Rethinking the morphophonology of Estonian quantity

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Abstract

In this paper, I propose that quantity alternations in Estonian nominals need not be derived by morphophonological rules which directly manipulate foot structure according to the case form in which a word appears, but instead that by using the correct underlying forms of roots and case suffixes, the correct footing can result from algorithmic parsing of moraic structure.

This is accomplished by assuming that the genitive and partitive case suffixes consist only of prosodic material, and get their vowel quality by picking up a "floating" phoneme which is present underlyingly on the root. The partitive case contains a mora, and so it appends a new syllable to a bimoraic root, leaving the first syllable heavy (Q3), while the genitive case does not contain its own mora, and so by borrowing a mora from the root, the first syllable is left light (and thus in Q2).

1. Introduction

Estonian is well known in generative phonology because it is said to possess a three-way quantity distinction. In this paper I will survey the extent to which the three-way distinction exists, and review several previous analyses which have been put forth to account for it. I will then present a novel analysis for the data which derives the correct surface distinctions. Crucially, my analysis does not rely on morphophonological rules which directly manipulate prosodic structure, as do many previous analyses.

1.1. Data

Estonian has a number of surface minimal triplets for the three degrees of quantity, some examples of which are shown in (1). There can also be a two-way distinction in diphthong length, between long (Q2) and overlong (Q3), as in the genitive and partitive case forms of *laulu* 'song'. There is no short (Q1) example, as diphthongs do not have short forms.

(1)

"short"	"long"	"overlong"
Q1	Q2	Q3
vina	viina	viiːna
'vapour' (nom.)	'vodka' (gen.)	'vodka' (part.)
lina	linna	linːna
'flax' (nom.)	'city' (gen.)	'city' (part.)
	laulu	lauːlu
	'song' (gen.)	'song' (part.)

When we examine the nominative, genitive, and partitive forms of a single root, however, we find a pattern of alternations. The nominative case is a monosyllabic word, always in Q3, while the genitive and partitive cases have a second syllable whose vowel is not predictable based on the surface nominative form. The genitive case will appear in Q2, while the partitive will appear in Q3.

(2)

Nominative Q3	Genitive Q2	Partitive Q3	
viiːn	viina	viiːna	‘vodka’
linːn	linna	linːna	‘city’
lauːl	laulu	lauːlu	‘song’
suuː			‘mouth’

While bisyllables can show the three-way quantity distinction, all monosyllabic words in the language, with the exception of some function words, appear in Q3. This includes words which do not fit into the paradigms being examined here, such as the word for ‘mouth’ in (2). For native CVCV (Q1) nominals, there is no grade alternation, and instead all three forms are homophonous:

(3)

Nominative Q1	Genitive Q1	Partitive Q1	
vina	vina	vina	‘vapour’
lina	lina	lina	‘flax’

This paper will focus on nominals belonging to the paradigms shown in (2), focusing on how to derive the Q3-Q2-Q3 alternations.

1.2. Previous analyses

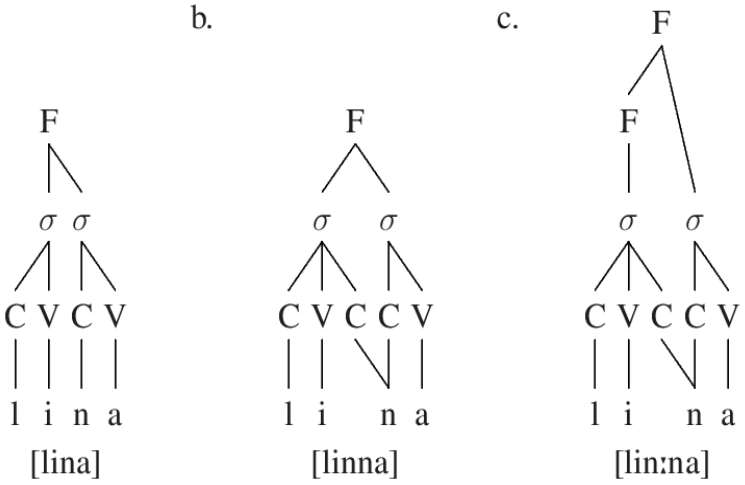
Standard descriptions of Estonian (Viitso, 2003: 12) describe a two-way distinction in length and a two-way distinction in weight. Thus Q1 syllables are light and short, but long syllables (Q2 and Q3) are distinguished from each other as being either light or heavy:

(4)

	Short	Long
Light	Q1	Q2
Heavy		Q3

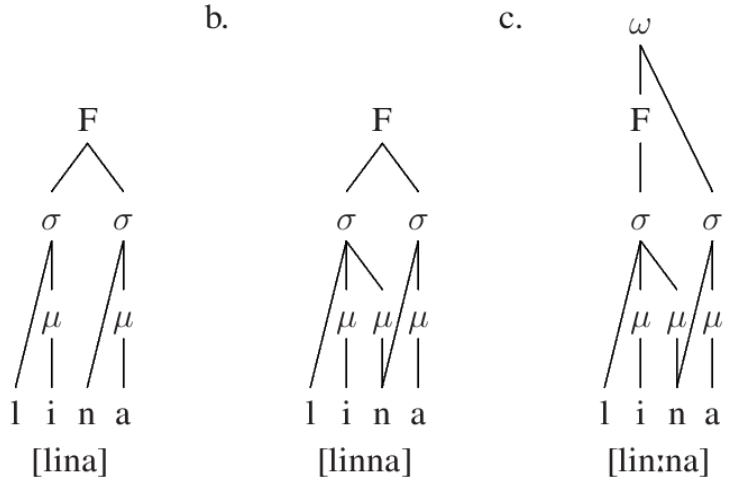
Prince (1980) analyses the light/heavy distinction using recursive foot structure. Q1 (5a) and Q2 (5b) each consist of a single bisyllabic foot. The distinction between short (Q1) and long (Q2) is represented in terms of syllable length, using C and V timing units. To represent an overlong syllable, as in (5c), the first syllable forms a monosyllabic foot by itself, and this foot serves as the head of a second foot, which also contains the second syllable. In this way, the overlong syllable can be thought of as forming its own quantity unit, a foot.

(5) a. b. c.



Odden (1997) suggests that instead of using recursive foot structure, the second syllable in Q3 words can be attached directly to the prosodic word, as in (6c). Such a system still uses the notion of the Q3 syllable forming its own foot, but does not allow feet to contain other feet. Another difference between Prince's and Odden's analyses is that Odden represents quantity with moras rather than with C and V timing units.

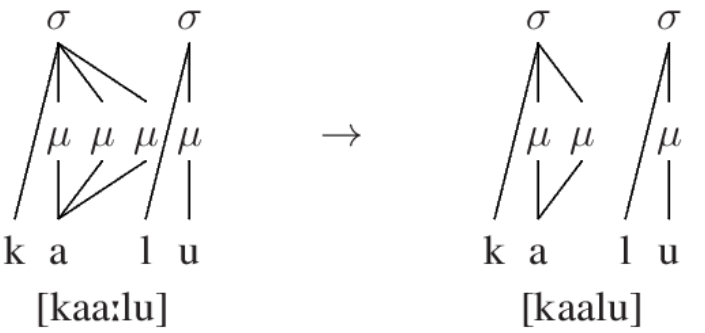
(6) a. b. c.



As we will see below, I propose something of a hybrid model distinguishing length and weight, which is more in line with the description in (4), i.e. timing units represent length (short/long) while moras represent weight (light/heavy), which together account for the two dimensions of contrast.

Hayes (1989: 296), on the other hand, uses moras rather than higher prosodic structure in a very literal manner to represent the three-way distinction: Q1 syllables are monomoraic, Q2 syllables are bimoraic, and Q3 syllables are trimoraic. In his model, Q2 is derived from a Q3 form by deleting its third mora:

(7)



Each of the three analyses discussed above has its problems. I agree with Prince (1980) and Odden (1997) in that they represent a Q3 syllable as forming its own prosodic unit, but they fall short because they require morphophonological rules which directly manipulate this prosodic structure. In other words, they require specific phonological processes which are aware of morphological information (meaning), applying only for certain forms. For example, a Q3 rule might need to say: “give the first syllable its own foot when the syntactic word is in the partitive case”. Futhermore, these rules must reference and modify structure, namely foot structure, which should be parsed from lower structure, rather than present and manipulable in underlying forms.

Hayes (1989), on the other hand, requires the manipulation of moras, which I do assume to be underlying, but again requires rules which are aware of morphological information. Furthermore, Hayes’s analysis requires somewhat uneconomical derivation, whereby a trimoraic (Q3) syllable is formed, only to have one of these moras deleted in order to get a bimoraic (Q2) syllable.

2. Analysis

In this section I will outline my analysis of Estonian quantity, in which higher levels of prosodic structure are parsed from lower moraic structure. This moraic structure is derived by adding genitive and partitive suffixes which contain only prosodic material (but no segmental content) to roots which surface as monosyllabic when used alone. This crucially allows the correct prosodic structure, and thus the three-way quantity distinction, to be derived without morphophonological rules which directly manipulate non-underlying prosodic units.

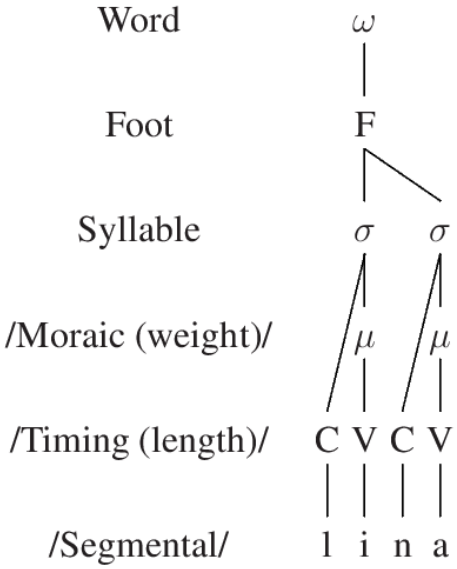
2.1. Representations

I draw a distinction between segmental and prosodic underlying material on the one hand, and parsed prosodic structure, which is part of the surface representation, on the other. The diagram in (8) shows the levels of phonological structure

which I will be assuming in my analysis.

The tiers in /slashes/ are those which can be used in underlying representations and manipulated by phonological processes, while those at higher levels are parsed algorithmically based on lower (underlying) prosodic structure. Furthermore, it is possible for the underlying form of a given morpheme to contain members of different (underlying) tiers independently of each other.

(8)



We can now turn to the question of what is contained in the underlying form of a root. What is the status of the vowel in the second syllable of words like those shown in (2) above? Prince has said of such vowels:

> It is plausible to assume that the nominative singular is generally derived by deletion of a stem-final vowel that shows up in the other cases and before derivational suffixes (Prince, 1980: 534).

However, it is not actually so plausible to assume this. First of all, only four of the nine vowels in Estonian participate in this "deletion", /i, e, a, u/, and furthermore, there are exceptions, even with such vowels. Although a number of these exceptions are proper names, not all of them are, and not all proper names are exceptions, so no definite generalisations can be made.

I propose instead that roots do not underlyingly have any timing units or moraic material which could be parsed into a second syllable. The segmental material for a second syllable, however, is present, in the form of a "floating phoneme" (Sloan, 1991), which is shown underlined in (9). When the root is used by itself with no suffixes (as in the nominative singular), the floating phoneme is not realised, and the single bimoraic (and thus heavy) syllable is able to form its own foot. This has the effect of realising all monosyllables in Q3, while allowing nominative singulars to avoid needing to undergo deletion of their final

syllable. The information about what vowel the second syllable would contain, however, is encoded in the floating phoneme rather than in a full vowel which is deleted.

(9) a.

‘city’

b.

‘flag’

There is, however, a single exception to the non-realisation of the floating phoneme. Four consonants in the language are said to have phonemically “palatalised” counterparts: /t, s, n, l/, and there are surface minimal pairs for palatalisation, such as those in (10). However, the opacity is lost in forms besides the nominative, where we see that the palatalised variants surface with the vowel /i/ in the second syllable, whereas the vowel following non-palatalised consonants is unpredictable:

(10)

Nominative	Partitive	
hal:l	hal:la	‘frost’
haĺ:l	haĺ:li	‘hall’
nut:t	nut:tu	‘crying’
nuť:t	nuť:ti	‘smartness’

For palatalised consonants, the floating phoneme is /i/. However, rather than simply having no effect at all, it spreads to the consonant, where it causes palatalisation.

2.2. Deriving Q2/Q3 bisyllables

In order to derive surface forms of the genitive and partitive cases with the correct quantity using the kind of underlying representations for roots which I outlined above, we need case suffixes which introduce only prosodic material, but lack segmental material. The underlying form of the partitive case suffix is as in (11). It contains only a V timing unit linked to a mora; it is a moraic vowel with no quality.

(11)

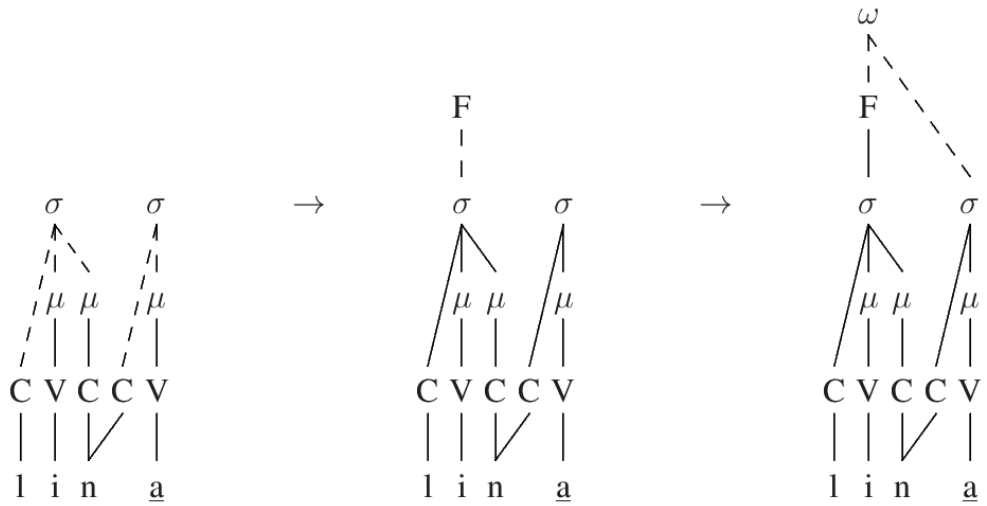
‘partitive’

When this morpheme is suffixed to a stem, the V timing unit picks up the floating phoneme. Because this phoneme is now hosted by a timing unit and has mora (and is thus not weightless), it can be realised as a vowel in the second syllable:

(12)

The words are then parsed into syllables and then feet. Assuming that Estonian feet are bimoraic, the representation in (13) gives us a bimoraic foot which is coextensive with a syllable, and because bimoraic syllables are heavy (and long) the syllable is spelled out in Q3. As per Odden’s (1997) analysis, the final syllable is then extrametrically appended directly to the word level:

(13)



The genitive case suffix also brings only prosodic material, without any segmental material. As seen in (14), the genitive consists only of a V timing slot, but does not come with its own mora. In this sense, it can be thought of as a morpheme which cannot on its own form the nucleus of a second syllable.

(14) / V /

‘genitive’

As with the partitive case suffix, the V timing slot of the genitive case associates

with the floating phoneme:

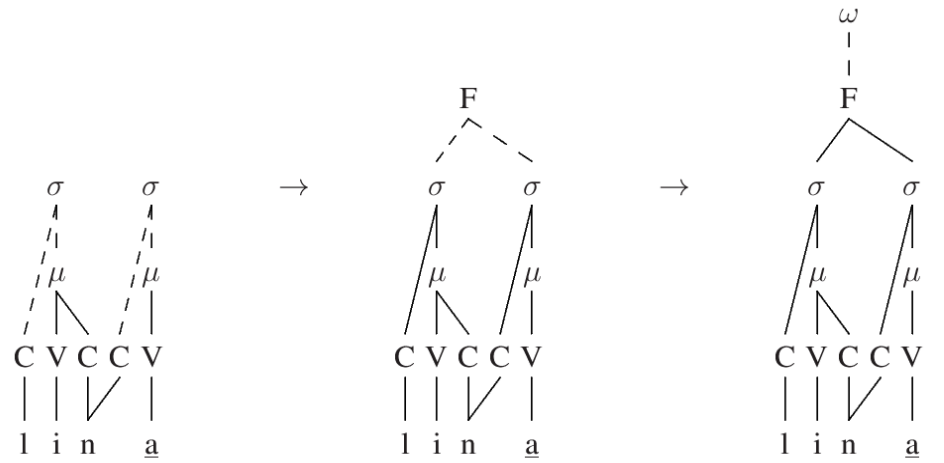
(15)

However, the floating phoneme still cannot be realised as a vowel, because it is weightless, i.e. it is not hosted by a mora. In order to fix this, the suffix "borrows" a mora from the stem, leaving the stem monomoraic:

(16)

Again, the syllables are parsed. Unlike with the partitive, here both syllables are monomoraic, and thus light. Both syllables are then parsed together into a single bimoraic foot. No syllable in the word is in Q3, because none of them form a foot, but because the first syllable is long, as its rhyme contains more than one timing unit, it is produced in Q2:

(17)



It should be noted that the mechanisms used in this analysis are not without precedent. Carvalho (2004) similarly uses floating phonemes for theme vowels on Portuguese verbs, which associate with vowel timing slots in particular contexts, and Baal et al. (2012) use a suffix consisting of a floating mora in order to derive a surface three-way quantity distinction in North Saami from an underlying two-way distinction.

3. Conclusion

In this paper, I have provided an analysis of Estonian nominal phonology which correctly derives the "gradation" between Q2 and Q3 of the genitive and partitive case forms based on several simple assumptions. Roots are assumed to resemble their (nominative) citation forms prosodically in that they are underlyingly bimoraic and lack the means to realise their final syllables. Because Estonian uses bimoraic feet, all monosyllables surface as their own feet, and thus in Q3. A suffix with its own mora (the partitive) allows the first syllable to retain two moras and be parsed as its own foot as in the nominative, causing it to surface in Q3, while a suffix without its own mora (the genitive) forces the first syllable to give up a mora, resulting in its realisation in Q2.

The analysis proposed here works without requiring morphophonological rules which directly manipulate non-underlying (parsed) prosodic structure, and it furthermore does not require stipulation of (often exceptional) stem-final vowel deletion in the nominative case. Instead, accepted assumptions about weight and length are combined with the notion of non-segmental case suffixes which combine with "floating" phonemes in order to realise the second syllable vowel of cases besides the nominative.

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