are somewhat more complicated in the verbal domain than what is shown in the tableau above. In the current example – *randú* – the theme vowels happen to be zero before the agreement affixes, producing the configuration necessary for the accent shift. However, in some instances, the theme vowel is not entirely deleted but only shortened before the agreement affixes in 1/2SG. Nonetheless, the accent shift takes place, disregarding the theme vowel entirely.

- (76) a. *kás+ee+ú* → *kás+ia+ú* → *kas^jaú* ‘I dug’
 b. *žín+oo+ú* → *žín+a+ú* → *žinaú* ‘I know’

In (76-a), the theme vowel is split into a glide followed by a short vowel, which intervenes between the final mora of the stem and the agreement affix. The agreement affix does, nonetheless, get the primary word accent. In (76-b) the theme vowel is shortened, but it retains a mora. Again, despite the intervention, Saussure’s shift takes place.

Upon examining the behavior of all verbs in all tenses, the following generalization emerges:

(77) *Theme vowel unaccentability:*

A mora associated with a verb’s theme vowel can never be accented in Lithuanian.

Indeed, there is not a single inflected verb form in Lithuanian where the surface accent would fall onto a theme vowel. It looks as if theme vowels were completely invisible for the prosodic apparatus of the language.

The counter-scopal order of morphemes

The solution that I will be proposing here was discussed by [Kiparsky \(2017\)](#). In Palauan, the so-called *Verb Marker* (marking transitivity, voice, aspect etc) has two phonologically allomorphs: (a) /o-/ before labials¹² and (b) /mə-/ elsewhere ([Embick, 2010](#)):

- (78) a. mə-rael, mə-ləʔo, mə-ŋəɖub
b. o-bəkal, o-bunt, o-bes

The selection of the respective allomorph is assumed to take place under strict locality. However, the selection of the correct allomorph does not fail even if an overt past-tense marker intervenes between the verb marker and the root:

- (79) a. m-il-əŋga, m-il-lim, m-il-luʔəs
b. o-il-bunt, o-il-bes

The idea behind [Kiparsky's](#) proposal is that that the following is the correct scopal order for the morphemes in question, with tense scoping over voice and aspect:

- (80) (Tense (Voice/Aspect (V)))

The concatenation of the root with the respective affixes proceeds in discrete steps, in full accordance with the scopal hierarchy:

- (81) [il + [o + bes]]

The counter-scopal linear order of the two prefixes on the surface is due to specific restrictions on the morphological template which each and every verb must adhere to.

For Lithuanian, we can follow the same basic logic and assume that the theme vowels are class-dependent exponents of tense. If the correct semantic scope is as follows –

- (82) (Tense (Agreement (V)))

– then, indeed, agreement markers and the verb are concatenated before the theme vowel is inserted, and the locality condition for the application of Saussure's Law is fulfilled:

¹² The phonological condition is supplemented by an inflectional class condition where a random set of additional verbs not beginning with labials also take /o-/.

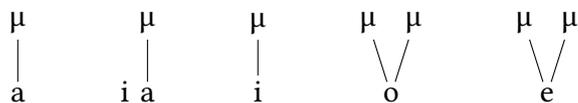
- (83) a. [[rańd + ú] + a] → [randú + a] → randú ‘I find’ [theme vowel deleted]
 b. [[ráđ + ú] + oo] → [radú + oo] → radaú ‘I found’ [theme vowel tucked in]

The final position of the theme vowel is between the root and the agreement formative. The theme vowel is therefore ‘tucked in’ between the two other morphemes.

The procedure of tucking in a theme vowel

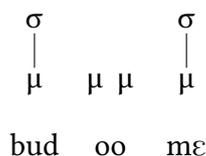
The underlying structure of the theme vowel morphemes is defective. Specifically, the underlying auto-segmental skeleton of a theme vowel contains the segmental specifications pre-linked to a mora or two moras, but the moras are not dominated by a syllable node:

- (84) *The lexical representations of the theme vowels:*



When a theme vowel is inserted after the root and the agreement marker have been put in place, its structure is placed between the structure of the root and the structure of the agreement morpheme:

- (85) *The initial step of tucking in a theme vowel:*



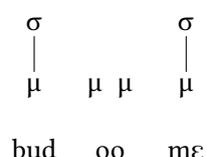
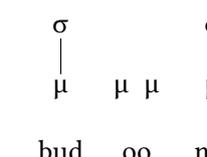
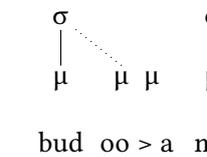
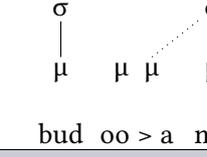
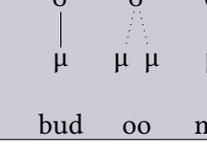
This structure is not licit since the two moras are floating and not dominated by a syllable node. A range of constraints determine what happens with this configuration:

- (86) a. ASSOCIATE!(μ), w = 20:
 every mora in the output must be dominated by a syllable node;
 b. DEP(σ), w = 19: penalizes the insertion of every new syllable node;
 c. * $[\sigma\mu\mu\mu]$, w = 20: a syllable may not contain more than two moras;
 d. IDWGHTRT, w = 20: a root syllable must have the same weight in the output as it had in the input (cf. [Revithiadou, 1999](#); [Alderete, 2001b](#));
 e. DEPASS(μ - σ), w = 2: no new association lines between moraic and syllabic nodes should be introduced into the structure.

If the agreement affix begins with a consonant (which is the case in the first and second person forms in the plural), then neither mora of the theme vowel can dock parasitically onto the syllable of the affix because of the intervening onset consonant /m/ or /t/. If one of the moras of the theme vowels became associated with the syllable node of the agreement morpheme, the resulting syllable would be ill-formed. The constraint against this is formulated in (87).

(87) SYLLSTRUC, w = 40: no non-moraic element may intervene between two moras linked to the same syllable node.

(88) Past tense derivation: *bud+oo+mε*

Inp:		SYLLSTRUC	IDWGHTRT	*[σμμμ]	ASSOCIATE!(μ)	DEP(σ)	DEPAss(μ-σ)	\mathcal{H}
	bud oo mε	40	20	20	20	19	2	
a.					-2			-40
b.			-1		-1		-1	-42
c.		-1			-1		-1	-62
 d.						-1	-2	-23

On the other hand, if the agreement morpheme is a single vowel (as it is the case for singular markers), there is no intervening onset consonant, and one of the moras of the theme vowel can parasitically dock onto the inflectional affix, thus forming a diphthong.

(89) *Past tense derivation: bud+oo+u → budau*

Inp:		SYLLSTRUC	IDWGHTRT	* _[σμμμ]	ASSOCIATE!(μ)	DEP(σ)	DEPAss(μ-σ)	ℋ
	$\begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \mu \quad \mu \quad \begin{array}{c} \sigma \\ \\ \mu \end{array}$ bud oo u	40	20	20	20	19	2	
a.	$\begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \mu \quad \mu \quad \begin{array}{c} \sigma \\ \\ \mu \end{array}$ bud oo u				-2			-40
b.	$\begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \mu \quad \mu \quad \begin{array}{c} \sigma \\ \\ \mu \end{array}$ bud oo > a u				-1		-1	-22
c.	$\begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \mu \quad \mu \quad \begin{array}{c} \sigma \\ \\ \mu \end{array}$ bud oo u			-1			-2	-24
d.	$\begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \begin{array}{c} \sigma \\ \\ \mu \end{array} \quad \begin{array}{c} \sigma \\ \\ \mu \end{array}$ bud oo u					-1	-2	-23

At this point, I would like to say a couple of words about the change of the theme vowel /-ee-/ before the agreement suffix /-u/. Let us take a look at the following example:

(90) *mat+ee+u → mačiau*

The underlying theme vowel is [-bk]. However, the coronal consonant /t/ undergoes full palatalization and becomes an affricate. We learned in the introductory chapter that this happens before vowels specified for [+bk]. The fact that the theme vowel changes its specification to [+bk] can be attributed to the fact that, within a (native) diphthong, both components tend to agree in backness. When the theme vowel docks onto the syllable of the agreement marker, the dominant feature [+bk] of the agreement vowel causes an assimilatory process whereby the theme vowel is retracted. The [-bk] feature does, however, survive as palatalization on the root-final consonant:

(91) *mat+ee+u → mat^ʃau*

Now, with the segment [tʃ] being located before a [+bk] vowel, the affrication takes place

either at the word level, or post-lexically.

One final issue needs to be addressed in this section before moving on to stress retraction. This has to do with the fact that, as it was mentioned above, the short theme vowels delete altogether when followed by vocalic agreement affixes.

Deletion of theme vowels

We saw in the subsection above why long theme vowels become short when the agreement affix is constituted by a short vowel. If we applied the same logic to the short theme vowels (at least /-a-/ and /-ia-/), these should be able to project a syllabic node before consonant-initial agreement and parasitically dock onto the syllable of the agreement marker in case the latter is /-u/ or /-i/. The first prediction is borne out:

(92) [[rand + mε] + a] → randamε

As far as the second prediction goes, the actual result is the total absence of a theme vowel:

(93) [[rand + u] + a] → randu

Paradigmatically, this makes intuitive sense: if the theme vowels /-a-/ and /-ia-/ did not delete before the agreement markers, the results would be the same as those produced with the theme vowels /-oo-/ and /-ee-/, which, as we know, must shorten. The exact mechanism behind this deletion is not so simple because it seems at the first glance that the morphological apparatus must have access to paradigmatically related forms (which might not even feature the same root!) in order for the grammar to ‘know’ what the output should not look like.

I will leave this question open for the time being. The simplest answer is to assume contextual allomorphy, and this is the solution I am opting for. If we assign the verbs that take the theme vowels /-a-/ and /-ia-/ random inflectional class features, e.g. [A] and [B], then the allomorphy rules for the theme vowels will have the following shape:

(94) a. $\emptyset \leftrightarrow [+part,-pl,A]$ [cf. [Harley and Ritter \(2002\)](#)]
b. $/j/ \leftrightarrow [+part,-pl,B]$
c. $/a/ \leftrightarrow [A]$
d. $/ia/ \leftrightarrow [B]$

4.4.2 Stress retraction

So far, we have only seen how verbal forms behave when simple verb stems combine with theme vowels and agreement markers. In this section, we will take a look at prefixed verbs. There are several types of prefixes that can be added to Lithuanian verbs. The most common one is probably the negation element /nɛ-/. Even when expressing sentential negation, this particle fuses with the verb and forms one phonological word with it. A prosodic break can never be inserted between the two.

(95) *díbru* ‘I work’ → *nɛdírbu* ‘I don’t work’

Another common type of prefix is a semantic particle going back to a preposition. There are over ten different particles which can be attached to Lithuanian verbs. Sometimes, they simply indicate a completed action, i.e. they have a purely aspectual meaning:

(96) a. *rašiaú* ‘I was writing’ → *parašiaú* ‘I wrote’
b. *eejaú* ‘I was going’ → *nueejaú* ‘I went’

In many instances, the semantic meaning of a verb is altered:

(97) a. *maátee* ‘he saw’ → *numaátee* ‘he foresaw’
b. *eéjoo* ‘he was walking’ → *praeéjoo* ‘he went by’

At first, we will take a look at the prosodic behavior of verbs with only one prefix. In all of the above examples, the accent in a prefixed verb remains on the same mora as in the base form. This is, however, not always the case [Stundžia \(2009\)](#). Let us take a close look at the verb forms below.

(98) a. *keičia* ‘he changes’ → *pakėičia* ‘he changes’
b. *keičiú* ‘I change’ → *pakėičiú* ‘I change’
c. *keíte* ‘he was changing’ → ***pákėitee*** ‘he changed’
d. *keičiaú* ‘I was changing’ → ***pákėičiau*** ‘I changed’

The verb *keísti* has a root whose accent lies on its final mora. This naturally makes it prone to undergoing Saussure’s accent shift. This happens in both the present and the past tenses. In the present tense, the theme vowel /-ia-/ is reduced to just the glide /-j-/ before the first-person affix /-u/. In the past tense, the theme vowel is retained. However, as we saw in the previous section, the accent shift happens nonetheless. As far as the prefixed form is concerned, the

accentuation of the verb in the present tense remains intact. However, in the past tense, in all forms, the accent is retracted to the prefix:

(99) *Accent retraction affecting all the forms:*

- 1 pákeičiau pákeiteemε
- 2 pákeitēi pákeiteetε
- 3 pákeitee

As far as the prefixes are concerned, all but one prefix (including the negation) behave in the exact same manner: they will either be accented in all forms, or unaccented in all forms.

- (100) a. pakeičia, iškeičia, nekeičia *etc.*
 b. pakeitee, iškeitee, nėkeitee *etc.*

One prefix appears accented with all verbs in all the forms of all tenses: /pé(ε)r-/ ‘over-’.

- (101) pėreina ‘he crosses’, pėrskaitēe ‘he reread’, pėrbeegoo ‘he ran across’ *etc.*

I propose treating the phenomenon of stress relocating to the prefix in the following way. Firstly, the prefix *per-*, which is always accented, has a strong underlying accent on its first mora: /pé(r)-/. Secondly, all other prefixes have a weak underlying accent: /pá-/ , /nú-/ , /úž-/ *etc.* Finally, I assume that verbal roots can be underlyingly strong and weak, as well. Exactly how roots are grouped into strong and weak ones will be addressed in the following section. For now, we will just take the following statement as a given:

- All infinitival root allomorphs are strong (see sections below);
- Some present-tense root allomorphs are strong, and some are weak;
- Some past-tense root allomorphs are strong, and others are weak.

All verbs will therefore fall into four major groups:

	Infinitive	Present	Past	
All strong	áug-	áug-	áug-	‘to grow’
Prs weak	kalbėe-	kaĺb-	kalbėe-	‘to speak’
Pst weak	keĩt-	keĩt-	keĩt-	‘to change’
Prs and Pst weak	mėt-	mėt-	mėt-	‘to throw’

Table 4.4: Strong and weak root morphemes

Following the guidelines of the analysis involving nouns and adjectives, I will assume that the strong accent has the activity level of [1.0], and the weak one [0.5]. If we juxtapose roots and prefixes, the following picture emerges:

- (102) a. Préf+Róot → PréfRoot
 b. Préf+Róot → PréfRoot
 c. Préf+Róot → PrefRóot
 d. Préf+Róot → PréfRoot

Thus, during the formation of a derived verbal stem, the root will only be accented (and potentially undergo Saussure's shift if the accent falls onto its last mora) if the root is strong and the prefix is weak. What this says essentially is that the distribution of accents in prefixed forms is the mirror image of the BAP. While strong accents are still preferred to weak ones, it is now the prefixes that are given precedence over stems. In the subsection below, we will see that prefixes do build autonomous units in Lithuanian. In particular, individual prefixes and prefix complexes will be marked with word-level delimiters even though they are technically stem-level entities. Because of their all-around idiosyncratic behavior, I assume that prefixes are protected by a dedicated constraint.

- (103) a. MAXASS(μ_{PR} -H), 8 » MAXASS(μ_{ST} -H), 6
 b. MAXASS(μ_{ST} -H), 6 » MAXASS(μ_{AFF} -H), 4

The culminativity constraint introduced above is also active at the stem level in the verbal system, requiring that one of the input accents be rendered invisible:

- (104) CULM(H), w = 80: an output form must have at most one of its moras associated with an accent, regardless of its activity specification.

In accordance with the system developed in Chapter 1, the constraints from the MAXASS(μ -H) family will be evaluated gradiently.

In the tableaux below, I will only show derivations where the two underlying accents are non-adjacent. In case there is adjacency in the underlying representation, it is beneficial to not have the two accents coalesce due to the fact that, every time a verbal root combines with a verbal prefix, the surfacing accent retains the strength of the original accent pre-linked in that position and never has the cumulative strength of two underlying accents. Why this should be the case (i.e. why coalescence cannot take place under linear adjacency even though we clearly saw that it always did in all of the cases considered prior to this one involving prefixes) is addressed in the next section where sequences of multiple prefixes are discussed.

(105) pĕr+skaĩt- → pĕrskait-

$\begin{array}{c} \sigma \\ \mu \quad \mu \\ \quad \\ H_{1.0} \quad H_{1.0} \end{array}$		CULM(H)	MAXASS(μ_{PR} -H)	MAXASS(μ_{SR} -H)	\mathcal{H}
		80	8	6	
a.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \quad \quad \\ H_{1.0} \quad H_{1.0} \end{array}$	-1			-80
b.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \neq \quad \\ H_{1.0} \quad H_{1.0} \end{array}$		-1		-8
c.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \neq \\ H_{1.0} \quad H_{1.0} \end{array}$			-1	-6

(106) pá+skaĩt- → paskaĩt-

$\begin{array}{c} \sigma \\ \mu \\ \\ H_{0.5} \end{array}$ $\begin{array}{c} \sigma \\ \mu \quad \mu \\ \quad \\ H_{1.0} \end{array}$		CULM(H)	MAXASS(μ_{PR} -H)	MAXASS(μ_{SR} -H)	\mathcal{H}
		80	8	6	
a.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \\ H_{0.5} \quad H_{1.0} \end{array}$	-1			-20
b.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \neq \quad \\ H_{0.5} \quad H_{1.0} \end{array}$		-0.5		-4
b.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \neq \\ H_{0.5} \quad H_{1.0} \end{array}$			-1	-6

As an example of a weak stem, I am choosing the verb *kĕit-* 'to change' in the past tense, where it has a weak stem.

(107) pĕr+kĕit- → pĕrkĕit-

$\begin{array}{c} \sigma \\ \mu \quad \mu \\ \quad \\ H_{1.0} \quad H_{0.5} \end{array}$		CULM(H)	MAXASS(μ_{PR} -H)	MAXASS(μ_{SR} -H)	\mathcal{H}
		80	8	6	
a.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \\ H_{1.0} \quad H_{0.5} \end{array}$	-1			-80
b.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \neq \quad \\ H_{1.0} \quad H_{0.5} \end{array}$		-1		-8
c.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \quad \mu \\ \quad \neq \\ H_{1.0} \quad H_{0.5} \end{array}$			-0.5	-3

(108) pá+kĕit- → pákĕit-

$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \\ H_{0.5} \quad H_{0.5} \end{array}$		CULM(H)	MAXASS(μ_{PR} -H)	MAXASS(μ_{SR} -H)	\mathcal{H}
		80	8	6	
a.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \\ H_{0.5} \quad H_{0.5} \end{array}$	-1			-80
b.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \neq \quad \\ H_{0.5} \quad H_{0.5} \end{array}$		-0.5		-4
c.	$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \neq \\ H_{0.5} \quad H_{0.5} \end{array}$			-0.5	-3

At the word level, when the inflectional affix is added, the BAP will naturally keep the accent on the stem, even if a Saussurian (i.e. weakly accented) agreement marker is present.

- (109) pėrskait+ú(+oo) → pėrskaitau ‘I read through’
 (the process of tucking in the theme vowel is not shown here)

		*CLASHUR	MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	R	\mathcal{H}
$\begin{array}{ccc} \sigma & \sigma & \sigma \\ \mu \ \mu & \mu \ \mu & \mu \\ & & \\ H_{1.0} & & H_{0.5} \\ p\epsilon r & skait & u \end{array}$		8	6	4	2	
a.	$\begin{array}{ccc} \sigma & \sigma & \sigma \\ \mu \ \mu & \mu \ \mu & \mu \\ & & \vdash \\ H_{1.0} & & H_{0.5} \\ p\epsilon r & skait & u \end{array}$			-0.5	-1	-4
b.	$\begin{array}{ccc} \sigma & \sigma & \sigma \\ \mu \ \mu & \mu \ \mu & \mu \\ \vdash & & \\ H_{1.0} & & H_{0.5} \\ p\epsilon r & skait & u \end{array}$		-1			-6

A recapping remark on the theme vowel: it consists of the long vowel /-oo-/ pre-linked to two moras without a dominating syllabic node. The constraint requiring a mora to have a host triggers the insertion of an association line between one of the moras of the theme vowel and the syllabic node of the inflectional ending. The reason no floating mora can dock onto the root syllable is because roots are protected from such manipulations. Since no syllable can have more than two moras, only one of the free moras of the theme vowel associates, triggering a lowering of the vowel.

4.4.3 The ‘leftmost wins’ principle

The discussion in Chapter 2 treated the Basic Accentuation Principle as a preference for morphological heads (Revithiadou, 1999). In the previous section I did, however, depart from this idea by saying that MAXASS(μ_{PR} -H) had a higher weight than MAXASS(μ_{ST} -H). As suggested by Prof. G. Müller, there is a way to reconcile these diverging principles and reduce the amount of stipulated constraints and their relative weights.

Whenever we saw a competition between a stem and an inflectional/derivational suffix, the stem was on the left and the suffix on the right-hand side. When a root combines with a prefix, as in the examples discussed here, the prefix is linearly the leftmost element. In the original work on Indo-European accent, the BAP was indeed a preference for the leftmost accent to win, not the one of a morphological head.

If we adopted this principle for Lithuanian, then, instead of the following hierarchy – $\text{MAXASS}(\mu_{\text{PR}}\text{-H}) \gg \text{MAXASS}(\mu_{\text{ST}}\text{-H}) \gg \text{MAXASS}(\mu_{\text{SUFF}}\text{-H})$ – one could have only one MAX constraint protecting the leftmost of the accents present in the input. Even though it is not entertained in the remainder of this chapter, this option is definitely worthy of attention.

Another possibility to reduce the number of constraints would be to stipulate that prefixes are not weak and strong, but rather strong [1.0] and, in the case of *per-*, extra strong, i.e. [1.5].

4.4.4 Verbs with multiple prefixes

Sometimes, more than one prefix can be added to one verbal root at the same time. The most frequent examples of such cases are:

- A semantic/aspectual particle combines with the sentential negation:

(110) $\text{N}\varepsilon\text{-u}\check{z}\text{-}\acute{\text{a}}\text{ug}\text{-oo}$
 NEG-up-grow-TH.PST
 ‘(S)he did not grow up.’

- Two semantic prefixes are combined together:¹³

(111) $\text{I}\check{s}\text{-p}\acute{\text{a}}\text{r}\text{-d}\text{av}\text{-ee}\text{-m}\varepsilon$
 out-PREV-give.PST-TH.PST-1PL
 ‘We sold (it) out.’

- The semantically versatile prefix *bε-* is combined with the negation in order to render the ‘no longer’ meaning:

(112) $\text{N}\varepsilon\text{-b}\varepsilon\text{-beeg}\text{-i}\acute{\text{o}}\text{o}\text{-j}\text{-a}$
 NEG-BE-run-REP-EP-TH.PRS
 ‘(S)he doesn’t run around any more.’

- The otherwise optative prefix *tε-* combines with *bε-* to render the ‘still at it’ meaning:

(113) $\text{T}\varepsilon\text{-b}\varepsilon\text{-beeg}\text{-i}\acute{\text{o}}\text{o}\text{-j}\text{-a}$
 TE-BE-run-REP-EP-TH.PRS
 ‘(S)he is still running around.’

When multiple prefixes are combined with a single weak verb stem, it is always the last prefix

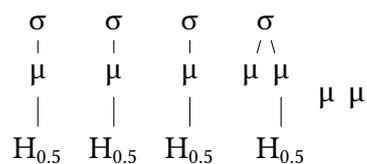
¹³ As in German: *aus-ver-kauf-t*.

(i.e. the one immediately preceding the root) that will have the surface accent. Below is an example of a verb with different prefix complexes:

- (114) a. NÉ-kεit-ee
 NEG-change-TH.PST
 ‘(s)he wasn’t changing.’
- b. Nε-bÉ-kεit-ee
 NEG-BE-change-TH.PST
 ‘(s)he wasn’t changing (it) any more.’
- c. Nε-bε-iš-kεit-ee
 NEG-BE-out-change-TH.PST
 ‘(s)he didn’t (manage to) exchange (it) any more.’

The challenge here is to explain why it is specifically the last accent winning over all others. The underlying representation of *nε-bε-iš-kεit-ee-* can be seen below:

(115) *Multiple prefixes clustering:*



I would like to propose the following logic in order to explain the accent patterns in prefix complexes:

- A. All the prefixes are concatenated with the verbal root in one step during the stem cycle;
- B. What makes the entire prefix complex special is the fact that it is *delimited* as an autonomous prosodic word. The placement of the delimiting brackets does not, however, induce a word-level computation. The brackets are supplied automatically by the grammar as part of the input every time a prefixal complex is concatenated with a root.
- C. Since only one accent is allowed to remain linked, it will have to be one of the prefixal accents due to the higher weight of $\text{MAXASS}(\mu_{\text{PR}}\text{-H})$ relative to $\text{MAXASS}(\mu_{\text{ST}}\text{-H})$. Within the prefixal complex, all the accents have the same status. However, the constraint R (familiar to us from the analysis of Saussure’s Law) makes sure the rightmost accent wins by a small margin.
- D. The presence of a word-level delimiter between the rightmost accent of the prefixal complex and the initial accent of the root prevents the two accents from coalescing. Additionally, a restriction is imposed prohibiting accents located within the prefixal complex from coalescing with one another. Perhaps, this is due to the fact that the accents located on the prefixes are too local to each other (since their carriers have an identical morphemic status).

The reason the accents within the prefixal group cannot coalesce is the empirical fact that, even if the rightmost accent of the complex wins against the stem, its weight is still [0.5]. This can be inferred from the fact that, in participial forms, the resulting stem will lose against a strong adjectival ending:

- (116) a. [nĕ + bĕ + íš] + nĕš → nĕbĕíšnĕš-
 b. nĕbĕíšnĕš + t + as → nĕbĕíšnĕštas
 c. nĕbĕíšnĕš + t + uŭ → nĕbĕíšnĕštuú

The constraints prohibiting the two undesired types of coalescence are defined as follows:

- (117) a. *COALW/W(H-H), w = 500: coalescence of accents across prosodic word boundaries is prohibited;
 b. *COALHOM(H-H), w = 500: coalescence between accents pre-linked to homorganic items in the input is prohibited.

These assumptions yield the results shown in the tableaux below.

(118) $n\acute{e}-b\acute{e}-i\check{s}-n\acute{e}\check{s} \rightarrow n\acute{e}b\acute{e}i\check{s}n\acute{e}\check{s}$ -¹⁴

	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$	*COALW/W(H-H)	*COALHOM(H-H)	ASSOCIATE!(H)	MAXASS(μ_R -H)	MAXASS(μ_{ST} -H)	R	\mathcal{H}
					500	500	50	8	6	1.5	
a.	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$			-3	-1.5			-162
b.	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$			-3	-1	-0.5	-1	-162.5
c.	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$			-3	-1	-0.5	-1	-162.5
d.	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$			-3	-1	-0.5		-161
e.	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$	-1		-2	-1	-0.5		-611
f.	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [H_{0.5} \\ n\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ H_{0.5} \\ b\acute{e} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \\ [H_{0.5} \\ i\check{s} \end{array}$	$\begin{array}{c} \sigma \\ \\ \mu \\ \vdash \\ [PW] \\ H_{0.5} \\ n\acute{e}\check{s} \end{array}$		-1	-1	-1	-0.5		-561

An interesting configuration emerges for candidate (a): because the derivation is taking place at the stem level, there is no prosodic word delimiter after the root, which results in R being violated by this candidate, even though its rightmost accent is still linked. In candidates (d),

¹⁴ In this tableau, multiple association lines are severed, leaving multiple accents floating. Every floating accent will violate the constraint ASSOCIATE!(H). In order to make sure that only one accent survives, the obvious solution is to set the weight of CULM(H) to a much higher value, e.g. [800]. This will not change anything about the analyses developed in this dissertation, since CULM(H) has never been violated and never will be violated by a winning candidate. In the tableaux below, I will keep the weight of [80] points for consistency purposes.

(e) and (f), the accent that survives is not technically the rightmost one, but it happens to coincide with a prosodic word delimiter imposed by the prefixal complex, thus satisfying R and making (d) marginally better than (b) and (c).

If the first prefix in a prefixal complex is the strong prefix *pěř-*, this prefix's accent will win:

- (119) a. nú+sí+něš+ee → nusíněšee
 b. pěř+sí+něš+ee → p ěřsiněšee

The tableau below shows the derivation.

- (120) pěř+sí+něš+ee- → p ěřsiněšee-

	$\begin{array}{c} \sigma & \sigma & \sigma \\ \wedge & & \\ \mu & \mu & \mu \\ & & \\ [H_{1.0} & H_{0.5} & PW] & H_{0.5} \\ \text{pěr} & \text{si} & & \text{něš} \end{array}$	ASSOCIATE!(H)	MAXASS(μ_{PR} -H)	MAXASS(μ_{ST} -H)	R	\mathcal{H}
		50	8	6	1.5	
☞ a.	$\begin{array}{c} \sigma & \sigma & \sigma \\ \wedge & & \\ \mu & \mu & \mu \\ & & \\ [H_{1.0} & H_{0.5} & PW] & H_{0.5} \\ \text{pěr} & \text{si} & & \text{něš} \end{array}$	-2	-0.5	-0.5	-1	-108.5
b.	$\begin{array}{c} \sigma & \sigma & \sigma \\ \wedge & & \\ \mu & \mu & \mu \\ & & \\ [H_{1.0} & H_{0.5} & PW] & H_{0.5} \\ \text{pěr} & \text{si} & & \text{něš} \end{array}$	-2	-1	-0.5		-111
c.	$\begin{array}{c} \sigma & \sigma & \sigma \\ \wedge & & \\ \mu & \mu & \mu \\ & & \\ [H_{1.0} & H_{0.5} & PW] & H_{0.5} \\ \text{pěr} & \text{si} & & \text{něš} \end{array}$	-2	-1.5			-112

Now that we know that prefixal complexes are delimited with word-level brackets, we can say that, instead of the tentative MAXASS(μ_{PR} -H) constraint, the actual constraint is MAXASS(μ_{PW} -H), demanding faithfulness to an accent located within a unit that represents a prosodic word. This formulation seems more plausible to me. The final ranking thus has the following shape:

- (121) MAXASS(μ_{PW} -H) [8] » MAXASS($\mu_{ST/RT}$ -H) [6] MAXASS(μ_{AFF} -H) [4]

4.4.5 When is a verb's root allomorph weak?

We saw above that the so-called 'anti-BAP' effect in Lithuanian emerges when a verbal root allomorph has a weak underlying accent, as opposed to the default strong one. The grouping of the verbal root allomorphs into strong and weak follows a very regular pattern.

First and foremost, only monosyllabic roots can be weak. This criterion does not create a balanced dichotomy since most verbs in the native lexicon have monosyllabic roots.

Secondly, among monosyllabic roots, all those that have the falling pattern (i.e. they contain two moras and the accent lies on the first one) are invariably strong.

(122) Only monosyllabic roots with an accent on their final (or only) mora can ever be weak.

In the present tense, verbs with the theme vowels /-a-/, /-ia-/ and /-i-/ can be weak. They can either be primary or have the stem suffix /-ee-/ in the infinitive and the past tense forms. Verbs with the theme vowel /-oo-/ in the present tense are always strong.

(123) *Weak stem criteria for the present tense:*

1. Verbs whose underlying stem vowel is short;
2. Verbs whose present-tense stem syllable contains the sequence /-εR-/ alternating with /-iR-/ in the other stems;
3. Verbs whose stem syllable contains the /-aR-/ sequence (these are always /-ee-ti/ verbs).

- (124) a. kīšti 'to shove' → (*prs.*) kīša, pákiša
b. pírkti 'to buy' → (*prs.*) pėrka, páperka
c. kalbėti 'to speak' → (*prs.*) kalba, pákalba

There are two lexical exceptions from this rule:

- (125) a. gulėeti 'to lie (down)' → gúli, **nεgúli**
b. turėeti 'to have' → túri, **nεtúri**

As far as the past tense is concerned, more past-tense verbs are weak than present-tense ones.

(126) *Weak stem criteria for the past tense:*

1. The theme vowel must be /-ee-/, AND:
2. The verb must be a primary verb, i.e. no /-ii-ti/ verbs can be weak.

- (127) a. leék-ti ‘to rush’ → (*pst.*) leékee, át-leek-ee
 b. baígti ‘to finish’ → (*pst.*) baígee, pábaigee

- (128) matíiti ‘to see’ → (*pst.*) maátee, pamaátee [a suffixal verb]

In colloquial speech, verbs with diphthongs in the root which undergo weakening in the past can (optionally) undergo weakening in the present, as well:

- (129) baígti ‘to finish’ → (*pst.*) baígee, pábaigee; (*prs.*) pabaígia, *coll.* pábaigia

In some dialects, e.g. in the High Lithuanian dialects around the city of Kaunas ([Stundžia, 2009](#)), this has become the normal way of accenting such verbs.

4.4.6 Long agreement affixes and multiple particles

In the chapter dedicated to nominal accent, I mentioned that the original Saussurian affixes were all long and accented on their first mora. The original segmental content of these long affixes was restored when a pronominal element was added to an adjective:

- (130) bált-**u** → balt-**úo**-ju

In the case with adjectival affixes, the original long versions of the inflectional endings also have a strong underlying accent, as can be seen from the example above, where the surface accent is on the affix and not on the stem.

There is a similar pattern observed with inflected verbal forms in Lithuanian. In order to speak about it, the reflexive particle needs to be introduced. In Lithuanian, the only morpheme which can follow an agreement affix is the reflexive particle /s(i)/. As far as its form and meaning are concerned, this particle is case-impooverished and can refer to both direct and indirect objects.

The examples above already included this particle, which always appears as the rightmost prefix in a chain of prefixes. If, however, a verb has no prefixes and no negator, the reflexive is suffixed at the right edge.

- (131) a. Joón-as gíid-oo-s(i) nuó ligoós.
 J-NOM.SG treat-TH.PRS-RFL from disease-GEN.SG
 ‘John is treating himself [ACC] for a disease.’
 b. Joón-as pėřk-a-s(i) kniíg-aa.
 J-NOM.SG buy.PRS-TH.PRS-RFL book-ACC.SG

‘John is buying himself [DAT] a book.’

The same two verbs above have the following outputs when prefixes are added:

(132) pasigúidoo, nusiperka

If the reflexive particle *-si* is added to the end of a verb, the agreement affixes restore their historic heavy form in case the theme vowel is reduced to zero:

(133) a. kas+a+u+si → kasúosi ‘I dig for myself’
b. kas+a+i+si → kasíesi ‘you dig for yourself’

If the theme vowel is not deleted, the output is the same with and without the reflexive element:

(134) a. kas+ee+u(+si) → kasiaú(si) ‘I dug (for myself)’
b. kas+ee+i(+si) → kaséí(si) ‘you dug (for yourself)’

In the case involving the verb *kas-* ‘dig’, the reflexive particle attached at the end of the word. In case the theme vowel is not fully syncopated, as is the case in the past tense, the agreement affix forms a diphthong with it and undergoes no further changes. However, in the present tense, the theme vowel is deleted altogether, so the agreement affix is the only element between the final consonant of the root and the reflexive particle. In this case, the agreement affix appears in its heavy form. Crucially, in both instances, the accent shift from the last mora of the stem to the agreement affix does take place.

We saw above that the accent shift in verbs was analyzed along the same lines as the analogical phenomenon in nouns. The mechanism triggering the shift crucially relied on a resonant interaction of two constraints when two underlying accents clustered at the right edge of a phonological word. Here, however, not only the theme vowel on the left (in the case of the past tense), but also the material to the right of the agreement marker’s initial mora obliterates the configuration necessary for the accent shift to take place.

(135) The Saussurian shift is counter-bleed by preceding theme vowels and by the addition of the reflexive particles on the right.

The issue with the theme vowel was addressed in the previous parts of this chapter. At this point, I would like to say a few things about the reflexive particle. Since, in its essence, the reflexive morpheme is a pronominal element, it can be considered a pronominal clitic. Being a

clitic, this element is added to the verb in the post-lexical cycle. That means, it cannot disturb the already established accentuation pattern.

4.4.7 Stress stability in the future tense

In the future tense, the agreement affixes /-ū, -l/ follow the future marker /-s-/ and the theme vowel /-i-/, which deletes before the agreement affix in case the two are identical:

- (136) a. vālgii+s+i+ú → vālgiisiu 'I will eat'
 b. vālgii+s+i+í → vālgiisi 'you will eat'

In (136-a), the theme vowel is not linked to a separate mora on the surface and is absorbed into the preceding consonant. In both cases, the mora of the agreement affix follows the final mora of the stem. This is exactly the right configuration for Saussure's Law to apply. However, it does not every apply in the future tense:

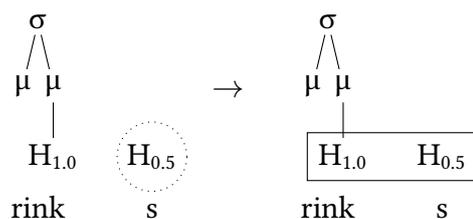
- (137) a. riñk+s+i+ú → riñksiu, *riñksiú 'I will choose'
 b. kās+s+i+ú → kasiu, *kasiú 'I will dig'

In the first chapter, we saw how the application of Saussure's Law can be blocked when the root contains a 'fortified' accent with the activity level of [+1.5]:

- (138) a_{1.5}st+a_{1.0} → aásta, *astá

In the previous chapter, we also saw how some affixes introduce floating accents which have the capability of reducing the strength of the underlying stem accent. Following the same logic, the future tense affix in Lithuanian can actually contain a positively specified floating accent. It contains no other prosodic information (since it does not project a mora), and contributes the segment /-s-/. Because the floating accent is specified positively, the result is not weakening of the root's underlying accent, but rather, a fortification thereof:

- (139) *The fortification of the base at the stem level:*



At the word level, the fortified stem is now immune to the application of Saussure’s Law. Even when *CoAL(H-H) and R resonate, the cumulative violation is still lower than that induced by candidate (a):

(140) *riñks+i+ú* → *riñksiu*

		MAXASS(μ_{ST} -H)	MAXASS(μ_{AFF} -H)	R	*CoAL(H-H)	\mathcal{H}
		6	4	1.5	1.5	
a.		-1.5			-1	-10.5
b.			-1	-2	-2	-10

4.4.8 The conditional

In the conditional forms, Saussure’s Law also does not apply:

(141) a. *riñk + t + ee + ú* → *riñkčiau*
 b. *riñk + tum + ee + í* → *riñktumɛi*

In the 2SG form, this happens for a clear reason: the conditional morpheme’s allomorph intervenes between the root and the agreement affix. In the 1SG, we might expect Saussure’s Law to apply due to the fact that the conditional mood’s morpheme is reduced to /-t-/, and the theme vowel is tucked in later, as we saw in the analysis above.

Because of the highly irregular suffixes in the conditional overall, I propose that one of the following two clauses captures the situation from a synchronic viewpoint:

1. The suffix of the conditional is originally /-tum-/ in the first-person form, and only reduced to /-t-/ when the theme vowel is introduced;
2. The suffix of the conditional has absorbed the theme vowel, and they now form a single exponent: /-tja-/. Since this exponent is not tucked in and introduced before the agreement marker, the application of the accent shift is impossible.

(147) *Converb stem derivation, Step 1:*

Inp:	DE(H)	CULM(H)	*ASSOCIATE(H)	DEF Ass(μ -H)	MAX ASS(μ_{PR} -H)	MAX ASS(μ_{ST} -H)	*COAL(H-H)	\mathcal{H}
$\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$	80	80	50	10	8	6	1.5	
<p>a.</p> $\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$			-2		-0.5			-104
<p>b.</p> $\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$		-1		-0.5				-85
<p>c.</p> $\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$			-1	-0.5	-0.5			-59
<p>d.</p> $\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$			-1		-0.5		-1	-55.5
<p>e.</p> $\begin{array}{ccc} \sigma & & \sigma \\ & & \\ \mu & & \mu \\ & & \\ H_{0.5} & & H_{1.0} \quad H_{-0.5} \\ \text{nu} & & \text{n\v{e}\v{s}} \end{array}$			-1			-1	-1	-57.5

In the second step, the segmental material is added, producing the following final output:

(148) *Converb stem derivation, Step 2:*

$$\begin{array}{ccc} \sigma & & \sigma & & \sigma \\ | & & | & & | \\ \mu & & \mu & & \mu \\ & & | & & \\ & & H_{0.5} & & \\ \text{nu} & & \text{n\v{e}\v{s}} & & \text{dam} \end{array}$$

(149) *Converb accent placement at the word level:*

				*DISTCOAL(H-H)	ASSOCIATE!(H)	DEPAss(μ-H)	MAXAss(μ _{ST} -H)	MAXAss(μ _{AFF} -H)	R	*COAL(H-H)		
	σ	σ	σ	μ								
	μ	μ	μ	μ								
		H _{0.5}		H _{1.0}								
	nu	něš	dam	i	80	50	10	6	4	1.5	1.5	\mathcal{H}
a.	σ	σ	σ	μ		-1		-0.5				-53
	μ	μ	μ	μ								
		H _{0.5}		H _{1.0}								
	nu	něš	dam	i								
b.	σ	σ	σ	μ		-1			-1	-1		-55.5
	μ	μ	μ	μ								
		H _{0.5}		H _{1.0}								
	nu	něš	dam	i								
c.	σ	σ	σ	μ	-1						-1	-84.5
	μ	μ	μ	μ				-0.5				
		H _{0.5}		H _{1.0}								
	nu	něš	dam	i								

There is only one exception from the above pattern (where the prefix is never accented), namely, those instances where the prefix *pěr-* is employed:

- (150) a. *pěr+něš+dam+as* → *pérněšdamas*
 b. *pěr+něš+dam+á* → *pérněšdama*
 c. *pěr+něš+dam+í* → *pérněšdami*
 d. *pěr+něš+dam+oos* → *pérněšdamoos*

In the above examples, the prefix is always accented. This is hardly surprising. We saw that it was always accented in finite verbs. This was due to the fact that this prefix has a strong underlying accent, and the relative ranking of the MAXAss constraints. With the kind of accent coalescence proposed in this dissertation, this is the predicted result also for the converb.

(151) *Converb stem derivation with the strong prefix pĕr-:*

Inp:	DE(H)	CULM(H)	*ASSOCIATE(H)	DEPAss(μ -H)	MAXAss(μ_{PR} -H)	MAXAss(μ_{SR} -H)	*COAI(H-H)	\mathcal{H}
$\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \end{array}$	80	80	50	10	8	6	1.5	
<p>a.</p> $\begin{array}{c} \sigma \quad \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \neq \quad \quad \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \quad \text{dam} \end{array}$			-2		-1			-108
<p>b.</p> $\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \neq \quad \quad \dots \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \end{array}$			-1	-0.5	-1			-63
<p>c.</p> $\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \neq \quad \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \end{array}$			-2			-1		-106
<p>d.</p> $\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \quad \neq \quad \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \end{array}$			-1			-1	-1	-57.5
<p>e.</p> $\begin{array}{c} \sigma \quad \sigma \\ \mu \quad \mu \quad \mu \\ \neq \quad \quad \\ H_{1.0} \quad H_{1.0} \quad H_{-0.5} \\ \text{pĕr} \quad \text{nĕš} \end{array}$			-1		-1		-1	-59.5

Naturally, at the word level, it will also be the prefix winning over the inflectional affix and receiving the surface accent.

In case the base the converb suffix combines with contains a root-extending suffix, the accentuation pattern of the converb forms switches to the frozen type exhibited by strong stems:

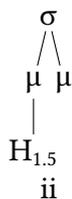
- (152) nu-mat-íi-dam-as, nu-mat-íi-dam-a, nu-mat-íi-dam-i, nu-mat-íi-dam-oos

The accent remains on the root-extending suffix throughout the paradigm. In fact, we will see below that all the forms derived from extended roots with the following extensions – *ii*, *ee*, *uo*, *au*, *en*, *in* – have a frozen accent on these extensions.

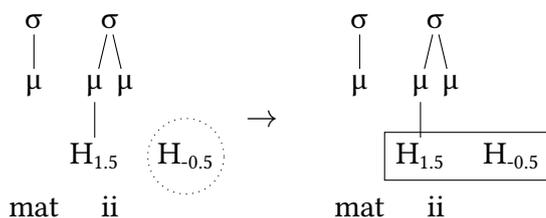
(153) kalbėti, kalbėtuu, kalbėtuuju, pakabėesiančiaisiais *etc.*

We saw in the nominal chapter that there were a range of stems that resisted the application of Saussure’s Law. I assumed these stems to have a higher activity level than the ‘normal’ strong nominal stems. If we assume a similar specification for the extended verbal roots in question, their behavior will naturally follow from the back that their activity level is very high.

(154) *The extra strong verb-extending suffixes:*



(155) *The derivation of the converb stem:*



The resulting stem’s accent has lost some of its underlying activity, but it remains strong nonetheless.

4.6 Non-finite forms: the active participles

There are three active participles in Lithuanian:

- (156) a. raáš-ant-is ‘the one (M.SG.NOM) who writes’
 b. raáš-ius-i ‘the one (F.SG.NOM) who wrote’¹⁶
 c. rašii-s-i-ant-is ‘the one (M.SG.NOM) who will write’

¹⁶ The MASC.SG.NOM form is contracted, therefore, the feminine form is presented here.

4.6.1 The present active participle

The present active participle is based on the respective present-tense stem. The theme vowel of the present tense is preserved (however, /-oo-/ is shortened to /-a-/), and the formative of the participle is /-nt-/. Naturally, the participle takes adjectival suffixes expressing gender, number and case.

- (157) a. $ka\acute{l}b+a+nt+is \rightarrow ka\acute{l}bantis$ ‘the speaking one’
 b. $g\acute{u}l+i+nt+is \rightarrow g\acute{u}lintis$ ‘the one who is lying down’
 c. $ra\acute{s}+oo+nt+is \rightarrow ra\acute{a}\acute{s}antis$ ‘the writing one’

In the base form (nominative singular masculine), the accent is on the same mora as it is in the present-tense base form (i.e. without agreement affixes). This placement of the accent is retained throughout the entire declensional paradigm:

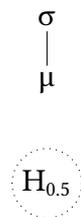
	M.Indef	M.Def	F.Indef	F. Def
N	$ka\acute{l}b-ant-is$	$ka\acute{l}b-ant-iis$	$ka\acute{l}b-ant-i$	$ka\acute{l}b-an\check{c}-iooji$
G	$ka\acute{l}b-an\check{c}-io$	$ka\acute{l}b-an\check{c}-ioojoo$	$ka\acute{l}b-an\check{c}-ioos$	$ka\acute{l}b-an\check{c}-ioosioos$
D	$ka\acute{l}b-an\check{c}-iam$	$ka\acute{l}b-an\check{c}-iajam$	$ka\acute{l}b-an\check{c}-iai$	$ka\acute{l}b-an\check{c}-iajai$
A	$ka\acute{l}b-ant-ii$	$ka\acute{l}b-ant-iiiji$	$ka\acute{l}b-an\check{c}-iaa$	$ka\acute{l}b-an\check{c}-iaajaa$
I	$ka\acute{l}b-an\check{c}-iu$	$ka\acute{l}b-an\check{c}-iuoju$	$ka\acute{l}b-an\check{c}-ia$	$ka\acute{l}b-an\check{c}-iaaja$
L	$ka\acute{l}b-an\check{c}-iame$	$ka\acute{l}b-an\check{c}-iajame$	$ka\acute{l}b-an\check{c}-iooje$	$ka\acute{l}b-an\check{c}-ioojooje$
N	$ka\acute{l}b-ant-iis$	$ka\acute{l}b-ant-iej$	$ka\acute{l}b-an\check{c}-ioos$	$ka\acute{l}b-an\check{c}-ioosioos$
G	$ka\acute{l}b-an\check{c}-iuu$	$ka\acute{l}b-an\check{c}-iuujuu$	$ka\acute{l}b-an\check{c}-iuu$	$ka\acute{l}b-an\check{c}-iuujuu$
D	$ka\acute{l}b-ant-iems$	$ka\acute{l}b-ant-iesiems$	$ka\acute{l}b-an\check{c}-iooms$	$ka\acute{l}b-an\check{c}-ioosiooms$
A	$ka\acute{l}b-an\check{c}-ius$	$ka\acute{l}b-an\check{c}-iuosius$	$ka\acute{l}b-an\check{c}-ias$	$ka\acute{l}b-an\check{c}-iaasias$
I	$ka\acute{l}b-an\check{c}-iais$	$ka\acute{l}b-an\check{c}-iaisiais$	$ka\acute{l}b-an\check{c}-ioomis$	$ka\acute{l}b-an\check{c}-ioosioomis$
L	$ka\acute{l}b-an\check{c}-iuose$	$ka\acute{l}b-an\check{c}-iuosiuose$	$ka\acute{l}b-an\check{c}-ioose$	$ka\acute{l}b-an\check{c}-ioosioose$

Table 4.5: *The declension of a present active participle.*

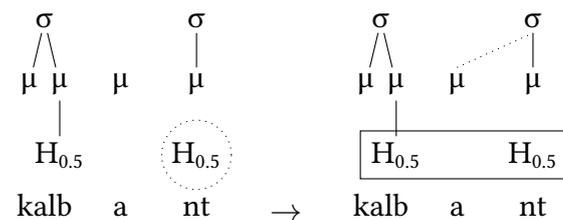
This accentuation paradigm is different from what we saw when we were discussing regular Lithuanian adjectives. Unlike most underived adjectives and the adjective *paskutinis*, the present active participle has a strong stem allomorph in all the declined forms. This is evident from the fact that the long adjectival suffixes always remain unaccented.

In the present tense, verbs such as *kalbėti* have a weak root allomorph. In the present active participle form, however, the stem is always strong. We have already seen a stem fortification effect brought about by the suffix of the future tense. I would like to make a similar assumption about the suffix of the present active participle:

(158) *The suffix of the present active participle*



(159) *The fortification of the present active participle stem:*



However, even in the case where *kalb-* is fortified, this cannot be the full story. As far as the weak present-tense root allomorphs are concerned, their weakness can be detected if a prefix is added, in which case the prefix will be accented on the surface:

(160) *né-kalb-a* '(s)he does not speak'

If we assume that the prefix, the root and the affix of the present active participle are concatenated simultaneously, then, given the constraints above, the prefix should win over the stem with the coalescing accents. This is due to the fact that the MAXASS(μ -H) constraints react to the weights of the original accent, not the newly emerging ones during coalescence.

(161) *Retention of prefixal accent despite fortification:*

Inp:	DE(H)	CULM(H)	*ASSOCIATE(H)	DEP _{ASS} (μ-H)	MAX _{ASS} (μ _{PR} -H)	MAX _{ASS} (μ _{ST} -H)	*COAL(H-H)	\mathcal{H}
$ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{0.5} \quad H_{0.5} \quad H_{+0.5} \\ \text{pa} \quad \text{kalb} \end{array} $	80	80	50	10	8	6	1.5	
a. $ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{0.5} \quad H_{0.5} \quad H_{+0.5} \\ \text{pa} \quad \text{kalb} \end{array} $			-1		-0.5		-1	-55.5
b. $ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{0.5} \quad H_{0.5} \quad H_{+0.5} \\ \text{pa} \quad \text{kalb} \end{array} $			-1			-0.5	-1	-54.5

However, the emerging stem with the prefix's accent surviving suffers from a significant disadvantage: its single accent is now weak. This makes the prediction that the stem should lose to a strong adjectival ending. We have, however, seen in the example above that this is not the case:

(162) *pákalbančiuu* [-uũ GEN.PL]

In the following section, I will show that there is evidence supporting the idea of evaluating the constraint ASSOCIATE!(H) in a gradient manner (i.e. depending on the weight of the involved accent). If we do this here with a weak stem and a prefix, the resulting stem emerges with its accent in the wrong position.

(163) *Wrong accent position in the stem:*

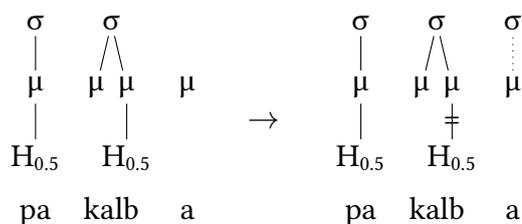
Inp:		DE(H)	CULM(H)	*ASSOCIATE(H)	DEP ASS(μ-H)	MAX ASS(μ _{Pr} -H)	MAX ASS(μ _{St} -H)	*COAL(H-H)	\mathcal{H}
$ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \\ H_{0.5} \quad H_{0.5} \\ \text{pa} \quad \text{kalb} \end{array} $ ⊙ $H_{+0.5}$		80	80	50	10	8	6	1.5	
☹ a.	$ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{0.5} \quad H_{0.5} \quad H_{+0.5} \\ \text{pa} \quad \text{kalb} \end{array} $			-0.5		-0.5		-1	-30.5
☺ b.	$ \begin{array}{c} \sigma \quad \sigma \\ \quad / \backslash \\ \mu \quad \mu \quad \mu \\ \quad \quad \\ H_{0.5} \quad H_{0.5} \quad H_{+0.5} \\ \text{pa} \quad \text{kalb} \end{array} $			-1			-0.5	-1	-54.5

I would therefore like to propose the kind of interleaving of cycles that is discussed in [Bermúdez-Otero \(2010\)](#). More specifically, I claim that, before the participial affix is added, a surface accent is determined for the bare present-tense stem (which coincides with the third-person form). In other words, the $[ka\acute{l}b-a]$ - part of the participial form $[ka\acute{l}b-a]-nt-iems$ undergoes optimization as if it were its own separate word. The bracketing of the resulting morphological structure has the following shape:

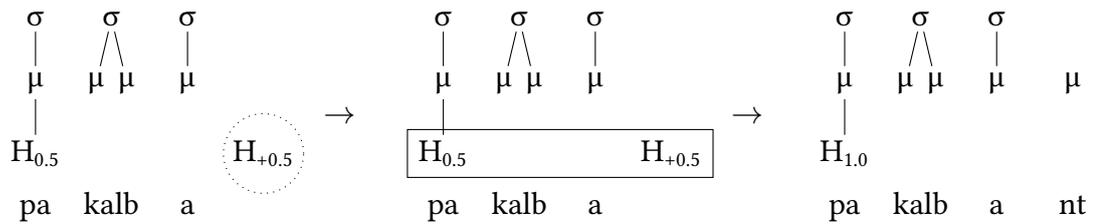
(164) $[[[[pá + ka\acute{l}b + a_{PW}] + H_{+0.5} St] + nt_{St}] -$

The resulting word is subjected to the suffix $/-nt-/$, which triggers a stem-level optimization. At this point, the surface accent of the present-tense form is fortified, whereupon adjectival morphology may be added.

(165) *The derivation of 'pákalba':*



(166) *The derivation of the stem 'pákalbant-':*



The contracted suffixes of the present active participle

Another interesting property shown by the present active participle is constituted by the so-called contracted forms of the participle used in the masculine singular and plural nominative forms in contexts where the participle is used predicatively. The contracted affixes are:

(167) -ant+is → -aās, -ant+iis → -aā

These suffixes are always accented after verbs that have weak stems in the present tense:

(168) nēš-ti, nēš-a, nūnēša → nēš-**aās**

Even in those instances where the participle is consistently accented on the prefix, the surface accents falls onto the suffix in these contracted forms:

(169) nūnēšantis, nūnēšantiems, nūnēšanti ... **nūnēšāá(s)**

Verbs that have a strong accent in the present tense tend to also be accented on the stem in the contracted participial forms:

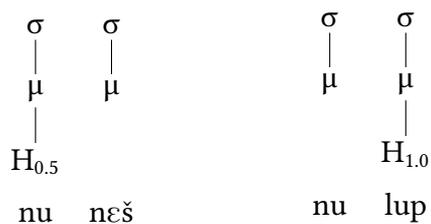
- (170) a. dírbtī → dírba, padírba → dírbaas
 b. mílétī → míli, nēmíli → míliis
 c. rašíiti → raášoo, paraášoo → raášaas

In the colloquial language, these forms are frequently stressed on the contracted affix, too:

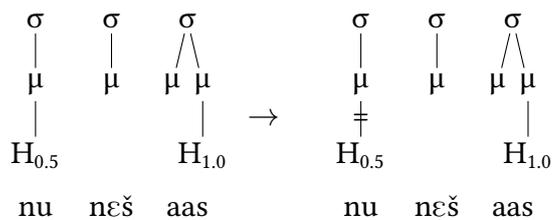
(171) dirbaás, myliís, rašaaás

If we assume that the contracted forms of the participial affixes have no fortifying accentual element and a pre-linked strong affix of their own, then this behavior is predicted. We do not even need to assume a word-level derivation of the present-tense form.

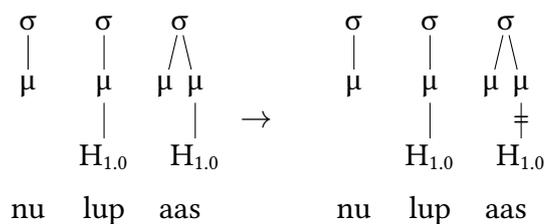
(172) *Stem-level outputs for strong and weak roots:*



(173) *Word-level derivation with contracted affix:*



(174) *Word-level derivation with contracted affix:*



The colloquial pronunciation with the accent always on the contracted ending can be derived if the latter is assumed to additionally have a floating negative accent, i.e. it is considered to be a dominant affix.

4.6.2 The past active participle

The suffix of the past participle is /-(i)us-/, followed by adjectival inflectional formatives. In the masculine nominative forms (singular and plural), a portmanteau is used.

In the nominative plural of the feminine gender in predicative usage, the masculine form is often used instead:

(175) Joós iirá béeg-us-ioos / béeg-εε.
 3PL.F.NOM be.PRS.3 run-PTCTP.ACT.PST-F.NOM.PL run-PTCTP.ACT.PST.M.NOM.PL
 ‘They have run.’

The root morpheme in the past participle form undergoes the same changes as it does in the normal past-tense form. However, the accent is always retained on the root, never moving to

	M.Indef	M.Def	F.Indef	F. Def
N	béeg-εεs	-	béeg-us-i	béeg-us-iooji
G	béeg-us-ioo	béeg-us-ioojoo	béeg-us-ioos	béeg-us-ioosioos
D	béeg-us-iam	béeg-us-iajam	béeg-us-iai	béeg-us-iajai
A	béeg-us-ii	béeg-us-iiiii	béeg-us-iaa	béeg-us-iaajaa
I	béeg-us-iu	béeg-us-iuojū	béeg-us-ia	béeg-us-iaaja
L	béeg-us-iamε	béeg-us-iajamε	béeg-us-ioojε	béeg-us-ioojoojε
N	béeg-εε	béeg-us-ieji	béeg-us-ioos	béeg-us-ioosioos
G	béeg-us-iuu	béeg-us-iuujū	béeg-us-iuu	béeg-us-iuujū
D	béeg-us-iems	béeg-us-iesiems	béeg-us-iooms	béeg-us-ioosiooms
A	béeg-us-ius	béeg-us-iusius	béeg-us-ias	béeg-us-iaasias
I	béeg-us-iais	béeg-us-iaisiais	béeg-us-ioomis	béeg-us-ioosioomis
L	béeg-us-iuose	béeg-us-iuosiuose	béeg-us-ioose	béeg-us-ioosioose

Table 4.6: *The declension of a past active participle.*

the prefix:

- (176) a. pá-kεit-εε ‘*he changed*’
 b. pa-kεít-εεs ‘*the one who changed*’

The stress remains on the same syllable throughout the paradigm. The only questionable form is the one I have omitted in the table above. The masculine definite forms in the nominative singular, though almost never actively produced, might be accented on the ending if it is ever built:

- (177) beeg-us-iísis

Since this form is hardly attested and its accentuation is speculative, I will leave it alone and concentrate on the rest of the paradigm. The pattern is different from the present active participle. There, we also had a fixed accent location in all the declined forms. However, this fixed position corresponded to the surface position of the stress in the finite present-tense form. The placement of the accent was derived by employing a non-monotonous sequence of phonological cycles.

As far as the past participle is concerned, if the same logic cannot quite be employed. If the finite past-tense were to be constructed first, then it’s not clear why the accent of the participle is never on prefixes. Moreover, the theme vowel of the past tense would need to be obliterated using some kind of subtractive morpho-phonological apparatus.

Even though the segmental changes in the root of a past active participle are exactly the same as in the finite past tense, the accent is always fixed on the root morpheme:

(178) beŕ-ti ‘to pour’ → beéree, íšbeeree, BUT: beéρεεε, išbeéρεεε

The identity of the two root allomorphs is frequently traced back to segmental identity (Arkadiev, 2012). I do therefore consider it desirable to have an account of the past passive participle in which it shares the root allomorph with the finite past tense. In order to capture the behavior, I would like to propose that the cyclic profile of the past active participle differs in a principled manner from that of the present active participle.

Because the past active participle stem is always strong, I assume that the suffix /-us-/ has a fortifying effect on its base, exactly as /-nt-/ did in the previous section. In this respect, the two suffixes are identical. What makes the suffix of the past active participle different, however, is the fact that it is combined with the verbal root very early on, before any other material is added, including all the prefixes. The difference between the bracketed structures involving /-us-/ and /-nt-/ can be seen in the example below:

(179) a. The present active participle: [[[[pá + kaĺb] + a] + H_{+0.5}] + nt]
 b. The past active participle: [pá [[kaĺb + H_{+0.5}] + us]]

The result of this derivation is obvious: the root allomorph will be strengthened before the prefix is introduced. When /pá-/ is concatenated with /kaĺbus-/, the latter has a strong accent, so the prefix can not win in the competition despite its privileged status (see Section 4.4.2).

If the root allomorph is strong in the past tense, it will be even further fortified, with its accent’s activity level reaching [+1.5]:

(180) [[va_{1.0}lg + H_{+0.5}] + ius] → va_{1.5}lgius-

At the first glance, this is not a problem at all because the prediction the theory makes is that the overly strong accent of the stem will remain intact and never move to a prefix or a strong inflectional affix. For the most part, this prediction is borne out:

(181) pá + va_{1.5}lgius + ĩesiems → paválgiusiesiems

There is, however, one unpredicted pattern that we still need to account for. In case the prefix is /pěr-/, the accent will move to it:

(182) pĕr + si + va_{1.5}lgius + ii → pĕrsivalgiusii

As the example above suggests, the immediately arising question is whether we did make a logical mistake while deriving the stem of the participle. In fact, this is not the solution I choose to pursue.

If we observe the behavior of the prefix /pĕr-/, we will soon notice that it is always accented regardless of what kind of or how much material follows it. We have also seen in Chapter 2 that there are root morphemes in the language which are lexically specified as extra strong. The most elegant way of integrating this prefix into the behavior of the past active participle without breaking any of the cyclicity logic is to assume that this prefix also has an extra strong underlying accent. Indeed, combined with the participial stem above, this version of the prefix will yield the desired result:

(183) pĕ_{1.5}r + va_{1.5}lgius → pĕ_{1.5}rvalgius-

4.6.3 The future active participle

The future participle has the same suffix as the present participle, but is based on the future stem (with the future tense marker and an altered theme vowel):

(184) rašiisiu ‘I will write’ → raši-s-ia-nt-iems ‘to the ones who will write’

The future participle is declined in the same manner as the present active participle. The definite forms are very rare. The masculine nominative singular form in the definite paradigm is barely ever attested and its accentuation is controversial, which is why I left it out.

	M.Indef	M.Def	F.Indef	F. Def
N	béeg-s-ia-nt-is	-	béeg-s-ia-nt-i	béeg-s-ia-nč-iooji
G	béeg-s-ia-nč-ioo	béeg-s-ia-nč-ioojoo	béeg-s-ia-nč-ioos	béeg-s-ia-nč-ioosioos
D	béeg-s-ia-nč-iam	béeg-s-ia-nč-iajam	béeg-s-ia-nč-iai	béeg-s-ia-nč-iajai
A	béeg-s-ia-nt-ii	béeg-s-ia-nt-iiiji	béeg-s-ia-nč-iaa	béeg-s-ia-nč-iaajaa
	...			
N	béeg-s-ia-nt-iis	béeg-s-ia-nt-ieji	béeg-s-ia-nč-ioos	béeg-s-ia-nč-ioosioos
	...			

Table 4.7: *The declension of a future active participle.*

As far as the accentuation of the future participle is concerned, the same pattern holds as in the case of the other two active participles. In this case, it is hardly surprising because we

have already seen above that the future tense shows accentual stability. The root allomorph used in the future tense is always strong. The suffix /-nt-/ contains its underlying accent, which ensures the unavailability of the root's accent for the floating accent of the definite inflectional affixes. All in all, under the assumptions we have made in the previous sections, the stress stability in the future active participle is completely expected.

4.7 Non-finite forms: the passive participles

In addition to the active participles discussed above, there are three passive participles in the language:

- (185) a. raáš-oo-m-as 'the one that is written'
 b. rašii-t-as 'the one that was written'
 c. rašii-s-i-m-as 'the one that will be written'

Among other functions, these participles are used extensively to form passive expressions:

- (186) a. Láišk-as býv-oo raáš-oo-m-as.
 letter-NOM.SG be-TH.PST write-TH.PRS-PTCP.PASS.PRS-M.NOM.SG
 'The letter was being written.'
 b. Láišk-as jáú iš-siuus-t-as.
 letter-NOM.SG already off-send-PTCP.PASS.PST-M.NOM.SG
 'The letter [is] already sent.'

The present and future participles are based on the respective finite forms' stems with the addition of the suffix /-m-/, followed by normal adjectival inflectional endings. The past participle is based on the infinitival (!) root allomorph, has no theme vowel and features the suffix /-t-/. Unlike Slavic languages, Lithuanian only uses /-t-/ and never /-n-/ for this particular participle.

4.7.1 The present passive participle

The present active participle is built upon the present-tense stem with the addition of the present-tense theme vowel, followed by the Balto-Slavic marker *-m-* and adjectival inflections.

- (187) a. kalb+a+m+as → kalbamas
 b. miil+i+m+as → míilimas
 c. sak+oo+m+as → saákoomas

Verbs with the theme vowel /-oo-/ retain their accent on the stem even when strong suffixes are added. I therefore assume that the root allomorph of these verbs is strong:

(188) rǎš+oo+m+as/ĭ → raášoomas, raášoomi

I would like to remind the reader at this point that, in finite verbs with vocalic agreement markers, Saussure's Law applies even in those instances where the theme vowel is not fully deleted but merely shortened:

(189) rǎš+oo+ú → rašau, *raášau

We attributed this to the fact that the theme vowel has defective syllable structure with floating moras not linked to a dominating syllabic node. As a result, at the time when Saussure's Law applies, there is still no intervener between the final mora of the root and the agreement marker's weakly accented mora.

This generalization does not, however, hold for the present passive participle:

(190) a. rǎš+oo+m+ú → raášoomu [lack of Saussurian shift]
 b. kaĺb+a+m+ú → kaĺbamu [lack of Saussurian shift]

Additionally, present active participles formed from verbs with the theme vowel /-oo-/ resist dominance-induced weakening when long adjectival endings are added:

(191) raáš-oo-m-uujuu, raáš-oo-m-iesiems, raáš-oo-m-aisiais *etc*

On the other hand, verbs with the theme vowels /-(i)a-/ and /-i-/ have a weak stem in the present passive participle.

(192) leńk+ia+m+as/ĭ → leńkiamas, lenkiamí [strong ending wins over weak stem]

Just like in the previous case, there is no application of Saussure's shift:

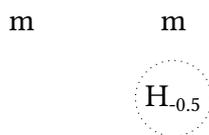
(193) leńkiamu

Interestingly enough, if a verb has a prefix, it is never accented (except for, of course, the prefix *pěr-*):

(194) nulėńkiamas, nulėnkiamí [BUT: pėrlenkiamas]

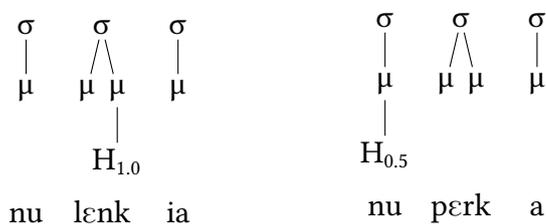
The accentuation of the present passive participle can be derived easily if one assumes different underlying representations for the suffix /-m-/ depending on the inflectional class of the verb in question. I propose that there are two underlying allomorphs of the passive marker. One of them contains a negatively specified floating accent. Other than this floating accent, the morpheme does not contribute a mora or syllabic node and contains only the nasal consonant (which always becomes syllabified into the onset of the syllable brought about by inflectional material).

(195) *The allomorphs of /-m-/:*

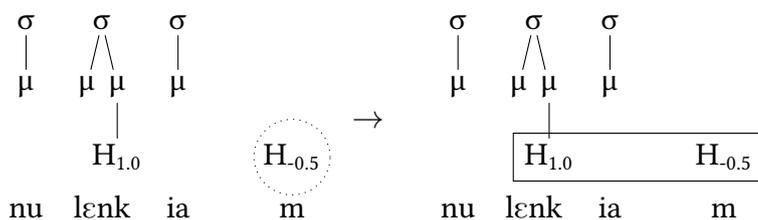


The reader will have noticed by now that the present active participle is based on the finite form of the present tense, much like the present active participle. It makes perfect sense to propose the interleaving cycles for the present passive participle, as well. Thus, the first step is the word-level formation of the finite form *nuleńkia*, the result of which is, again, combined with the suffix /-m-/ at the stem level.

(196) *The word-level outputs for two present-tense verbs:*

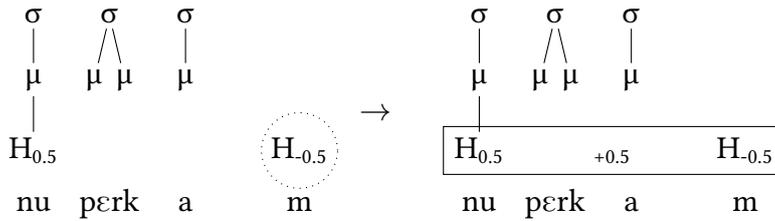


(197) *Stem formation for the present passive participle, case I:*



If the present-tense form is accented on the prefix, it cannot accept the floating accent without adding epenthetic activity due to the minimal well-formedness requirement I have presented above:

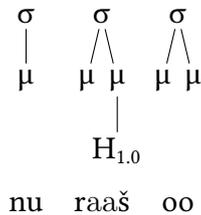
(198) *Stem formation for the present passive participle, case II:*



At the word level, when adjectival morphology is introduced, the participial stem behaves like a regular weak stem (see above).

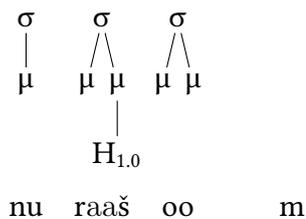
As far as the other allomorph of /-m-/ is concerned, it combines with verbs that take the theme vowel /-oo-/ in the present tense. These verbs always have a strong stem, and the output of the present-tense word-formation process has the following representation:

(199) *The present tense of oo-verbs:*



This representation is not altered in any way by the addition of the suffix containing only a nasal segment.

(200) *The stem of the present active participle of oo-verbs:*



4.7.2 The past passive participle

The past passive participle is based – at the first glance – on the root allomorph of the infinitive, not that of the past tense:

(201) (*inf*) kél-ti, (*pst*) kéel-ee → **kél**-t-as ‘raised’

Verbs whose infinitive contains a root-extending syllable retain it in the past passive participle:

- (202) a. (*inf.*) kalb-ée-ti, (*pst.*) kalb-ée-j-oo → kalb-ée-t-as ‘spoken’
 b. (*inf.*) mat-íi-ti, (*pst.*) maát-ee → mat-íi-t-as ‘seen’

Verbs that do not have a stem-extending suffix normally have a weak root allomorph in the past participle (even though the root allomorph of the infinitive is always strong):

- (203) kél+t+as/-ú/-í/-uú → kél-tas, kél-tu, kél-tí, kél-tuú [M.NOM.SG/INSTR.SG/NOM.PL/GEN.PL]

Suffixal verbs have a strong, dominance-resistant participial stem:

- (204) a. mat-íi-t-as, mat-íi-t-uu, mat-íi-t-uujuu [-as, -uú, -uújuu]
 b. kalb-ée-t-as, kalb-ée-t-uu, kalb-ée-t-uujuu
 c. gvild-én-t-as, gvild-én-t-uu, gvild-én-t-uujuu

Interestingly enough, if the verb displays accent retraction to prefixes in the past tense, it will also show it in the past active participle, even if the segmental content differs:

- (205) a. kél-ti, kéel-ee, pa-kéel-ee → kél-t-as, pa-kél-t-as, pa-kel-t-uú
 b. beí-ti, beér-ee, pá-beer-ee → beí-t-as, pá-beer-t-as, pe-beer-t-uú

This issue is not trivial. If we base the past passive participle entirely on the infinitive and attribute the weakening (dominant) effect to a floating accent introduced as part of the participial formative (i.e. H_{0.5} + /-t-/) at the same cycle where the concatenation of the root and the prefix takes place, then, if we have gradient violations of ASSOCIATE!(H) (we needed to assume this for the past active participle), the weakened root accent will basically always lose to any prefix, ruling out (205-a).

Alternatively, if we assume that the root and the prefix are concatenated and evaluated separately, then the strong infinitival stem should always win over a weak prefix, thus ruling out (205-b).

The problematic aspect of this participle is that it is faithful to two different stems: (a) the infinitive’s stem segmentally and (b) the past-tense stem prosodically. Additionally, the prosodic faithfulness only concerns the position of the accent of the stem, not its strength.

- (206) a. (*inf.*) kél-, (*pst.*) kéel, pa-kéel- → pa-kél-t-
 b. (*inf.*) veík-, (*pst.*) veík-, pá-veik- → pá-veik-t-

Finally, there are exceptions from this pattern. Thus, some of the verbs whose infinitival stem

contains a strong falling root retain this accent in the past passive participle regardless of what kind of accent they have in the past tense:

- (207) a. (*inf.*) dúo-, (*pst.*) dáv-, pá-dav- → pa-dúo-t-
 b. (*inf.*) válgii-, (*pst.*) válg-, pa-válg- → pa-válgii-t-

Upon closer scrutiny, it becomes obvious that this behavior is displayed by the following types of verbs (the examples in the list show the surface accents displayed by these verbs in combination with the strong adjectival formative /-uú/ GEN.PL):

A. Verbs with the extra strong root-extending elements:

- (208) kalbée-t-uu, dainúo-t-uu, giedóo-t-uu, matíj-t-uu, daliń-t-uu

B. Verbs with the extra strong root-extending elements whose accent is, however, on the primary root syllable:

- (209) válgii-t-uu, váikšćioo-t-uu

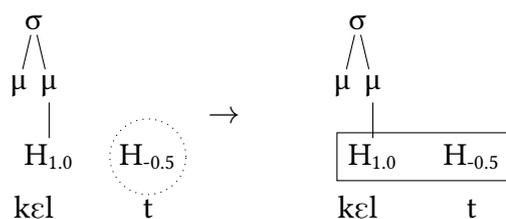
C. The above verb *dúo-ti*, which seems to be a true exception.

The entire plethora of patterns are derived straightforwardly under the following assumption: the suffix of the past passive participle (which has a weakening negatively specified floating accent) is introduced very early, before the root of the verb is even combined with its prefix(es). This is exactly the same assumption as the one I had made for the past active participle. This is a very welcome result since the two past participles neatly pattern together. The only thing making them different is the specification of the floating accent.

- (210) [P_w [St [Pref- P_w] + [St V + H_{-0.5}, -t]] + -uú]

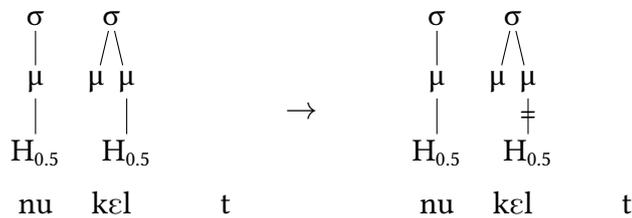
In this case, the root allomorph will be weakened by the suffix of the past passive participle before any other material is added.

- (211) *The weakening of the root by the past passive participle's floating accent:*



Now that the root's accent is weak, it will naturally lose to any prefix (even a weakly accented one):

(212) *Loss of root accent in prefixed forms:*



Naturally, at the word level, when adjectival morphology is added, the surface accent will depend on the strength of the latter (due to the Basic Accentuation Principle).

As far as the roots with extra strong root-extending elements are concerned, we saw above that these elements have an underlying accent with the activity level of [+1.5]. The addition of the past passive participle's marker weakens this underlying accent to [+1.0]. As a result, such a stem will win over weak prefixes and lose to the strong prefix /pĕr-/. This is exactly what happens:

- (213) a. miile_{1.5}e + H_{0.5}-t → miile_{1.0}e-t
 b. nu_{0.5} + miile_{1.0}e-t → nu-miile_{1.0}e-t
 c. pε_{1.0}r + miile_{1.0}e-t → pε_{1.0}r-miilee-t

Finally, I would like to mention verbs which do contain what looks like an extra-strong root extender even though the latter is not accented. If we do assume that such extended roots are not born extended but formed during an early cycle, then, in order for the root to win over the root-extending element, it needs to also have the activity level of [1.5]:

(214) va_{1.5}lg + i_{1.5}i → va_{1.5}lg-ii-

If this is the correct underlying representation, then it is understandable why, once the suffix of the past passive participle is added, these verbs behave exactly like the previous group we have just discussed.¹⁷

¹⁷ It is curious that, in the present and past tenses, these verbs, regardless of whether they retain the root-extending element, behave as if their stems were regular strong ones, since they lose to /pĕr-/ even without being visibly weakened by any element in the structure. We have indeed seen that /pĕr-/ is always invariably accented whenever it is added to any verb with any level of complexity. Perhaps, this prefix has an extra strong underlying accent, as well, which would explain this behavior better than anything else.

4.7.3 The future passive participle

Even though the future passive participle is rarely used, it can be productively constructed from all verbs. The future tense marker and the theme vowel of the future tense are preserved. However, the future tense's accent stability is not adhered to, as the participle has a weak stem, which can be seen in the following example.

(215) $b\check{u}v+s+i+H_{0.5,-m+as}/-ú/-u\check{u} \rightarrow b\acute{u}u-s-i-m-as, b\acute{u}u-s-i-m-u, buu-s-i-m-u\acute{u}$

Again, in root-extending verbs, the stem remains strong:

(216) a. $ra\check{s}\check{i}\check{i}+s+i+H_{0.5,-m+as}/-u\check{u} \rightarrow ra\check{s}\check{i}\check{i}-s-i-m-as, ra\check{s}\check{i}\check{i}-s-i-m-uu$
b. $v\check{a}l\check{g}\check{i}\check{i}+s+i+H_{0.5,-m+as}/-u\check{u} \rightarrow v\check{a}l\check{g}\check{i}\check{i}-s-i-m-as, v\check{a}l\check{g}\check{i}\check{i}-s-i-m-uu$

If it is assumed that the passive participle marker has a weakening effect on all verbs and is added after the future tense has been formed, then the behavior of the future passive participle is an amalgamation of the other two passive participles.

4.8 Chapter summary

This was the third and last theoretical chapter in this dissertation. Its goal was to apply the analyses proposed in the previous two chapters in the verbal domain. The accentual patterns of verbs constitute the most complicated topic in Lithuanian prosody. The reason for this the fact that a verb in Lithuanian is more frequently represented by a longer string of individual morphemes than a noun or an adjective.

Most verbs appear regularly with preverbs. The language also makes extensive use of participle, whose suffixes are often capable of having an impact on the prosody of the resulting form. While the distribution of surface forms seems very irregular at the first glance, I have shown in this chapter that it is actually quite easy to capture if we rely on the core assumptions made in the previous parts of this dissertation.

What makes verbal forms confusing on the surface is the manner in which their component morphemes are combined cyclically. First an foremost, the cyclic order of verbal affixes does not always reflect their surface order in the phonetic component:

(217) $[[V + Agr] + Th] \rightarrow V-(Th)-Agr$

The fact that the theme vowel is added later than the agreement formative makes it possible for

the verbal root to interact with the agreement suffix locally, hence the application of Saussure's Law in given contexts.

A prefixal complex – even though it is evaluated during the stem cycle – has prosodic word delimiters in Lithuanian, making certain processes impossible (such as the coalescence of two accents across the prefix/root boundary). The special delimiting of prefixes also elevates their status in the hierarchy and makes the protection of their accents more important. Therefore, if a root and a prefix with accents of equal strength are combined, the prefix takes precedence:

$$(218) \quad nu_{0.5} + ka_{0.5} \rightarrow nu_{0.5}kas-$$

While certain participial suffixes behave similarly in that they have a fortifying effect on their bases, the timing of the concatenation of these suffixes yields different results on the surface. Thus, the suffix /-nt-/ of the present active participle is added late, after the present-tense form is evaluated. In this case, the root has a chance to interact with the prefix (complex) without the participial morpheme meddling:

$$(219) \quad [[[pa_{0.5} + ka_{0.5}s] + a] + H_{0.5,nt}] \rightarrow [[pa_{0.5}kasa] + H_{0.5,nt}] \rightarrow pa_{1.0}kasant-$$

As for the past active participle, its suffix enters the derivation early, producing a strong stem, but this time without stress retraction to the prefix:

$$(220) \quad [p_{0.5} + ka_{0.5}s + H_{0.5,us}] \rightarrow paka_{1.0}sus-$$

The timing of the introduction of various morphemes is therefore crucial for the surface distribution of accents. If we assume a cyclic model where each derivational and inflectional morpheme has its time slot, the seemingly random accentual properties of various verb forms become completely regular, with very few true exceptions.

Chapter 5

Discussion and conclusions

5.1 Discussion

This final part of the dissertation will summarize and systematize everything I have said above. This dissertation has made several theoretical claims, and I would like to provide an overview of them, considering their advantages and potential shortcomings at the same time.

Claim 1. Underlying accent strength.

The main claim of the dissertation is that underlying accents in Lithuanian can vary in strength. In the traditional analyses of Indo-European pitch accent systems (languages like Greek, Sanskrit, Russian and others), strong morphemes are assumed to have an underlying accent, while weak morphemes are believed to be accent-free (Halle and Vergnaud, 1987a,b; Blevins, 1993; Revithiadou, 1999). In Lithuanian, this set of assumptions is not sufficient to derive all the data correctly. As far as nominal accentuation is concerned, I was able to identify several crucial issues that remained unresolved until now.

If we combine together the weak stem *kɛlm-* and the weak inflectional ending *-as*, then, according to the Basic Accentuation principle (as it is defined in the traditional analyses), a default accent should be inserted at the left edge of the resulting phonological word. This is exactly what happens:

$$(1) \quad kɛlm + as \rightarrow kélmas$$

Let us now consider the weak stem *nuostab-* and the weak ending *-uu*. Following the logic of the previous example, the following output is predicted:

$$(2) \quad nuostab + uu \rightarrow *núostabuu$$

The correct output is, however, *nuostaábuu*. The ‘epenthetic’ accent does not surface at the left edge of the word. For weak stems like *vilk-*, Blevins (1993) assumes that they have an extraprosodic leftmost mora, i.e. the underlying representation is *v<i>lk-*. For this latter stem, the output is predicted correctly:

$$(3) \quad v<i>lk + as \rightarrow vílkas$$

But how about the stem *nuostab-*? In this case, one would have to assume that its initial two moras are extraprosodic in order to insure that the accent is placed on the third mora (the fourth mora is added due to automatic lengthening of /a/). For longer stems of the type *nuostab-*, Blevins (1993) assumes that they have a floating tone near their right edge (I will return to this shortly). This means, however, that stems like *vilk-* and *nuostab-* are underlyingly different

and rely on different principle for the correct derivation of their surface accents. I do not believe this should be the case.

My proposal is different from what has previously been assumed for Lithuanian and other Indo-European languages. The core of the idea is that underlying accents can vary in strength. The underlying strength of a lexical accent has determines how costly it is to obliterate this accent in the surface realization. Since Lithuanian permits only one accent to be pronounced on the surface, it becomes less costly and therefore preferable to remove the weaker one of two underlying accents within a phonological word:

- (4) a. $k\varepsilon_{0.5}lm + a_{1.0}ms \rightarrow k\varepsilon lmáms$
 b. $va_{1.0}rn + a_{0.5} \rightarrow várna$

In case the two lexical accents are equal in their strength, then the morphological head (i.e. the stem) will be given precedence over the inflectional ending (cf. [Alderete, 2001b](#); [Revithiadou, 1999](#)):

- (5) a. $va_{1.0}rn + o_{1.0}oms \rightarrow várnooms$
 b. $k\varepsilon_{0.5}lm + u_{0.5} \rightarrow k\varepsilon lmu$

Crucially, in this system, no extraprosodicity or floating root accents are needed. Every nominal root/stem contains an underlying accent, which can be weak or strong. Therefore, the underlying representations for the above roots are the following ones:

- (6) $k\varepsilon_{0.5}lm-$, $nuosta_{0.5}b-$, $vil_{0.5}k-$

This straightforwardly predicts where the accent will fall within the root in case the root surfaces with the main word accent after the phonological optimization has taken place. One simple mechanism thus predicts the behavior of all nominal (and verbal) stems in the language.

One more advantage of this approach is that, for inflectional endings, we can assume a three-way distinction: (a) affixes with no lexical accent¹; (b) affixes with a weak underlying accent; (c) affixes with a strong underlying accent.

- (7) (a) $-as$, (b) $-u_{0.5}$, (c) $-a_{1.0}$

The distinction between (a) and (b) is absolutely crucial because it determines whether or not a given affix is capable of triggering the accent shift known as Saussure's Law. At the

¹ Endings are allowed to not have any accent because they are subordinate morphemes.

first glance, the endings *-as* and *-u_{0.5}* are identical in their behavior despite their different underlying representations:

- (8) a. $k\varepsilon_{0.5}lm + as \rightarrow k\acute{e}lmas$
 b. $k\varepsilon_{0.5}lm + u_{0.5} \rightarrow k\acute{e}lmu$
- (9) a. $ka_{1.0}im + as \rightarrow k\acute{a}imas$
 b. $ka_{1.0}im + u_{0.5} \rightarrow k\acute{a}imu$

The difference between these two affixes becomes visible when they are combined with stems whose underlying accent is located on the their rightmost mora:

- (10) a. $var_{0.5}p + as \rightarrow var\acute{p}as$
 b. $var_{0.5}p + u_{0.5} \rightarrow \underline{varp\acute{u}}$
- (11) a. $in_{1.0}d + as \rightarrow i\acute{nd}as$
 b. $in_{1.0}d + u_{0.5} \rightarrow \underline{ind\acute{u}}$

The two examples above show us that, in case two underlying accents clash at the right edge of the word, the above preferences for strong accents over weak ones and for stems over inflectional affixes are overridden, and the surface accent is right-aligned. In the traditional analyses, the endings in (7) can only have two types of underlying representations: one with and one without a lexically specified accent. This is exactly the reason why the analysis in Blevins (1993) fails to derive the application of Saussure’s Law correctly. In order to maintain the three-way contrast, one could resort to lexically indexed constraints or some other such means. In the system I propose in this dissertation, the interactions between roots and inflectional endings are transparently based on their underlying representations. The only enrichment I have introduced is that, in addition to being accented or accent-free, accented morphemes can also be specified as strong or weak.

The above accent shift brings us to the second major point I make in the current thesis.

Claim 2. Harmonic grammar cannot derive all types of cumulative effects.

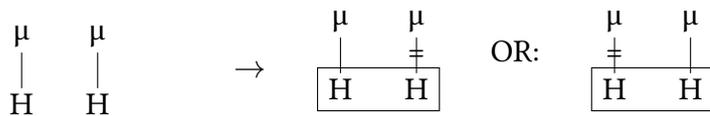
We saw above that the accent shift is triggered when two underlying accents collide at the right edge of a phonological word. In this case, the relative strength of the two accents is ignored and the surface accent is always on the final mora:

- (12) $-\acute{\mu}\acute{\mu}\# \rightarrow -\mu\acute{\mu}\#$

In order to derive this behavior, I began by making the crucial assumption that, every time two

accents land on two linearly adjacent moras after two morphemes have been concatenated, they coalesce into one accent. The coalescence happens in order to prevent one of the two accents from being removed entirely. With one association line having been deleted, the resulting merged accent is only associated with one mora of the structure. Which mora this will be is normally governed by the above-mentioned basic accentuation principle.

(13) *Two accents coalescing:*



When two accents coalesce, a low-ranked constraint is violated: *COAL(H-H). In most cases, this violation is insignificant and does not have a visible impact on the output. What makes the right edge configuration special is that, every time the accent is not right-aligned in the output, another low-ranked constraint is violated which requires the accent to always be at the right edge of a phonological word (R). The idea behind my analysis is that the cumulative violation of *COAL(H-H) and R is stronger than the principles behind the basic accentuation pattern we saw above. In this case, however, the Harmonic Grammar framework runs into a challenge.

The cumulative effects in grammar that HG is naturally capable of capturing relate on clear-cut asymmetric trade-offs between constraint violation profiles. Let us imagine that we have the following ranking of constraints –

(14) $A \gg B \gg C$

– and two candidates, α and β . Candidate α violates only constraint A, while candidate β violates B and C to the exclusion of A.

(15) *An asymmetric trade-off between violations:*

Input	A	B	C
α	-1		
β		-1	-1

In this configuration, if the sum of the respective weights of B and C is greater than the weight of A, candidate α will end up with a better harmony profile and win in the competition. In case of the above interaction, every time two accents coalesce, the constraint *COAL(H-H) will be violated by all viable output candidates.

(16) *Lack of an asymmetric trade-off between violations:*

Input	A	B	C
α	-1		-1
β		-1	-1

Since cannot selectively turn off the violation of C by candidate α , this candidate will always lose to the more harmonic profile of β . This problem is discussed at length in [Mueller \(2017\)](#). My solution for this problem was the concept of *Resonance*. Two constraints can resonate if they are simultaneously violated by one and the same candidate within a given local domain. During resonance, the multipliers of the respective constraints increase, significantly lowering the candidate's overall harmony score:

(17) *Constraint resonance:*

Input	A	B	C
α	-1		-1
β		-2	-2

As far as Sussure's Law is concerned, the constraints *COAL(H-H) and R are capable of resonating when they are both violation within their local domain: the very right edge of the phonological word. When the resonance takes place, the optimal candidate is the one not violating R, i.e. the one where the surface accent coincides with the right edge.

Claim 3. Dominance can be derived using floating accents.

Dominance is a phenomenon that traverses the entire grammar of the Lithuanian language. Numerous derivational suffixes, as well as multiple participial suffixes have this effect on their bases. Sometimes, a dominant morpheme does not contribute its own pre-linked underlying accent, but it changes the strength of the stem it is appended to.

(18) $\acute{e}ln + \epsilon n \rightarrow \acute{e}ln\epsilon n-$

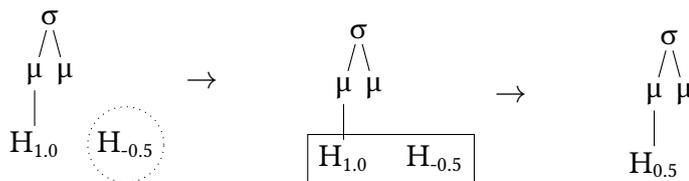
Interestingly enough, the reverse effect is also observable in Lithuanian (again, with a range of various morphemes):

(19) $vi\acute{l}k + i\acute{s}k \rightarrow vi\acute{l}ki\acute{s}k-$

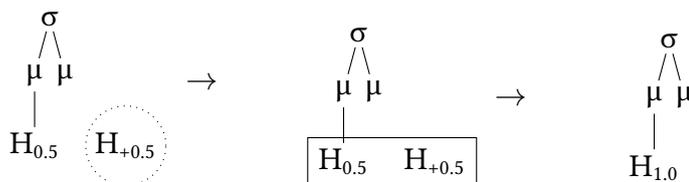
Since Lithuanian displays both dominance (i.e. weakening) and fortification effects, I consider

it rations to provide a uniform explanation for both phenomena. I capture these effects by claiming that certain morphemes introduce a separate exponent (before their segmental material is added) in the shape of a floating accent. The floating accent of a dominant/fortifying morpheme docks onto the existing accent of the base. The weight of the resulting accent is the sum of the two original weights. If a floating accent can be specified negatively (a kind of phonological ‘anti-matter’), the accent of the base will be weakened. Otherwise, it will be reinforced.

(20) *Dominance:*



(21) *Fortification:*



The advantage of this approach is in its simplicity, yet great predictive power: with just two different kinds of floating accents, one is able to account for a whole range of accentual patterns in the language. The process where two accents coalesce is independently motivated in the language: it helps account for the Saussurian accent shift. The exact same operation can be applied to capture a seemingly unrelated pair of phenomena.

Claim 4. Phonological derivations proceed in a cyclic manner.

Classic OT is a framework where morphological structures, no matter how complex they are internally, are evaluated in parallel. This assumption has proven to be empirically challenging, with various ways of splitting evaluations into smaller chunks, e.g. Stratal OT (Bermúdez-Otero, 2010; Kiparsky, 2000), or slowing them down, e.g. Harmonic Serialism (McCarthy, 2010), having emerged over the years.

Stratal OT is an appealing framework because here, phonological derivations follow the morphological composition of morphemes into larger units. Thus, optimization of smaller formations can take place before more material is added. This allows for a straightforward way to account for such phenomena as opacity (Bermúdez-Otero, 2010).

The machinery I have used in this dissertation is not as powerful as Stratal OT. One key features of Stratal OT is the fact that constraints may be re-ranked between different levels.

While I am not making a claim that this will never be needed for any aspect of Lithuanian phonology, I can say with confidence that one single ranking of the major constraints was enough to capture the accentual phenomena we have looked at. I therefore call the framework of this dissertation *Cyclic Optimality Theory* (rather than *Stratal*).

The advantage of splitting phonological evaluations of words into smaller chunks became particularly obvious when looking at the accentual pattern of Lithuanian verbs. One of the phenomena we dealt with was the interaction between verbal roots and agreement endings, which was not disrupted by an intervening theme vowel:

- (22) a. kás+Ø+ú → kasú [normal application of Saussure’s Law under locality]
 b. kás+a+ú → kasaú [application of Saussure’s Law despite intervention]

It has been argued prior to the writing of this dissertation that the linear order of morphemes in a language does not always reflect their compositional order (Kiparsky, 2017). Under the assumption that the theme vowel is cyclically introduced after the verb has been combined with the agreement marker, the locality condition for the application of Saussure’s shift is met before it is obliterated on the surface during a later cycle where the theme vowel is added (in other words, the introduction of the theme vowel counter-bleeds the application of Saussure’s Law):

- (23) [[kás + ú] + oo] → [kasú + oo] → kasaú

Another piece of evidence for the importance of the exact timing of phonological evaluations came from the intricate system of Lithuanian participles. The present active and the past active participles are notorious for always having a strongly accented stem, even when the respective finite forms (one whose root allomorphs these participles are based) are weak. At the same time, the precise location of the accent within the stem tracks the location of weak accent for the present active participle, but is fixed on the root in the past active participle. In order to capture this difference, I proposed that the cyclic composition of the respective participial stems is not the same. While the suffix of the present active participle triggers a separate phonological cycle after the root and the prefix have had a chance to communicate independently, the suffix of the past passive participle is introduced early enough and can therefore interact with the base’s morphological parts immediately:

- (24) a. [[[pá + pɛrk] + a] + H_{0,5},-nt] → [[[pápɛrk] + a] + H_{0,5},-nt] → [pápɛrka + H_{0,5},-nt] → [pǎpɛrka + nt] → pǎpɛrkant-
 b. [pá + kás + H_{0,5},-us] → [pakás + us] → pakásus-

In the first one of the two examples above, the prefix and the root are evaluated separately, resulting in the accent of the prefix winning over that of the root. The prefix's accent is then fortified by the floating accent of the participial formative. In the second example, the three morphemes interact within one cycle, resulting the fortified accent to show up on the root, not on the prefix.

5.2 Research plans

Lithuanian phonology is a very vast topic. In fact, the phonology of every language is probably a vast topic. With the total volume of under two hundred pages, this dissertation cannot possibly account for every single aspect of Lithuanian prosody. In the list below, I would like to mention just a few of the topics that I would like to focus on in the future:

- A. The peculiar distribution of strong and weak stems in the verbal domain. In Chapter 4, I provided a description of the types of verbal stems that have weak accents. Even though these stem types are quite different from each other, basically every verb matching the criteria for one of these types will also display this behavior. My current intuition is that there is a mechanism that determines a verbal root's prosodic characteristics at the root level. Analogy may play a role in this, as well ([Guzmán Naranjo, 2017](#)).
- B. The marked vs. unmarked status of the two contours observed in heavy syllables. Many have pointed out that the rising pattern is the unmarked member of the pair (e.g. [Pakerys, 1995](#); [Girdenis, 2003](#)). We have seen that there is a preference for word accents to be right-aligned in Lithuanian. All by itself, this preference has quite a low ranking in the language. There appears to also be a preference for prominence to also be right-aligned within syllables. I did not include elaborate metric structures in my analyses above. Perhaps, the alignment preferences have something to do with the trochee/iamb distinction familiar to us from many other languages.
- C. Lithuanian compounds (not discussed in this thesis), and also simple inflected forms in many Lithuanian dialects, have primary and secondary accents. In the analyses above, I assumed that obliterated accents were lost between cycles. This may very well be true for most word forms in the standard language. However, the dialectal patterns (found especially prominently in Low Lithuanian) with secondary accents seem to require a more fine-grained approach, probably based on theories including concepts such as *Containment* ([Trommer, 2011](#)) and pronounceability thresholds ([Goldrick and Smolensky, 2016](#)).

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Appendix I. The notation

The notation used in this work is a practical transcription of the standard Lithuanian orthographic system. The most important aspect of it is that long vowels are always written down using digraphs, which makes it possible to show the exact position of an accent within heavy syllables featuring long monophthongs.

Conventionally, Lithuanian uses single letters to indicate long vowels:

(25) ū [u:], o [o:]², y [i:], é [e:]

I will depart from this convention and always employ digraphs in these instances (see table below).

When the underlyingly short vowels *a* and *e* /ɛ/ are lengthened in certain environments conditioned by phonological and morphological factors, this is not marked in traditional Lithuanian orthography. The following two letters are therefore ambiguous:

(26) a. a → [a] or [a:]
b. e → [ɛ] or [ɛ:]

(27) kas [kas] ‘he will dig’ ↔ kasa [ka:sa] ‘he digs’ ↔ kasiu [kasʲu] ‘I will dig’

I will be indicating this length consistently in my representations.

Additionally, if a long vowel goes back to a combination of a short vowel with a subsequently absorbed nasal, it is written with a hook under it:

(28) a. rūkas [ru:kas] ‘smoke’ ↔ siųsti [sʲu:sʲtʲi] ‘to send’ « /siunt+ti/
b. mano [ma:no:] ‘he thinks’ « /man+o:/ ↔ mąsto [ma:sto:] ‘he considers’ /man+st+o:/

I will not be making a distinction between the various origins of long vowels and always use digraphs for all long vowels alike.

The letters *e* *ę* are used for the long and short low front vowel in standard Lithuanian orthography. I will instead use the IPA symbol [ɛ] for this sound.

Finally, I will disregard the tense-lax distinctions between long and short high vowels. I will therefore write [i] and [u], while the real pronunciation is [ɪ] and [ʊ].

The resulting vowel mappings can be seen in Table 1.

² This one also indicates the short [o].

Vowel	Traditional writing	Example	Transcription	Example
[i:]	y,į	vyras, lį sti	ii	vi iras, li sti
[i]	i	p ik tas	i	pik tas
[e:]	ė	lė tas	ee	le etas
[ɛ:]	e,ę	lesa, spr ę s	ɛɛ	lɛɛsa, sprɛɛs
[ɛ]	e	les	ɛ	les
[u:]	ū,ų	s ū nų	uu	su unuu
[u]	u	butas	u	butas
[o:]	o	lopas	oo	lo op as
[o]	o	šokas	o	šokas
[a:]	a,ą	nam ą	aa	na am aa
[a]	a	kas	a	kas

Table 1: *The notation used in this work for Lithuanian vowels.*

The two monophthongs with diphthongal surface quality (i.e. *ie* and *uo*), as well as all the bi-phonemic diphthongs will be written as they are in Lithuanian orthography, except for *ei* which I will render as ϵi .

As far as the consonants are concerned, I will write them as they are written in Lithuanian orthography. Thus, the consonants [ʃ ʒ tʃ dʒ] will be written as *š, ž, č, dž* respectively. I will not indicate automatic palatalization before front vowels. Palatalization before back vowels is marked using the letter *i* between the consonant and the vowel. Again, this is standard practice in Lithuanian orthography:

(29) *siuva* [sʲuva], *gɛɛnioo* [gʲɛ:nʲo:]

If there are instances of deviation from the standard way of writing Lithuanian consonants anywhere in this dissertation, I will mention this overtly.

Appendix II. Abbreviations

1 - first person, 2 - second person, 3 - third person, μ - mora, σ - syllable, φ - phi-features (gender, number, person), ACC - accusative, ACT - active, AFF - affix, COND - conditional mood, CONV - converb, DAT - dative, DEF - definite, DU - dual, EP - epenthetic, F(EM) - feminine, FUT - future, GEN - genitive, IMP - imperative, INF - infinitive, I(NSTR) - instrumental, LOC - locative, M(ASC) - masculine, NEG - negation, NOM - nominative, PASS - passive, PL - plural, PN - personal name, PREV - preverb, PR - prefix, PRS - present (tense), PST - past (tense), PTCP - participle, REL - relative, REP - repetitive, RFL - reflexive, SG - singular, ST - stem, TH - theme vowel, VOC - vocative.