The phonological word in Tilburg Dutch: Government phonology and a city dialect of Dutch

Swets, F.H.C.

Citation for published version (APA):
5 Phonological word domains

5.1. Introduction

In the preceding chapter the alternations between tense and lax vowels in Tilburg Dutch were discussed. I argued that alternations between tense and lax vowels and between long lax and short lax vowels are not of the same type although they occur in the same environment: before inflectional and derivational suffixes. My proposal was that the alternation between tense and lax is accompanied by the raising of the vowel. Thus, one cannot speak of an alternation conditioned by syllable structure alone. The discussion of tense/lax alternations already drew attention to the interaction between morphology and phonology. In this chapter, this interaction will be the main issue. Once again the subject of this chapter is to some extent a consequence of the fact that standard GP theory does not seem to be able to account for the relevant Tilburg Dutch data. The analysis which we expect to be applicable in such a case – the analysis of Closed Syllable Shortening - does not appear to work. I will show, however, how GP theory explains the data referred to and is also able to provide new insights.

In a Tilburg Dutch word such as [jëit] ‘goat’, a long lax vowel corresponds to a vocoid sequence in standard Dutch: [xeit]. However, in both varieties, we find forms such as [reit] ‘drives’, with a vocoid sequence. As argued in Chapter 3, in Tilburg Dutch single I and U elements only occupy a consonantal position if forced to do so by the lack of less sonorous elements. Consequently, we do not expect a form such as [reit]. In such a form FINAL-C appears to be satisfied by the final [t]. The difference between the final [t] in [jëit] and the one in [reit] is that in the first case the coronal obstruent is part of the lexical morpheme while in the other case the [t] is an inflectional morpheme. Apparently, the inflectional character of the obstruent makes it irrelevant with regard to FINAL-C.

Another situation is found in vowel shortening. Affixation of an inflectional coronal obstruent does not seem to affect the elemental make-up of the rhyme - /reit/ does not become *[reit] -, as demonstrated above. However, it does affect the number of skeletal positions the nucleus is linked to - in other words, the inflectional character of the obstruent does not make it irrelevant for vowel length. Consider the examples in (1).

(1) a. No change in rhyme before an inflectional coronal
   reiə ‘to drive’  tık rei ‘I drive’  hei reit ‘he drives’

---

1 It is not clear whether the vowels of such words are long or short. Boutkan & Kossmann (1996:83) give for instance /reiə/, /leiə/ for ‘to drive’ and ‘to suffer’ respectively, whereas Van Rijen (1993:16,18) gives /reia/ etc. with long lax vowels. The latter author reserves the
The examples in (1a) and (1b) appear to be contradictory. As indicated by the different effects of mono-morphemic versus inflectional [t] on the character of the vocoid in the rhyme (diphthong-like or not)(cf. 1a), an inflected word consists of two word domains; this is of course irrespective of whether the nucleus consists of a diphthong-like structure or of a long lax vowel. If that is indeed the case, shortening is not really what we expect. As an illustration, consider the structural representations and phonetic forms in (2).

(2) a. \( \text{rei}0 \text{t0} \) [reit]

b. \( \text{lup}0 \text{t0} \) [lupt] *\([\text{lupt}]\)

Following GP theory phonological domains are followed by an empty nucleus. This gives rise to the representations in (2). The verbal forms consist of a morphological stem and an inflectional affix. The form we expect in (2b) is *\([\text{lupt}]\), with a long vowel in the nucleus because there is no reason for vowel shortening to take place. This is the main problem I try to solve in this chapter.

In order to be able to account for the forms in (2a) and (2b) we have to understand how to deal with the morphology-phonology relation in general. Therefore, section 5.2 is devoted to a discussion of the way in which morphological structure is reflected in phonological structure. The subject of recursiveness in phonology is discussed and connected with the GP view of phonological domains. Finally, this section illustrates these views in the analysis of Final-C in inflected words in Tilburg Dutch. Section 5.3 deals with the shortening of long lax vowels. In 5.3.2, vowel shortening before inflectional coronal obstruents is discussed, after which other inflectional suffixes are considered. I will briefly touch on the subject of derivational suffixes and vowel shortening in 5.3.3.

5.2. The reflection of morphology in phonological structure

Before we are able to argue that the affixation of an inflectional segment has no affect because Final-C is restricted to the internal domain of the word, we have to agree that a word may consist of more than one domain. The existence of word-internal domains is less evident in Tilburg Dutch than it is in Standard Dutch.

short stems for the affixed forms (hei reit). For the affixed forms, both references give a short vowel. I follow Boutkan & Kossmann in this thesis.
Standard Dutch, as well as in English, the analytic structure of inflected verbal forms is clear because inflection results in phonological structures which would be impossible in monomorphemic words (e.g. overlong structures, such as found in English *leaped*). In this respect, (analytic) regular verbal inflection in Tilburg Dutch resembles non-analytic or synthetic *irregular* verb forms in English (e.g. *kept, wept*, etc.). However, as we have seen, Tilburg Dutch provides evidence for the analytic structure of regular verbal inflectional forms as well. The working of FINAL-C is a case in point.

For a long time recursive structure was considered to be impossible in phonology (cf. Nespor & Vogel 1986). With the appearance of OT, such absolute statements were replaced by violable constraints, of which NONRECURSVITY (Selkirk 1996) was one, prohibiting recursive phonological word structures of the type in (3).

\[(3) \quad ^*\text{Recursive Prosodic word:}
\]

\[
\begin{array}{c}
\alpha_w \\
/ \backslash \\
\alpha_w \beta
\end{array}
\]

Such a constraint may be violated, if a higher-ranking constraint requires this. Such a constraint is MIRRORING (Van Oostendorp 2002):

\[(4) \quad \text{MIRRORING}
\]

The prosodic structure of a word should be isomorphic to its morphological structure.

According to MIRRORING the optimal phonological structure of a recursive morphological structure is recursive as well. Consequently, if a morphological word contains another morphological word, its phonological structure should also have a phonological word containing another phonological word. In (5) an example is given of such isomorphism between morphological and phonological structure.

\[(5) \quad \text{Morphological structure: } [[\text{kanarie} \quad \text{s} \quad \text{kanari:}]
\]

\[
\begin{array}{c}
\text{Prosodic structure} \\
((\text{kanari:} \quad \text{s} \quad \text{kanari:})_a)
\end{array}
\]

(cf. Van Oostendorp 2002:9)

In a tree-like structure, we would get the representation in (6).

---

2 In Chapter 2, section 2.4, the GP distinction between analytic and non-analytic or synthetic structures has been discussed.
In (5) and (6) morphological and phonological structure is isomorphic: the morphological word corresponds to the phonological word. Furthermore, the structure is recursive: a morphological noun/phonological word is contained within a morphological noun/phonological word.

The Dutch case of [kanaris] ‘canaries (bird)’ resembles the Tilburg case of [reit], introduced above. In the morphological representation, the inflection is adjoined to the morphological word. MIRRORING demands the prosodic structure to be isomorphic to its morphological structure. As the morphological structure shows adjunction of the inflectional morpheme, the phonological structure shows adjunction as well. This is demonstrated in (7).

\[
\begin{align*}
\text{(7) Morphological structure:} & \quad \left[ \left[ \text{rei} \right]_{N} \ t \ \left[ \text{rei} \right]_{N} \right] \\
\text{Prosodic structure} & \quad \left( \text{rei} \right)_{\alpha} \ t \ \left( \text{rei} \right)_{\alpha}
\end{align*}
\]

In both (5) and in (7) the segmental make-up of the inflectional suffixes – /-s/ in the nominal case of Dutch and /-t/ in the verbal case of Tilburg Dutch – suits the demands of the morphology-phonology interface because in both cases the suffix consists of a coronal obstruent. As mentioned in Chapter 3 coronals are unmarked for place and because of this their internal structure is almost empty. These suffixes are thus suitable for ‘dangling’ adjoined positions.3

In Chapter 2, we have briefly discussed analytic versus synthetic morphology in GP. Analytic morphological structure creates a layered phonological domain, whereas synthetic or non-analytic morphology creates a word structure, consisting of one domain. An example of an analytic structure is English \textit{leaped} (li\textit{p0})_{\omega} d\textit{Ol}\omega, whereas an irregular form such as \textit{kept} is synthetic: (ke\textit{pt})_{\omega}. Clearly, a phonological form such as /reit/ is the result of analytic morphology: ((rei)_{\alpha} t)_{\omega}. If we assume that an analytic, adjoined phonological structure should be assumed for inflected forms such as /reit/ ‘(he) drives’ we have to express that \textsc{Final-C} is acting on the internal word domain. We have to define the constraint on the lower, internal phonological word: \textsc{Final-C (Low)}.

The restriction on the application of a constraint to the internal word domain, is not unusual. As mentioned in Chapter 3, McCarthy excluded function words when he proposed the \textsc{Final-C} constraint in 1993, implicitly restricting this constraint to the domain of the phonological word. Tunica was given as an example

---

3 It is not only an inflectional (or derivational) coronal that can occur in an adjoined, weak position. As we have seen in the previous chapter, tautomorphemic coronals also occur in a weak position, although rarely.
of a language where FINAL-C was argued to be relevant to the phonological phrase. Tilburg Dutch appears to be a language where the domain is the internal phonological word.

This is only a brief discussion of the relation between morphology and phonology. For a recent overview of the literature on this subject, see Kula 2002. We have been able to conclude that the distribution of diphthong-like structures in Tilburg Dutch reveals two phonological word domains. FINAL-C (LOW) is argued to be parameterised for the internal word-domain. In the next subsection we will confront this outcome with the case of vowel shortening in Tilburg Dutch.

5.3. Shortening of long lax vowels

5.3.1. Introduction

We have seen above that certain Tilburg Dutch morphological processes do not change the phonological structure of a word (/rei + t /= [reit] and not *[reit]). However, a change in length of lax vowels as a result of affixation occurs in the dialect of Tilburg Dutch. Inflection, derivation, and compounding may all result in vowel shortening. Tilburg Dutch examples can be found in (8).

(8) lùpɔ - lùp - lùpt 'to walk - (I) walk - (you/he/she) walks'
  ræmɔ - ræm - ræmt 'to empty - (I) empty - (you/he/she) empties'
  hɔlɔ - hɔlɔ: 'to attain - attainable'
  spur - spurbɔn 'rail - railway'

In this chapter I will not be concerned with other phonological processes occurring in combination with affixation, such as tense vowels becoming lax or back vowels becoming front, as in (9a) and (9b) respectively.

(9) a. strep - strèpkɔ 'stripe - stripe (dim.)'
  slop - sløpkɔ 'pillowcase - pillowcase (dim.)'

b. man - men: 'man - man (dim.)'
  tun - tun: 'barrel - barrel (dim.)'

In Chapter 4 I argued that the alternations between lax /u/, /ʌ/, and /u/ and tense /e/, /æ/, and /ə/ historically were possibly due to an affix, which caused laxing and lowering. Consequently, I do not consider the laxing of tense vowels in (9a) to be synchronically productive and regular, let alone the rare cases of umlaut or fronting in (9b), which are generally agreed to be non-productive synchronically.

The cases, which traditionally fall under inflection and which show vowel alternations in Tilburg Dutch consist of cases in which a verbal suffix is added – an inflectional ending /-t/; /-t/ or /-d/ past participle; /-ta/ or /-da/ ending for past tense
suffix and enclitic forms - and cases in which a nominal or adjectival inflectional affix is added. All these cases show quantitative alternations (shortening of long lax vowels), while some also show tense - lax alternations in addition. The cases in which a derivational suffix is added generally show quantitative shortening or no change at all. The same is true for compounds. First of all, we will consider the case of inflection, distinguishing between cases with an inflectional /-t/ and cases with other inflectional affixes.

5.3.2. Vowel shortening before inflectional affixes

5.3.2.1. Background

What we need to account for in this section is that affixation of /-t/ affects vowel length, though it does not change the elemental make-up of the rhyme: /rei + t/ does not become *[reit] but stays [reit] whereas /lu+ t/ becomes [lupt] and does not remain *[lupt]. Adopting the same layered structure for [lupt] as for [reit], the structure of the Tilburg Dutch inflected word [lupt] (‘he/she walks’), is expected to be as in (10). If [reit] (‘you (s/pl)/he/she drives’) consists of two morphological and phonological domains, [lupt] (‘you (sg/pl)/he/she walks’) does so as well.

(10) Morphological structure: ([lu] /N/ t /N/)

Phonological structure: ([lu] /ω/ t /ω/)

Since the two phonological domains are phonetically consonant-final – (luωtuω) – we expect them to be followed by a licensed domain-final nucleus. However, if the analysis was like this, we would expect *[lupt] instead of the attested [lupt] because nothing in the structure enforces vowel shortening, as can be seen in (11).

---

4 It was argued in Chapter 2 that in GP coda consonants are never found word-finally. Phonetically, word-final consonants are assumed to be in onset positions, necessarily followed by empty nuclei since onset positions always have to be licensed by a nucleus position. Consequently, domain-final /p/ and domain-final /t/ in (10) are followed by parametrically licensed empty nuclei.
The structure in (11) is fine and we do not expect shortening to occur in case of adjunction of a coronal suffix. That is, we don’t expect a short vowel in the nucleus, contrary to what we find. I suggest that the difference in influence of the inflectional affix (/t/) is due to the fact that in Tilburg Dutch domain-final empty nuclei are licensed in the most external word domain only. An empty nucleus which is \( \omega_0 \)-final, is not licensed in this language. Therefore, the \( \omega_0 \)-final nucleus has to be ‘spelled out’ ([luːpt]) or the structure has to be such that the parametric licensing of the domain final nucleus is not necessary.\(^5\) Modern Tilburg Dutch apparently prefers to license the internal-domain-final empty nucleus by the preceding nucleus. In order to support this claim we need to return to the subject of licensing briefly.

As mentioned in Chapter 2, licensing of empty nuclei is not supposed to go from left to right but from right to left. However, for the analysis of Dutch I follow Rowicka (1996, 1999) who claims and motivates that licensing of empty nuclei is not from right to left but from left to right. In Chapter 2, the notion of Trochaic Government (Rowicka (1996, 1999, also referring to Van der Hulst (ms.)) has been introduced.\(^6\) Interestingly, Trochaic Proper Government accounts for similar shortening phenomena as the Tilburg data under discussion. For instance, it allows for a straightforward analysis of phenomena affecting vowel length in Turkish, Yawelmani and Mohawk.

Let us look at the analysis of vowel shortening in Turkish, such as the shortening of the underlined vowel in [meraklar] ‘curiosity (nom. pl.)’, as compared to [mera:k] ‘curiosity (poss.)‘ and [merak] ‘curiosity (nom.)‘. Rowicka suggests that a form such as *[merakkar] is impossible but argues that this is not because of the closed syllable. Rather, the impossibility of this form is caused by the fact that the empty nucleus in between [k] and [l] is not licensed by the preceding nucleus. If the vowel preceding [k] would remain long, there would be two (phonologically) empty nuclei in a sequence (*[mera[0k0lar]]). This is impossible because of the

\(^5\) That forms with a vowel between internal word and affix are similar to historical predecessors of the Tilburg and Standard Dutch forms, is no coincidence probably. For instance ‘you take’ is *jij [nemt] in Standard Dutch but [du nemas] in Middle-Dutch (Van Breee 1987:225). One might argue that in the linguistic history of the dialects in question, it was necessary to spell-out the non-parametrically licensed internal domain final nucleus.

\(^6\) She also suggests we might do away with the parametrical licensing of domain-final empty nuclei.
required adjacency of licenser and licensee. Consequently, Rowicka suggests that the long vowel shortens in order to be able to license the empty nucleus. This is shown in (12).

(12) meräklär  ‘curiosity (nom. pl.)’ (as compared to merä:ki)

\[
\begin{array}{cccccccc}
\ast & O & N_1 & O & N_2 & N_3 & O & N_4 & O & N_5 & O & N_6 \\
| & | & | & | & | & | & | & | & | & | & | \\
x & x & x & x & x & x & x & x & x & x & x & x & x \\
| & | & | & | & | & | & | & | & | & | & | \\
m & e & r & a & 0 & k & 0 & l & a & r & 0 \\
\end{array}
\]

(Rowicka 1996:285), with some adaptations)

In (12) \(N_3\) (the second nucleus of the long vowel) is deleted so that the head of the long vowel, \(N_2\), may govern and license the empty nucleus in between [k] and [l]. Hayes (1995) discusses a similar case in Fijian in which a long vowel shortens when it is followed by a single, light syllable but not when it is followed by a long vowel or by two light syllables. Rowicka argues that in languages such as Turkish, shortening occurs in order to achieve an exhaustive parse of empty nuclei in Proper Government relations.

5.3.2.2. Shortening before inflectional /-t/

Just as Rowicka proposes that vowel shortening is the result of the necessity to properly govern a word-internal empty nucleus in the above-mentioned languages, I suggest that in Tilburg Dutch the head of the preceding nucleus licenses the internal word-domain-final empty nucleus. This is a consequence of the fact that in Tilburg Dutch only the final, empty nucleus of the largest or highest word domain is parametrically licensed. Since the head of the nucleus (i.e. the first part of the long vowel) cannot license both its immediately following dependent position and the empty position in between the two consonants, the long vowel shortens. In this way, the head of the nucleus can license the empty nucleus. In (13a) the head of the

\[
\begin{array}{cccccccc}
O & N_1 & O & N_2 & O & N_4 & O & N_5 & O & N_6 \\
| & | & | & | & | & | & | & | & | \\
x & x & x & x & x & x & x & x & x & x \\
| & | & | & | & | & | & | & | & | \\
m & e & r & a & k & 0 & l & a & r & 0 \\
\end{array}
\]
nucleus has to license the dependent position within its own nucleus and the following empty nucleus.

(13) a. \[ \begin{array}{c}
\text{pm-licensed}\ ^7 \\
\downarrow \\
\downarrow \\
\downarrow
\end{array} \]

\[
\begin{array}{c}
\text{\*O} \\
\text{R} \\
\text{O} \\
\text{R}\))\omega_0 \text{O} \\
\text{R})\omega_i \\
\text{N} \\
/ \ \\
x \\
\text{x} \\
\text{x} \\
\text{x} \\
\text{x} \\
\text{x} \\
\text{x}
\end{array}
\]

In (13b), the nucleus is no longer branching. It can therefore license the following empty nucleus.\(^8\)

(13) b. \[ \begin{array}{c}
\text{pm-licensed} \\
\downarrow \\
\downarrow
\end{array} \]

\[
\begin{array}{c}
\text{O} \\
\text{R} \\
\text{O} \\
\text{R}\))\omega_0 \text{O} \\
\text{R})\omega_i \\
\text{N} \\
/ \\
x \\
\text{x} \\
\text{x} \\
\text{x} \\
\text{x} \\
\text{x}
\end{array}
\]

The alternation between [lu̯p] and [lu̯pt] reminds us of data observed in English: weep - wept, keep - kept, etc. These have been analysed as cases of Closed-Syllable Shortening. There is, however, an important difference between the Tilburg shortening cases and the English ones. As we will see below, this difference argues for an analysis based on Trochaic Licensing instead of Closed-Syllable Shortening for Tilburg Dutch.

The distinction between the two languages is related to the productivity of the respective constructions. The shortening cases in English are irregular, rare and not productive anymore. Productive past formation is without shortening (e.g. leak-

\(^7\) I will use ‘pm-licensed’ as an abbreviation for parametrically licensed.

\(^8\) Actually, as we will see in chapter 6, the representation in (13b) is not quite correct. As will be amply discussed, lax vowels always need to occur in a branching rhyme, or put more generally, in a branching structure in order to acquire the necessary strength to license another nucleus.
leaked, esteem-esteemed, etc.), the shortening cases (such as weep-wept, keep-kept) are lexically listed and not phonologically derived from the corresponding non-suffixed forms with long vowels (cf. Harris 1994). In GP this is important since the notion of resyllabification is considered to be controversial. If a form such as wept would be phonologically derived from weep + t there would be a change in constituent structure between the two forms, as becomes clear from (14).

(14) a. wiùp weep

\[
\begin{array}{cccc}
O & R & O & R \\
\mid & N & \mid & \\
\mid & \mid & \mid & \\
x & x & x & x & x \\
\mid & \mid & \mid & \\
w & i & p \\
\end{array}
\]

b. wEpt

\[
\begin{array}{cccc}
O & R & O & R \\
\mid & \mid & \mid & \\
x & x & x & x & x \\
\mid & \mid & \mid & \\
w & e & p & t \\
\end{array}
\]

(cf. Harris 1994:80)

In (14b) the stem-final [p] is in the rhymal adjunct position and [t] occupies the word-final onset. Therefore, the long vowel in the nucleus is short and the rhyme has room for [p]. Since both forms are in the lexicon, there is no question as to whether one form has changed (resyllabified) into another.

Even if one did not consider resyllabification to be a problem, one could still not adopt such analysis for the Tilburg Dutch cases, unless one wished to discard GP theory altogether. The phonology of the form [wept] shows no morphological domains — it is an acceptable monomorphemic form, just like other monomorphemic English words (apt, etc.). They are synthetic forms, in which no internal morphology is visible. Forms such as weep, keep, wept and kept are independently listed in the mental lexicon. Such an assumption is possible because these past tense forms are not productive and comparatively rare in English. If we return to the Tilburg Dutch forms such as [lùp] / [lùpt] (‘(I) walk / ‘(you/he/she) walk(s)’), the suggestion that there is no internal morphology in the inflected form is difficult to defend. In the discussion of vocoid final forms we have already observed that there clearly is more than one domain in such an inflected Tilburg Dutch word. For that reason I have adopted Van Oostendorp’s notion of MIRRORING, accounting for the fact that adjunction in morphology is reflected in adjunction in phonology. Although we can claim that English forms such as wept and kept have no internal
morphological and phonological structure, we cannot possibly make the same claim for the relevant forms in Tilburg Dutch.

For the sake of the argument, we will apply the analysis of the English forms to the relevant Tilburg Dutch cases. The possible outcomes are presented in (15). In (15a) we observe a form without visible inflection. Such a form is impossible: the discussion of **FINAL-C** has demonstrated that there is more than one word domain in Tilburg Dutch and that inflectional affixes (even 0-affixes) are external to the lower phonological word domain. In English, *wept* is a separate lexeme and not a regular past inflectional form and in such a situation a representation such as found in (15a) is fine. Such an analysis is not possible when the form in question is a perfectly regular, derived inflectional form, which is the case in the comparable case in Tilburg Dutch. In (15b) a representation is given of a Tilburg Dutch form with visible inflection (2 s./pl., 3 s.) without resyllabification and in (15c) with resyllabification. I will discuss (15b) and (15c) below.

(15) a. lUùp ‘(I) walk’

```
O       R       O       R
|       / \     |       |
x   x   x   x   x
|     \ /     |
l    u:    p
```

(cf. w i: p )

(15) b. lupt ‘you/he/she walks’

```
((O       R       O      R)ω₀  O       R)ω₁
|     | \     |       |
x   x   x   x   x   x
|     | \     |       |
l    o   p   t
```

(cf. w e p t )

(15) c. lupt ‘you/he/she walks’

```
((O       R )ω₀  O      R)ω₁
|     | \     |       |
x   x   x   x   x
|     | \     |       |
l    o   p   t
```

(cf. w e p t )
Let us consider (15b) first. If we do not change the structure and assume no resyllabification, the structure is grammatical. The long vowel [u] might have occurred instead of [u] since the structure is adequate in itself.

In (15c) I have adopted the analysis for English [wept] for Tilburg Dutch [lupt]. I added word domains given the regularity of the inflectional process. This means that resyllabification is assumed to have occurred, with the inflectional consonant occupying the onset position and the lexical [p] the coda. This implies shortening. The problem is that this results in a word-domain ending in a coda. This is contrary to the constituent structure which we assumed until now. It would imply that word domains may differ as far as their structure is concerned. The fact that this analysis works for English keep/kept pairs but not for Tilburg Dutch [lupt]/[lupt] cases is due to the fact that in the English case we are dealing with non-productive, lexicalised forms without internal morphology whereas in Tilburg Dutch shortening is productive and regular. Consequently an analysis based on Closed Syllable Shortening is not an option for the Tilburg Dutch data.

The analysis of vowel shortening before inflectional coronal obstruents is thus based on the concept of Trochaic Shortening and on the assumption that in Tilburg Dutch only the most external word-domain-final empty nuclei are parametrically licensed. It is not unlikely that at some point in the history of English, the keep-kept cases were structurally identical to the synchronic Tilburg Dutch [lupt]-[lupt] cases. This helps to solve the problem for the GP analysis of the English examples. If the keep/kept cases are remnants of a diachronic stage of the English language, we expect such cases to have resulted from regular and productive processes in that historical stage. In that period a form such as [kept] must be assumed to have internal morphology, just like present day Tilburg Dutch [lupt]. Consequently, it is possible that at some time in the past the analysis of the now irregular and unproductive English cases was identical to that of the Tilburg cases discussed above. That is, we suppose that in both languages the final empty nucleus in the largest word domain was/is parametrically licensed exclusively. A head of a long vowel in the first nucleus cannot license both its dependent position in the nucleus itself and an internal-word-final empty position, as illustrated in (16a). This results in shortening, so that its head can license the empty nucleus, as in (16b).
The regular past formation in English is similar to the Standard Dutch system. Forms such as *seeps* (or past tense *seeped*) and Standard Dutch *loopt* ‘walks’ have identical analyses in this respect. The analysis is based on Trochaic Licensing. It assumes that in these languages final nuclei are licensed in each phonological word. Whether it is the most internal, most deeply imbedded domain, \( \omega_0 \), or the less internal, less deeply imbedded domain, \( \omega_1 \), its final empty nucleus is licensed. In (17a) I give examples with their morphological and phonological representation. In (17b) it can be observed that no shortening is expected to occur in a structure in which both domain final empty nuclei are licensed.

(17) a. English  

\[
\begin{array}{l}
\text{seeps} \\
[[\text{si:p} \ s] \\
((\text{si:p}0)s0) \\
\text{(morphological form)} \\
\text{(phonological form)}
\end{array}
\]

Standard Dutch  

\[
\begin{array}{l}
\text{loopt} \\
[[\text{lop} \ t] \\
(lo0)(t0) \\
\text{(morphological form)} \\
\text{(phonological form)}
\end{array}
\]

---

9 I have adopted an analysis in which phonetically long and tense vowels in Standard Dutch are phonologically tense and not long (cf. Chapter 4). Because it is argued that tense vowels may not occur in a branching rhyme, the effect is the same as if they were long phonologically.
5.3.2.3. Variation in vowel shortening before inflectional affixes

In the previous subsection we proposed an analysis based on a parameterised licensing of domain final empty nuclei and on Trochaic Licensing in order to account for vowel shortening before inflectional coronal obstruents in Tilburg Dutch. Yet shortening does not always occur with all speakers. In the section on shortening with derivational suffixes and compounds it will be argued that the variation is due to the gradual character of lexicalisation. With inflection the situation is different. Although the picture is not completely clear, it is evident that there is a phonological basis for variation. If the long stem vowel is followed by a stop, a nasal or /l/, the vowel is short when inflection is added. However, when the stem final consonant is a fricative (including the /r/) there is variation. Not much is known about the exact nature of this variation. It seems that both variants are possible in some cases, while only a long vowel form is grammatical in others, as can be observed in (18).

(18)  \( \text{bl} \text{E} \text{u} \) \( \text{v} \) « \( \text{bl} \text{E} \text{ft} / \text{bl} \text{E} \text{ft} \) 'stay – stays'
       \( \text{h} \text{Y} \text{u} \) \( \text{r} \) « \( \text{h} \text{Y} \text{rt} / \text{h} \text{Y} \text{rt} \) 'to hear – hears'
       \( \text{l} \text{E} \text{u} \) « \( \text{l} \text{E} \text{ft} / \text{l} \text{E} \text{ft} \) 'to live – lives'
       \( \text{v} \text{E} \text{u} \) \( \text{r} \) « \( \text{v} \text{E} \text{rt} / \text{v} \text{E} \text{rt} \) 'to bounce – bounces'

It is interesting that the variation only occurs with a, phonologically, very strictly defined group of fricatives.\(^\text{11}\)

\(^{10}\) I am concentrating on a subset of the inflectional variation. For more details regarding the richness of the variation in this dialect, I refer to Boutkan & Kossmann (1996).
\(^{11}\) Fricatives show a connection with vowel length, although as far as I know the character of this connection is not clear. Van Oostendorp (p.c.) suggests that the reason for the variation in vowel length among fricatives may be that there are two opposite forces at work: phonologically the form is short, but phonetically the fricative causes gradual lengthening. Depending on the gradation of the phonetic lengthening, the form is perceived as long or short. I will not discuss this subject here but will refer to the cases of Philadelphia tensing

\[ (17) \text{b. pm-licensed pm-licensed} \]
\[ \text{O R O} \]
\[ \downarrow \downarrow \]
\[ \text{OR} \text{OR})\omega_0 \text{OR})\omega_1 \]
\[ \text{N} \]
\[ \text{	extbackslash} \]
\[ \text{x x x x} \text{x x x x} \]
\[ \text{| \text{	extbackslash} | | |} \]
\[ \text{s i: p t} \]
\[ \text{l o p t} \]
Concluding this section, Trochaic Licensing (Rowicka 1996, 1999) and not Closed Syllable Shortening accounts for vowel shortening in Tilburg Dutch. Shortening in Tilburg Dutch occurs after affixation of a coronal obstruent because in this dialect empty nuclei are not licensed in the final position of the internal, lower word. In Standard Dutch and English the lower word-domain-final nucleus is parametrically licensed. Since the head of the first nucleus does not have to license the lower word-domain-final nucleus vowel shortening does not occur in these languages. The reason for not choosing the well-known Closed Syllable analysis for the cases in which vowel shortening occurs does not lie in the GP reluctance to accept the notion of resyllabification. It is caused by the fact that there is at least one wellformedness constraint operating on the domain of a-word-within-a-word: FINAL-C. The fact that vocoid sequences occur before an inflectional coronal obstruent but not before a lexical coronal obstruent clearly indicates that there is an internal word domain, within which constraints can be active. This means that in Tilburg Dutch, as well as in closely related Standard Dutch, the constraint MIRRORING (van Oostendorp 2002) is highly ranked. Having adopted an analysis in which phonetically word-final consonants are followed by an empty nucleus and a structure, in which morphological domains are mirrored in phonological domains, an analysis based on Closed Syllable shortening becomes highly improbable.

5.3.2.4. Other inflectional affixes and (en)clitics

It is not necessary to discuss all inflectional affixes separately. What is true of a certain affix is true of other affixes with a similar phonological shape (cf. De Schutter 2002). For instance, the shortening which occurs before the inflectional verbal coronal -/t/ is in all due respects the same as the one occurring before the inflectional endings with /–d/ (or /–t/) (indicating past and enclitic 2nd person singular en plural) or before the enclitic /d/ (or /t/). I have discussed the case of 2nd and 3rd person singular verbal inflection extensively. For the sake of completeness, I present some other cases with inflectional suffixes in (19). These examples show verbal forms in the regular past tense (19a), with the 2nd person enclitic (19b) and in the perfect tense (19c).

(19) a. vrỴkə vrỴktə ‘to work (hard) – worked’
    vṛldə vṛldə ‘to file – filed’

b. ṿmtə ṿmdə ‘to find - do you find’
    ṛktə ṛktə ‘to hit - do you hit’

where /æ/ becomes tense before voiced fricatives and front nasals (cf. Benua 1995) and the Scottish Vowel Length Rule (Scobbie a.o. 1999) which concerns a length alternation of /i/ and /u/.
In all these cases, the shortening is evident. One of the examples in (19c) is particularly interesting because the internal domain-final consonant is /t/. If an inflectional /t/ is added – for instance, in the 2nd singular and plural or in 3rd person singular and the imperative – the following situation arises. Take for instance /stœ:t/ ‘I encounter’ (a form with no visible suffix). If such an inflectional /t/ is added we arrive at the structure in (20).

(20) stœ:t \[(stœ:0)t0\]

The form in (20) is made up of two word domains, both with a final empty nucleus, just as we expect. We have seen that the empty nucleus at the end of the internal word domain is not parametrically licensed in Tilburg Dutch. Therefore, this licensing has to be done through Trochaic Proper Government by the head of the first nucleus. Consequently, the long vowel shortens, so that it can license the empty nucleus. This is the analysis I have presented above. What makes (20) significant is that the two phonologically final onsets are occupied by the same coronal obstruent. A structural representation is given in (21).

(21) a. \[\begin{array}{ccccccc}
\textit{pm-licensed} \\
{\textit{\downarrow}} & {\textit{\downarrow}} & {\textit{\downarrow}} \\
\text{o} & \text{R} & \text{O} & \text{R} \text{œ} & \text{O} & \text{R} \text{œ} \\
\text{\textbf{N}} \\
\text{x} & \text{x} & \text{x} & \text{x} & \text{x} & \text{x} & \text{x} \\
\text{\textbf{\text{x}}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} \\
\text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} \\
\text{st} & \text{œ} & \text{t} & \text{t} & \text{t} \\
\end{array}\]

(21) b. \[\begin{array}{ccccccc}
\textit{pm-licensed} \\
{\textit{\downarrow}} & {\textit{\downarrow}} \\
\text{o} & \text{R} & \text{O} & \text{R} \text{œ} & \text{O} & \text{R} \text{œ} \\
\text{\textbf{N}} \\
\text{x} & \text{x} & \text{x} & \text{x} & \text{x} & \text{x} & \text{x} \\
\text{\textbf{\text{x}}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} \\
\text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} & \text{\text{x}} \\
\text{st} & \text{œ} & \text{t} & \text{t} & \text{t} \\
\end{array}\]

(21a) demonstrates once more that licensing of the unlicensed internal domain-final nucleus cannot be combined with licensing of the dependent position in the first nucleus. In (21b) the vowel in the nucleus is short and consequently the head in the nucleus is able to license the word-final empty position. The result is a phonological
form /stætt/, with two licensed empty nuclei following the coronals. As a consequence the two coronal obstruents show a geminate structure. Geminates are phonetically never realised in Dutch. Therefore, the pronounced form is [stæt].

The analysis of the past tense inflected forms with /-də/ and /-tə/ (cf. (19a) and (19b) is exactly the same as we have seen with present tense 2nd and 3rd person singular and imperative: shortening occurs because the word domain-final empty nucleus should be licensed. This is demonstrated in (22).

The other inflected forms – such as the past participle – receive the same analysis if they consist of similar suffixes: either /-t/ (in the participle) or /-də/ and /-tə/ (or /dər/). The adjunction of these affixes or clitics has the same consequences for vowel length (in all these cases variation is possible when the stem-final consonant is a fricative).

We will now consider the consequences of the adjunction of vowel initial suffixes, for instance the infinitive suffix /-ə/. The initial structure of an infinitival form is as in (23a).

12 The enclictic /dər/ ‘there’ causes shortening just as well. However, when the allomorph /ər/ is used, the stem vowel remains long: /Ik lɔb-dər wɛl eʋə nɔr tu/, /Ik lɔb-ər wɛl eʋə nɔr tu/ ‘I’ll go over there’.
In (23a) we observe a sequence of two adjacent nuclear positions (underlined). The first skeletal point is deleted because of the OCP, resulting in the structure in (23b) (cf. Charette 1991).

The case presented in (23) is unproblematic. One puzzling case is the shortening which sometimes takes place when an /n/ is added to a verbal stem ending in a vowel. The pattern seems to be rather irregular and phonologically there seems to be no reason for shortening. For instance, while the infinitive of the verb /čùn/ ‘to go’ has a long vowel, the vowel is short in the 1st and 3rd person plural (/čùn/. If the infinitive form of the verb function as an auxiliary, followed by another infinitive, the infinitive stem vowel of /čùn/ is short as well. This is illustrated in (24).

We have seen in the examples above that the behaviour of affixes is to a large extent determined by their phonological properties. In other words, it does not matter whether /-tə/ or /-də/ stands for past tense or 2nd person clitic or whether it concerns a noun or a verb. The cases in (24) constitute counterexamples to this generalisation: the same suffix only sometimes causes shortening (γον versus γον). I have no explanation for this.

The shortening in the case of comparatives and superlatives is not in a principled way different from the cases described above, although there is some
variation which I cannot account for. In the case of comparatives, there are two allomorphs /-sr/ and /-dr/. As expected, the stem vowel is short when the suffix begins with a consonant (25a) and long when it starts with a vowel (25b); in the case of the superlatives the /-st(ə)/ suffix causes shortening, although there is some variation (cf. 25c).

(25) comparatives
   a. klen / klendør ‘small / small’ (comparative)
      zwør / zwørdr ‘heavy / heavy’ (comparative)
   b. døf / duvør ‘deaf / deaf’ (comparative)
      brøn / brønør ‘brown / brown’ (comparative)
   c. superlatives
      klen / klenst ‘small / small’ (superlative)
      hux / huxst ‘high / high’ (superlative)
      sxæn / sxænst ~ sxænst ‘slanting / slanting’ (superlative)
      zwør / zwørst ‘heavy / heavy’ (superlative)
      ltx / ltxst ‘low / low’ (superlative)

This concludes the section on inflectional affixation in which I have argued that vowel shortening in inflectional suffixation is largely due to Trochaic Shortening (Rowicka 1996, 1999), as well as to the absence of parametric licensing of the empty nucleus in final position of the internal word domain. In the next subsection I will consider derivation and compounding.

5.3.3. Shortening of long lax vowels with derivational suffixes

In section 5.2 of this chapter, MIRRORING was discussed. This constraint is more specific than ALIGN (McCarthy and Prince 1993). There are (interface-) constraints, satisfying ALIGN but not MIRRORING (Van Oostendorp 2002). MIRRORING demands the prosodic structure to be isomorphic to its morphological structure. ALIGN does not demand structural isomorphy but only alignment of the relevant edges. We have discussed the structure of an inflected word such as Tilburg Dutch /tɛːt/. MIRRORING demands the prosodic structure to be isomorphic to its morphological structure. As the morphological structure contains adjunction of the inflectional morpheme, the

---

13 Diminutive formation conforms to a large degree to the analysis presented here. However, diminutive formation is not purely inflectional and consists of more than semi-empty coronal obstruents or schwa. Since Dutch diminutives are notoriously complex, I will not discuss them any further here.
phonological structure should also show adjunction. The structure is repeated in (26).

(26) **Morphological structure**  
\[ [\text{rei} \ N \ t \ N] \]

**Prosodic structure**  
\[ ((\text{rei})_a \ t \ )_a \]

The isomorphic structure as depicted in (26) is no problem in the case of inflection. The phonologically adjoined position in (26) is occupied by a coronal obstruent. As mentioned in Chapter 3 coronals are unmarked for place and as such they are suitable for ‘dangling’ adjoined positions.

In the case of derivational affixation, the situation is different. There are derivational suffixes which closely resemble inflectional suffixes. Such a case is the suffix /-t/, which transforms an adjective into a noun. This suffix is phonologically identical to the inflectional suffix for past tense. In those cases suffixation shows the pattern we expect on the basis of the observed behaviour of the similarly shaped inflectional suffixes. Some examples are given in (27).

(27)  

<table>
<thead>
<tr>
<th>Stems</th>
<th>Meanings</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>grutə</td>
<td>‘size’</td>
<td>(&lt; grukt ‘big’)</td>
</tr>
<tr>
<td>britə</td>
<td>‘width’</td>
<td>(&lt; brit ‘wide’)</td>
</tr>
<tr>
<td>huxət</td>
<td>‘height’</td>
<td>(&lt; hux ‘high’)</td>
</tr>
<tr>
<td>drıxtä/dıııxtə</td>
<td>‘drought’</td>
<td>(&lt; drıııx ‘dry’)</td>
</tr>
</tbody>
</table>

In (27) the suffixed forms have a short stem vowel; there seems to be no variation, except when the initial long vowel occurs before a fricative.

There are also suffixes which have a full vowel. Because of the heavy phonological make-up of these suffixes, they cannot occur in a position adjoined to a phonological word. As an illustration, consider the following representation (adapted from Van Oostendorp 2002).

(28)  

<table>
<thead>
<tr>
<th>Stems</th>
<th>Meanings</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>spııırxm/spııızxım</td>
<td>‘thrifty’ (Tilburg Dutch)</td>
<td></td>
</tr>
</tbody>
</table>

**morphological structure**  
\[ [\text{spııırx} \ N \ zım]_N \]

**phonological structure**  
\[ *(\text{spııırx})_a \ zım)_a \]

\[ ((\text{spııırx})_a \ zım)_a? \]

The affix in (28) consists of two consonants of which only one is coronal, and a full vowel instead of a coronal obstruent and/or schwa. The suffix is thus too heavy phonologically to occur in an adjoined position although the morphological structure is one of adjunction: \([\text{spııırx} \ N \ zım]_N\) versus \*(\text{spııırx})_a \ zım)_a\). This implies that the suffixed form cannot satisfy `MIRRORING` as this constraint requires the phonological structure to be identical to the morphological structure. It can, however, satisfy `ALIGN`, the constraint demanding morphological and phonological boundaries to be aligned. This way the morphological structure is still reflected in the phonological structure, although to a lesser degree: an *adjointed* morphological structure is now
reflected in a *compound* phonological one (cf. Van Oostendorp 2002). Other cases with heavy derivational affixes are given in (29).

(29)  

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lIrzɔm</td>
<td>‘instructive’ (lIrɔ ‘to teach, to learn’)</td>
</tr>
<tr>
<td>bɔvɔ(r)bɔr/ bɔvɔr</td>
<td>‘navigable’ (bɔvɔ ‘to navigate’)</td>
</tr>
<tr>
<td>kAmɔrɔdɔp</td>
<td>‘companionship’ (kAmɔrd ‘comrade’)</td>
</tr>
</tbody>
</table>

As is evident from the examples in (29), there is some variation. Sometimes only the short form occurs (/lIrzɔm /), sometimes both are possible (/bɔvɔ(r)bɔr/ and /bɔvɔr/) and sometimes the long form (/kAmɔrɔdɔp/) occurs only.

Compounds in Tilburg Dutch show the same variation as we have seen with derivational suffixes above. Sometimes we find vowel shortening, sometimes not and sometimes both forms appear to be possible. Examples are given in (30).

(30)  

<table>
<thead>
<tr>
<th>Words</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| (30) a. vowelshortening  
  spɔrubɔn | ‘railway’ (cf. spɔr ‘rail’)  
  bɛkpent | ‘stomach-ache’ (cf. bɛk ‘stomach’)  
  kIɔrmɔkɔ | ‘to prepare’ (cf. kIɔr ‘ready’) |
| (30) b. no shortening  
  strɛkplank | ‘ironing-board’ (cf. strɛk ‘to iron’)  
  sxI:flɔ:n | ‘to hit in such a way that it becomes slanted’ (cf. sxIf ‘crooked’) |
| (30) c. variation  
  dɛkplank/ dɛkplank | ‘diving-board’ (cf. dɛk ‘to dive’)  
  vIrpunt/ vIrpunt | ‘ferry’ (cf. vIr ‘ferry’) |

Let us look at the structural representation of a compound with vowel shortening in Tilburg Dutch, such as /spɔrubɔn/ in (30a). I assume that this form is lexicalised and that the internal word domains have vanished: (/spɔrubɔn\\)‘railway’ (cf. /spɔr\\ ‘rail’). Consequently, the vowel cannot be long because it would result in an impossible structure with two onsets next to each other, as in (31a). As a consequence, the first long vowel is short and the /r/ occurs in the coda position of the first rhyme (31b). This is no problem for the Closed Syllable Shortness analysis: the compound is a lexeme and not a derived word.

---

14 The lexicalisation can be inferred from the fact that the meaning of the compound cannot always be deduced from the meaning of the constituting parts.
Let us now consider an example in which both forms, with a long and a short lax vowel, are possible, such as /dəkplɑŋk/-/də:kplɑŋk/ in (30c). I suggest that this variation has a different motivation from the variation previously found with fricative-final stems. In the fricative-final case, the variation has to do with the phonological/phonetic character of fricatives (cf. footnote 11). The variation in the case of compounds and most derivational suffixes is caused by the fact that lexicalisation is a gradual process and that speakers may vary – and even one speaker may vary. If the first vowel is short, the form is lexicalised and can be represented as in (31b). If the first vowel remains long, the form still consists of two phonological words. The identity of a domain consisting of these two phonological words is not exactly clear (cf. the question mark in (28)).

In a regular ‘adjoined’ inflected word in Tilburg Dutch, the lower word domain final nucleus is not licensed, forcing the first nucleus to shorten. For convenience sake I repeat (13) in (32).

In (32a) the lower domain final nucleus is not automatically licensed. Because of this, it has to receive its licensing from the preceding nucleus through Trochaic Licensing (Rowicka 1996, 1999). If the vowel in the first nucleus is long, this is impossible because it cannot license two dependent empty positions at the same
time. In (32b) the nucleus is no longer branching. It can therefore license the following empty nucleus and, as a result of this, it may remain silent.

\[
(32) \text{b. } \begin{array}{c}
\text{pm-licensed} \\
\downarrow \\
\downarrow \\
\text{N} \\
x x x x x x
\end{array}
\]

If a non-lexicalised compound consists of two individual words, there is no reason to assume that the domain final nuclei are unlicensed. Therefore, shortening is not expected to occur (cf. 33).

\[
(33) \begin{array}{c}
\text{pm-licensed} \\
\downarrow \\
\downarrow \\
\text{N} \\
x x x x x x
\end{array}
\]

This concludes the discussion of length alternation in derivation and compounding.

5.4. Conclusion

In this chapter I have argued that there is a fundamental difference between the apparently similar English word pairs *keep/kept* and the Tilburg Dutch pairs [lœp]/[lœpt]. In the English case we are dealing with non-productive, lexicalised forms without internal morphology, whereas in Tilburg Dutch the shortening is productive and regular and shows internal morphological and phonological structure. As a consequence the Closed Syllable Shortness analysis, available for the English cases, is not a possible analysis of the Tilburg Dutch cases. An alternative analysis appears to be available. This analysis accounts for the relevant data and also has the advantage of looking critically at theoretical issues within GP. For instance, the chapter portrays the relevance of the question as to the number of word domains and in which respects they may or may not differ.

The analysis of vowel shortening before inflectional coronal obstruents occupies the main part of this chapter. I propose an analysis based on the concept of
Trochaic Shortening of Rowicka (1996, 1999) and on the assumption that in Tilburg Dutch only the most external word-domain-final empty nuclei are parametrically licensed. Because of this, the lower domain final nucleus remains unlicensed unless the preceding nucleus takes over. A head cannot license two dependent positions at the same time. The result is a structure with a short vowel in the nucleus and a trochaically licensed, empty nucleus at the end of the lower word domain.