is an allophonic variation between tense (closed) vowels and lax (open) vowels that is determined by syllable structure. The former occur in open syllables, the latter in closed syllables. The important observation is that the lax vowels appear not only in syllables that are clearly closed, but also in those cases where they are followed by an I that is ambisyllabic according to the rule just mentioned. From this we may conclude that the ambisyllabic is independently motivated.

It is of course not possible to conclude that the syllable-based approach to the type of data discussed in this section has been validated in general. The previous example does suggest, however, that such an approach has some credibility, and is certainly not less likely than the foot-based analysis.

I conclude that standard metrical foot structure, to the extent that it differs from the kind of foot structure that is assumed in the theory proposed in the previous sections, has no strong motivation apart from its primary motivation, which is to characterize alternating stress patterns. We have seen that alternating stress patterns can be characterized in terms of a rhythmic melody that does not impose a constituent structure on strings of syllables. Hence standard metrical foot structure can be eliminated from the theory.

4.5. Conclusions

In this chapter I have discussed several issues concerning the representation and analysis of stress. We compared in detail two current theories referred to as the grid-only and tree-only theory and concluded that there are no significant differences between these two theories, apart from the fact that in the latter we assign a detailed tree structure to the text. I then argued in favor of a compromise regarding the prosodic constituent structure. This compromise tied in well with the point of view, adopted in section 4.3.2., that main stress assignment should be separated from assignment of rhythmic structure. The former can be formalized in terms of the tree format, the latter in terms of an autosegmental theory. In the final section of this chapter it has been shown that argumentation in favor of standard metrical foot structure is inconclusive.

Chapter 5

Dutch Stress

5.1. Introduction

In this chapter the focus is on Dutch stress and its relation to syllable structure. In section 5.2, I offer a discussion of the various ways in which stress assignment is sensitive to syllable structure. In section 5.3, an analysis is presented of the stress pattern of Dutch, focussing on monomorphic words. I will offer two analyses that differ crucially with respect to the type of foot that is chosen. The first analysis is carried out within the standard metrical (arboreal) theory and the second within the tree-cum-grid theory that has been proposed in the previous chapter. I will argue in favor of the latter analysis.

5.2. Stress and syllable weight in Dutch

In section 3.4, I briefly discussed two cases in which there is a clear correlation between syllable structure and stress in Dutch. Simplex (i.e. morphologically unstructured) words with a final syllable of the shape (C)VVC (and to a lesser extent (C)VCC) are stressed on the final syllable almost without exception:

<table>
<thead>
<tr>
<th>(1)</th>
<th>platoel</th>
<th>legioen</th>
<th>anakoloset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>konijn</td>
<td>kapitaal</td>
<td>calamiteit</td>
</tr>
<tr>
<td></td>
<td>banaan</td>
<td>fenomeen</td>
<td>salamandrijn</td>
</tr>
<tr>
<td></td>
<td>konvooi</td>
<td>ceramiek</td>
<td>locomotief</td>
</tr>
<tr>
<td></td>
<td>kameel</td>
<td>avontuur</td>
<td>karikatur</td>
</tr>
<tr>
<td></td>
<td>fontein</td>
<td>tamboerijn</td>
<td>valeriaan</td>
</tr>
<tr>
<td></td>
<td>juweel</td>
<td>pelikaan</td>
<td>capaciteit</td>
</tr>
</tbody>
</table>
In terms of the mora theory discussed in chapters 2 and 3, we can correlate this with the fact that such syllables are superheavy, consisting of three morae.

An even more compelling generalization that was mentioned in connection with the issue of representing syllables with a schwa is the fact that syllables with a schwa cannot bear main stress. In van der Hulst & Hoortgat (1981) the distinction between syllables with a schwa and syllables with a full vowel with respect to stress placement was treated as an instance of the syllable weight distinction. The analysis of syllable structure in Dutch that I offered in chapter 3 showed that syllables with schwa can be analyzed as non-branching (i.e. having one mora), and syllables with a full vowel as branching (i.e. having two morae).

The two ways in which syllable structure influences stress placement both fall within the mora theory under a single geometrical property of syllables, viz. the number of morae that a syllable contains.

A third property of syllables that has been claimed to be of relevance is the distinction between syllables of the type VC and of the type VV (most explicitly in Kager & Visch 1983). The relevance of this distinction is much less clear, because a generalization based on this distinction faces many exceptions, but the claim is that VC syllables count as heavier than VV syllables. At first sight one might be inclined to think that the distinction between VC syllables and VV syllables is also of a geometrical nature involving a distinction between branching versus non-branching of some syllabic node, e.g. the rhyme. Yet I will argue that this is not the case. The main reason is that such a geometrical interpretation is at odds with my analysis of the Dutch syllable. The decision to analyze the open-closed distinction in non-geometrical terms is backed up by cross-linguistic observations concerning the marginal role played by this distinction in stress systems. I will argue that the third distinction involves greater heaviness of closed as opposed to open syllables, where closed will be defined as "ending in a consonant" and furthermore that the distinction plays a marginal role in the stress system.

Before I analyze the stress pattern of monomorphemic Dutch words in detail I will discuss some ideas concerning the representation of syllable weight that appear in the literature.

The factors that are claimed to determine "syllable weight" in Dutch do not exhaust the list of possible relevant factors in other languages. There are other factors that may play a role and for these it is quite certain that no plausible geometrical interpretation can be given. Given then that syllable weight is determined both by geometrical and non-geometrical properties of syllables, my decision to interpret the open-closed distinction in non-geometrical terms does not involve an ad hoc move.

Newman (1972) is one of the first to point out the relevance of the dichotomy heavy-light as distinct from the more familiar dichotomy open-closed. The cases of syllable weight that he mentions all involve the following opposition:

(2) heavy: VV, VC     light: V

Interestingly, Newman adds that there may be circumstances in which one wants to distinguish between VV and VC in terms of the open-closed distinction, but he does not mention such a case. The distinction given in (2) occurs in Dutch with the extra condition that the light syllable must contain a schwa and if the distinction VV/VC is relevant Dutch would also be an example where heavy syllables fall in two classes.

Hayes (1981), in his discussion of syllable weight, starts out by discussing the opposition between VV, VC versus V, i.e. the instantiation that Newman deals with. In the theory that Hayes adopts the distinction is represented as follows:

(3) heavy light

Small c's and v's represent segments, rather than slots here. Hayes adds: "It is interesting that virtually no rules of tree construction are sensitive to the structure (or even presence) of the syllable onset. To account for this, I will assume that all unmarked stress rules apply on the rime projection." (p. 41). In terms of the mora theory of syllable structure that I have adopted in chapters 2 and 3 this type of distinction is represented as follows:
The sonority threshold for morhood is such that any segment is allowed to occur as a second mora.

I have shown in chapters 2 and 3 that the mora representation of syllable structure is adequate to deal with the facts that have been considered in those chapters, but I also pointed out that the same is true for a different type of representation which is in line with another more common view on syllable structure, involving subsyllabic categories such as onset, nucleus, coda and, perhaps, rhyme. I referred to this second approach as the metrical theory of the syllable. In this chapter I will further explore the type of representation involving the category mora, but I add that by making use of the category nucleus, in the way suggested in chapters 2 and 3, we can also make the distinctions among syllable types that are relevant in Dutch (cf. 22a below). At the relevant places I will refer to the possible alternatives in this version of the metrical theory.

The second common type of weight distinction involves the opposition between long and short vowels, disregarding the presence or absence of postvocalic consonants. Newman does not discuss this type, but Byman (1977, 75) mentions the fact that "many languages have stress-placement rules which refer to the distinction between long and short vowels." As Hayes observes, "the proper representation of this opposition is not agreed on in the literature." (Hayes 1981, 41). The solution that Hayes adopts involves the notion of projection. We are allowed to project segments that share a certain feature. Hence we can project from the complete sequence of segments the substrings consisting of vowels:

Under the mora theory the distinction is represented again in terms of branching versus non-branching syllables:

In this theory the distinction falls out by saying that the sonority threshold is such that only vowels can be a second mora. I refer the reader to chapter 2, sect. 2.2.4. for a discussion of the use of the mora threshold.

The two types discussed so far are unified in Hayes' metrical account in terms of the category rhyme. In the metrical approach that I advocated, both are unified in terms of the category nucleus. In the mora account, finally, both types are unified under the heading of branching versus non-branching syllables and there is no need for the projection device, let alone to project different levels.

Another instantiation of the weight distinction that Hayes discusses is the opposition between syllables with a full and syllables with a reduced vowel (Hayes 1981, 57):

I assume that this distinction is underlingly one of vowel length, i.e. of gemination. This assumption can be motivated in two ways: first, the full vowels are phonetically longer than the reduced ones; and second, there are apparently no languages having an underlying three-way distinction of the type reduced : full short vowel : full long vowel. This would follow automatically from the assumption that both the full-reduced and the long-short distinction must be represented underlingly as gemination.

The situation in Dutch, where the full/reduced contrast plays a crucial role, is perhaps not exactly of the type that Hayes has in mind, because Dutch has a contrast between full long and full short vowels. It is the case, however, that full short vowels and full long vowels share the property that
they must all occur in a branching (i.e. heavy) syllable. Hence with respect
to stress assignment all full vowels function as a natural class as opposed
to the reduced vowel, i.e. the schwa:

(7) Heavy Light

Hayes continues to discuss a "motley group of rarer distinctions of
prominence which stress rules appear to treat in essentially the same
manner." (p. 41). The first is diacritically marked prominence. This
involves cases where certain syllables behave as if they were heavy, i.e.
they attract stress, although they do not show a syllabic structure that
makes them distinct from light syllables. Hayes proposes to mark such
syllables with a diacritic. A second type involves a distinction between
syllables with a high tone versus syllables with a low tone, where the
former function as heavy. Hayes offers no attempt to reduce these two
instantiations of the weight difference to a distinction in branching. I
refer to Anderson (1983), however, for an argument in favor of representing
diagnostic marking in terms of branching. So vowels that bear lexical stress
are marked as "branching". In this way Anderson attempts to explain an
observation made by Jakobson that languages having lexical stress cannot
have distinctive vowel length. I will not criticize Anderson's proposal
here, but it will be clear that the line of thought is incompatible with the
one that I have adopted.

Finally Hayes mentions yet another weight distinction, viz. the one
between closed and open syllables. He knows of two cases where this
opposition appears to play a role: Tiberian Hebrew (as described in
McCarthy 1979) and Seneca (as described by Stowell 1979). The treatment
that Hayes proposes for such cases is to say that in such languages
syllables contain a constituent called the nucleus which may only contain
vowels:

(8) heavy light

Hence the open-closed dichotomy is reduced to a distinction in
branchingness.

Within the mora framework that I have adopted it is not possible to
represent the distinction between open and closed syllables in geometrical
terms. It goes against the logic of this theory to say that postvocalic
consonants can count as a second mora, whereas the second part of a long
vowel or diphthong, which is more sonorous, cannot. Hence we cannot create
structures as in (9):

(9) heavy light

Turning to Dutch for a moment, it can be shown that structures as in (9)
cannot represent the correct way of representing the weight distinction
between closed and open syllables. The structures in (9) embody the claim
that syllables with long vowels or diphthongs count as light, whereas I have
argued that syllables of this type are branching, just like VC syllables
(cf. 7).

I have shown in chapter 3 that the rule creating the first mora in Dutch
is the one repeated here in (10):

(10)
In this way a distinction was created between branching and non-branching syllables, where VV and VC both came out as branching. Hence I cannot at the same time propose that they differ among each other in precisely the same way that they differ, as a pair, from syllables with a schwa, which are non-branching. This does not mean that the distinction between closed and open syllables (if proved useful) cannot be characterized formally. The distinction between VV and VC syllables can be characterized non-geometrically as follows:

\[ (11) \quad \text{Heavy} \quad \text{Light} \]

\[ (...C)... \quad (...V)... \]

A final way in which syllables may be of different weight involves the sonority of its segments. Prince (1983) speculates on the existence of stress systems in which syllables with low vowels count as heavier than syllables with non-low vowels. In the next section I will suggest that in Dutch the long and short vowels differ with respect to stress assignment in the sense that long vowels, apparently, count as heavier than short vowels.

I know of no other good examples but, if found, they would give additional support to the idea that there are several different ways in which syllable weight can be manifested.

To summarize, I give in (12) the instantiations of syllable weight that we have discussed:

\[ (12) \quad \text{Heavy} \quad \text{Light} \]

\[ a. \quad \text{i. VV or VC} \quad \text{V} \]
\[ \text{ii. VV} \quad \text{V or VC} \]
\[ b. \quad \text{closed syllable open syllable} \]
\[ c. \quad \text{marked [+P]} \quad \text{unmarked} \]
\[ d. \quad \text{high tone} \quad \text{low tone} \]
\[ e. \quad \text{i. tense V} \quad \text{lax V} \]
\[ \text{ii. low V} \quad \text{high V} \]
\[ \text{iii. ...} \]

Returning to Dutch, I will now discuss the following problem. As we have seen already, in the Dutch stress system the syllable weight distinction does not lead to a simple dichotomy. On the assumption that the VV/VC distinction is relevant, there are at least three dichotomies (ignoring for the moment my remark concerning long and short vowels):

\[ (13) \quad \text{Syllable Weight Classification} \]

\[ \text{light: schwa} \quad \text{heavy: full vowel} \]
\[ \text{light: VX} \quad \text{heavy: VXC} \]
\[ \text{light: VV} \quad \text{heavy: VC} \]

The question that must be answered is how this classification of syllables must be incorporated into the formal analysis of the stress placement rule.

In the first analysis of Dutch stress that I will propose in the next section I will make use of a syllable weight scale for the purpose of foot assignment, i.e. I will adopt the proposal put forward by various Dutch phonologists to rank syllables on a scale on the basis of their propensity to be stressed, much as segments can be ranked on a scale in terms of their sonority. Indeed Dijkstra (1982) and Van Noes (1982) refer to the scale as a "sonority scale". The idea of such a scale is also employed in Kager and Visch (1983). Rather than speaking of a sonority scale I will speak of a weight scale. At the two poles of the syllable weight scale we find syllables with a schwa (having the lowest propensity to receive stress) and the superheavy syllables, VVC and VCC (having the highest propensity to be stressed and appearing in that order). In between we find the heavy syllables (VV, VC), of which the latter type is claimed to have a greater propensity to receive stress. As an initial hypothesis we might adopt therefore the following scale:

\[ (14) \quad |---|---|---|---| \]

\[ \bullet \text{VV} \quad \text{VC} \quad \text{VCC} \quad \text{VVC} \]

---increasing weight---

Let us now investigate how, in the publications just mentioned, the weight scale is used in a theory of stress assignment that employs feet. In chapter 4 I distinguished the following types of limited quantity sensitive systems:
There exists general agreement on the claim that Dutch stress is of the limited Q-sensitive type. This is based on the observation that stress occurs on one of the final three syllables in monomorphemic words, predominantly on the penultimate syllable.

Although they show no awareness of this fact Dijkstra (1982) and Kager & Visch (1983) analyze the Dutch stress system as if it constitutes a fourth type, given in (15) in the fourth column. This fourth type may perhaps be expected to exist, given that it fills a gap in a classification that is based on the surface stress patterns, rather than on the way in which these systems can be analyzed within the metrical framework. One of the purposes of this section is to find out whether this is indeed the proper way to handle the Dutch stress system.

The analyses proposed by Dijkstra (1982) and Kager & Visch (1983) imply the claim that if stress is located on one of the final two syllables stress goes to the heavier of these two (this is different from the other types), but they also claim that stress goes to the penultimate syllable if both syllables are equally heavy. This is only a rough statement and we will go into more detail below. Let me focus here on the consequences of such a state of affairs. The type of foot that is needed must surely be quantity sensitive. As I argued in chapter 4, section 4.3.1.5, standard metrical theory employs three types of QS feet:

(16) a. F  b. F  c. F
    S W       S W       S W
            \___________/    \___________/    \___________/
             F          F          F

None of these three foot types can be used for Dutch, since these feet give us the first three systems in (15), leaving the fourth one unaccounted for. We need a new type of QS foot:

(17) F
    S W
\___________/  X
X

This foot type must be interpreted as follows. Both the left and the right node may dominate any type of syllable, but it may not be the case that the syllable which is dominated by S is placed lower on the weight scale than the syllable which is dominated by W. Let us refer to the configuration that is ruled out as a mismatch. The condition for successful foot-assignment can be stated as follows:

(18) F
    S W
\___________/  X
X

Mismatch Condition: S > W

The mere fact that an analysis of Dutch along the lines discussed here requires a new foot type is of course not an argument against such an analysis. It does make one wonder, however, whether the analysis is in fact adequate. This is one of the reasons for considering an analysis that does not make use of this type of foot in section 5.3.1.5.

Returning to the weight scale on which this type of foot-assignment is crucially based I want to answer the question whether, and if so, how a relation is established between a scale on which syllables are ranked, and properties of the syllables themselves. In the proposal advanced by Van Nes the scale is primitive in the sense that it is simply postulated. Dijkstra (1982) and Kager & Visch (1983), however, argue that the ranking of syllables can be derived from geometrical properties of syllables. These authors assume the following types of syllable structure for Dutch:
This is essentially the analysis that is proposed by Trommelen (1983). In chapter 3, section 3.5.1, we have seen that the decision to assign vowels to the nucleus node and consonants to the coda node consistently necessitates the adoption of a special convention to explain that a branching coda is allowed after a non-branching nucleus only. In short, the structures in (19) make it impossible to designate one constituent as the obligatory part of the syllable. I also argued that the need to adopt such a convention points to the missing of a generalization, rather than the making of one. However, ignoring that point, we can say that the scaling of syllables can be derived from the geometrical properties of syllables if we adopt the following principles:

(20) a. A branching node attributes more to heaviness than a non-branching node

b. A branching rhyme attributes more to heaviness than a branching nucleus and a branching nucleus attributes more to heaviness than a branching coda

Given these principles we derive the weight scale adopted above, repeated here for convenience:

(21) 5555
      VVVCVCCVVC

Let us now see how a scaling of syllables can be derived from the syllable structure analysis, giving here both the mora analysis and the corresponding metrical analysis:

(22) i. Mora theory
     a. c b. c c. c d. e e. c
     m m m m m m
     a v v v vv v v

ii. Metrical theory
    a. b. c. d. e.
       c c c cd c cd
       v v v vc v cc v vc

In my account there is, in both analyses, no structural difference between b and c, nor between d and e. On the assumption that we want to make the five-way distinction that is embodied in (21), I have no choice but to say that next to geometrical properties there are other properties that determine the ranking of syllables. The other relevant factors are syllable closure and vowel quality. Hence a scale can be derived if we adopt the following principles:

(23) a. Syllables are ranked according to the number of morae that they contain

b. Closed syllables count as heavier than open syllables

c. Syllables with long vowels count as heavier than syllables with short vowels

Apparently principle b takes precedence over c where a conflict arises. This is the case with respect to VV and VC syllables.

We must conclude that by adopting the syllable structure analysis that I have proposed we cannot reduce the weight scale to a single property of syllables. I do not consider this to be a disadvantage for two reasons. Firstly, as I have argued above, there are other examples where a weight difference cannot be related to geometrical properties of syllables. The second reason is that by "factoring out" syllable closure as a separate factor we explain why it is possible that this factor (as well as the factor vowel quality) is much less important than the factor that involves the
number of morae (see Hyman 1977). For these reasons I maintain that the syllable structure analysis that I have proposed provides an adequate basis for approaching stress assignment in Dutch.

Before I proceed with the analysis of Dutch stress I will make a brief remark about the device of extrametricality. If we limit this device to phonological units, as is proposed in Selkirk (1984), it allows us to downgrade final syllables on the weight scale or to disregard them altogether, i.e. we may mark extrametrical a final mora or a final syllable. Observe that by adopting the mora-theory we can limit the extrametricality device to stress-bearing units.

It is argued in the literature that units are marked as extrametrical either by rule or on an item-to-item basis, i.e. lexically. In the latter case extrametricality is a straightforward exception device, to be interpreted on a par with the diacritic [+F] which is assigned to syllables that receive primary stress contrary to rule.

Analyzing a language like Dutch, for which certain generalizations concerning stress placement face a considerable number of exceptions, we have to answer the question when a generalization concerning the stress pattern of monomorphemic words is significant and when not. The availability of the extrametricality device and the diacritic [+F] do not make it easy to reject a rule as invalid. Quite generally speaking anything is allowed to occur. Consider the following example. Suppose we want to establish what happens when the two peripheral syllables in Dutch are of equal weight. Words consisting of two super-heavy syllables are very rare, so in order to have sufficient data on which to base our choice, we must look at sequences of the type VV-VV and VC-VC. Strictly speaking, disyllabic words with initial stress tell us nothing:

(24) giro moslim
    baboe atlas

These words have initial stress. Yet this may be because their final syllable or final segment is extrametrical. In the former case these words would be like monosyllables and in the latter case (illustrated below) like words having a second syllable with a schwa:

(25) giro (c) mosi (m)

On the other hand bisyllabic words of this type with final stress are equally unrevealing:

(26) kado kordon
    idee kristal

In those cases the final syllable may be specified as [+F]. Given that both extrametricality and [+F] are exception devices the mildest position is to claim that a stress rule is less likely to express a significant generalization if the number of exceptions is greater than the number of regular cases, whether exceptionality is encoded in terms of extrametricality (to handle negative exceptions) or in terms of a diacritic mark (to handle positive exceptions). This is the position that I will adopt here. This implies that I will in principle propose a stress rule that accounts for the patterns that are in the majority, the dominant patterns. I realize that this position perhaps implies a simplification of the issues that are involved. Firstly, it may happen that a particular "dominant pattern" can only be captured by adding ad hoc devices to the theory, in which case one might want to refrain from accounting for this pattern as following from the rule. Secondly, we cannot be sure, that patterns which are in the majority, in fact represent what native speakers regard as rule governed patterns. There are several ways to check whether this is the case or not. One might investigate "wrong pronunciations" of foreign words or historical stress shifts as is done in Van Marle (1988). Another route is taken by Kager & Visch (1983), who claim that synchronic shifts (due to stress clash) are more likely to occur if the resulting stress pattern is predicted by the analysis. Finally, in Van der Hulst & Langeweg (forthc.) results will be reported from an experiment in which speakers of Dutch have been asked to pronounce nonsense words. As far as I have been able to judge from the results obtained, most of the patterns that are in the majority in the vocabulary of Dutch, are also chosen in pronouncing nonsense words.

The analysis that is offered in the next section is based on a corpus that contains the vast majority of Dutch monomorphemic nouns, adjectives and verbs, excluding highly specialized vocabulary and words that are clearly felt as foreign by native speakers of Dutch. Of course, monosyllabic words
and all polysyllabic words in which only one syllable contains a full vowel have been excluded. It goes without saying that it is impossible to gather a "complete list", among other things because it is not possible to draw a sharp line between foreign and non-foreign words or specialized and non-specialized words. I claim, however, that the collection (comprising about 3500 items) on which I base my analysis is representative and that the conclusions concerning the dominant patterns will not be affected by possible oversights on my part. In 'van der Hulst and Langeweg (forthc.)"complete" lists will be made available. Here I limit myself to giving incomplete lists that serve an illustrative purpose. Because the borders of the corpus are to some extent "fuzzy" I will also speak here in terms of rough totals when comparing the various subsets of data.

5.3. The stress pattern of Dutch monomorphemic words

5.3.1. Nouns

5.3.1.1. Bisyllabic nouns

Limiting ourselves to bisyllabic words for the moment let us first look at cases with a final syllable of the structure VC and VVC, i.e. with a final syllable that contains a long vowel or diphthong followed by one consonant, or a short vowel followed by two consonants. For a discussion of the Dutch vowel system I refer to chapter 3, section 3.3.3.

There are about 450 cases with finally stressed VVC (the first syllable being either VC or VV) and only about 25 cases with stress on the first syllable:

<table>
<thead>
<tr>
<th>27</th>
<th>VC-VVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>parasf</td>
<td>tarief</td>
</tr>
<tr>
<td>panei</td>
<td>muziek</td>
</tr>
<tr>
<td>juweel</td>
<td>profiel</td>
</tr>
<tr>
<td>atoom</td>
<td>banan</td>
</tr>
<tr>
<td>domein</td>
<td>aluin</td>
</tr>
<tr>
<td>siroop</td>
<td>sigaar</td>
</tr>
<tr>
<td>paleis</td>
<td>anijs</td>
</tr>
<tr>
<td>limiet</td>
<td>kajuit</td>
</tr>
</tbody>
</table>

(28) VC-VVC
octaaf archief octrooi portiek sandaal
garneel penseel kasteel reptiel pistool
ebemeum kostuum vulkaan orkaan sardien
ekloken fontein fortuin dolfin persoon
tartaar scharnier tamboer cultuur markies
formuis appanaat soldaat stleet bandiet
parkiet marmiet bandiet despot dispuut

(29) EXCEPTIONS
VV-VVC
sierad deemoed potlood arbeid
weemoed kleinoood bloemnote minnietraaflacht
kalief koekoek lichaam altaar
kroepoek wierook vampier mammoet
wierook swaluw arthor cocktail
zenuw

Turning to VCC cases we find a less clear picture, i.e. there are relatively more exceptions than in the previous case (regular: 110, exceptional: 70):

<table>
<thead>
<tr>
<th>30</th>
<th>VV-VVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>smaragd triomf spelonk augurk kioek</td>
<td></td>
</tr>
<tr>
<td>alarm katern balans eclips traject</td>
<td></td>
</tr>
<tr>
<td>relict basalt tumult gigant fasant</td>
<td></td>
</tr>
<tr>
<td>client talent adept protest reflex</td>
<td></td>
</tr>
</tbody>
</table>

(31) EXCEPTIONS
vijand eland eiland avond agens
biceps bruiloft kobalt climax codex

<table>
<thead>
<tr>
<th>32</th>
<th>VC-VCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>miljard concern impuls foresn respons</td>
<td></td>
</tr>
<tr>
<td>ellips karwats contract aspect district</td>
<td></td>
</tr>
<tr>
<td>insekt consult pendant fondant fragment</td>
<td></td>
</tr>
<tr>
<td>segment concept biljart concert rapport</td>
<td></td>
</tr>
<tr>
<td>contrast orkest arrest attest compost</td>
<td></td>
</tr>
</tbody>
</table>

(33) EXCEPTIONS
herberg nonsens ambacht asfalt yoghurt
Many of the initially stressed words end in /ks/ (written <x>) while this cluster occurs only a few times in the finally stressed cases. Facts like these can be expressed in subrules that express subregularities. As we go on I will mention other subregularities of this type, but I will not attempt to formulate explicit rules. In all cases such subrules would tell us that the fact that a syllable is either marked [+F] or marked as extrametrical is regarded as "expected" given the segmental make-up of these syllables. I have not been able to find clear phonological grounds for the fact that certain endings deviate from the dominant patterns.

In this type of case we find a fair number of exceptions to the generalization that final superheavy syllables are stressed. To illustrate the point that not all exceptions can be predicted consider the following pairs, which have similar endings:

<table>
<thead>
<tr>
<th>(34)</th>
<th>miljard</th>
<th>osmond</th>
</tr>
</thead>
<tbody>
<tr>
<td>tendens</td>
<td>nonsens</td>
<td></td>
</tr>
<tr>
<td>sarcast</td>
<td>albest</td>
<td></td>
</tr>
<tr>
<td>orkest</td>
<td>asbest</td>
<td></td>
</tr>
<tr>
<td>alarm</td>
<td>napalm</td>
<td></td>
</tr>
<tr>
<td>gigant</td>
<td>vijand</td>
<td></td>
</tr>
<tr>
<td>basalt</td>
<td>kobalt</td>
<td></td>
</tr>
<tr>
<td>eclips</td>
<td>bloeps</td>
<td></td>
</tr>
<tr>
<td>spelunk</td>
<td>avond</td>
<td></td>
</tr>
<tr>
<td>fazant</td>
<td>eland</td>
<td></td>
</tr>
</tbody>
</table>

Let us now turn to the stress pattern of bisyllabic nouns that end in VC and VV. We may distinguish four types:

<table>
<thead>
<tr>
<th>(35)</th>
<th>INITIAL</th>
<th>FINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC-VC</td>
<td>148</td>
<td>98</td>
</tr>
<tr>
<td>VV-VV</td>
<td>178</td>
<td>68</td>
</tr>
<tr>
<td>VC-VV</td>
<td>178</td>
<td>38</td>
</tr>
<tr>
<td>VV-VC</td>
<td>198</td>
<td>128</td>
</tr>
</tbody>
</table>

On the basis of these totals one would be tempted to say that stress is predominantly initial (or prefinal) and hence that bisyllabic words show no evidence for a significant weight difference between VC and VV.

Let us first take a close look at the bisyllables in which both syllables have the same skeletal structure:

<table>
<thead>
<tr>
<th>(36)</th>
<th>VC-VC: INITIAL STRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>plastic</td>
<td>mustang</td>
</tr>
<tr>
<td>sambal</td>
<td>consul</td>
</tr>
<tr>
<td>pelgrim</td>
<td>album</td>
</tr>
<tr>
<td>monlon</td>
<td>nectar</td>
</tr>
<tr>
<td>harnas</td>
<td>kermis</td>
</tr>
<tr>
<td>cactus</td>
<td>sabbat</td>
</tr>
</tbody>
</table>

VC-VC: FINAL STRESS

| kornsk | kristal |
| bonbon | kordon |
| kompas | succes |
| portret | trompet |

The clearest tendency is for words in <et> to receive final stress (I use "< >" to indicate spelling). There are only a few exceptions to that generalization. I give here what seem to be other generalizations ("computed" on the complete corpus):

<table>
<thead>
<tr>
<th>(38)</th>
<th>FINAL</th>
<th>INITIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 x &lt;et&gt; (4 exc.)</td>
<td>14 x V+&lt;ng&gt;</td>
<td></td>
</tr>
<tr>
<td>5 x &lt;el&gt;</td>
<td>19 x V+&lt;r&gt;</td>
<td></td>
</tr>
<tr>
<td>6 x &lt;es&gt; (2 exc.)</td>
<td>9 x &lt;is&gt; (1 exc.)</td>
<td></td>
</tr>
<tr>
<td>2 x &lt;ot&gt; (1 exc.)</td>
<td>28 x &lt;us&gt; (1 exc.)</td>
<td></td>
</tr>
<tr>
<td>16 x &lt;on&gt; (6 exc.)</td>
<td>18 x &lt;um&gt; (1 exc.)</td>
<td></td>
</tr>
<tr>
<td>3 x &lt;ol&gt; (1 exc.)</td>
<td>7 x &lt;a&gt;+[nas]</td>
<td></td>
</tr>
</tbody>
</table>

There are no words ending in <en>, so if we regard the only two ending in <as>, both having initial stress, as exceptions one might say that a sequence of a mid short [a:back, around] vowel and a dental consonant attracts final stress, thereby "disturbing" the predominant initial or prefinal pattern. The phonological status of this generalization is suspect, however.

The prefinal pattern surfaces even clearer in the case of VV-VV bisyllables:

<table>
<thead>
<tr>
<th>(39)</th>
<th>VV-VV : INITIAL STRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuba</td>
<td>yuca</td>
</tr>
<tr>
<td>sofa</td>
<td>noga</td>
</tr>
<tr>
<td>trema</td>
<td></td>
</tr>
</tbody>
</table>
specie olie linie motie rurie
baboe goeroe bami nazi dodo
kilo kano provo toto 'baby

(40) VV–VV : FINAL STRESS
idee taugee magie kopie taboe
revue gnei livrei etui koipij
depot kado buro recu bijou

In the following table we see the correlation between the nature of the final vowel and stress placement. I have added the score for VV–VV bisyllables (to be discussed hereafter) for comparison (again these numbers refer to the complete corpus):

(41) VV–VV

<table>
<thead>
<tr>
<th>VV–VV</th>
<th>INITIAL</th>
<th>FINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ë/</td>
<td>71</td>
<td>5</td>
</tr>
<tr>
<td>/ê/</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>/e/</td>
<td>41</td>
<td>12</td>
</tr>
<tr>
<td>/â/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ê/</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>/ï/</td>
<td>48</td>
<td>11</td>
</tr>
<tr>
<td>/õ/</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>/ei/</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>/ou/</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>/ui/</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By using the notation /ê/, I neglect here the autosegmental representation of length. The notation of diphthongs is also informal. For an analysis of the Dutch vowel system I refer to Chapter 3, section 3.3.3. Clearly the "disturbing" factors are the diphthong /ei/ and the mid unrounded vowel /ê/ The same two endings account for the great majority of finally stressed VV–VV words:

(42) VV–VV : INITIAL STRESS

pinda wodka dogma firma junta
versie fractie kwestie bamboe armoe
toast kombo saldo shampoo salvo
accou moscou whisky dummy panty

tooffee trofee moskee pygmeer elpee
vallei pastei karwei abdij soldij
kandij partij circuit bordeaux essay

The facts considered so far lend support to the idea that stress is predominantly prefinal if the final syllable is not superheavy and that the difference between VC and VV syllables is of little significance. The crucial case is going to be the VV–VC type. If VC is heavier than VV then we expect to find here a predominant full pattern, but in fact we do not, as the table in (35) has already revealed:

(44) VV–VC : INITIAL STRESS

wajeng pisang klawang viking smoking
reling honing koning sarong enuch
goelasj kajak bikak havik sesam
slalom forum datum satan rota
divan neong python nylon bizon
oson radar sonar humor motor
floue pias sinas lavas polis
iskris chaos bios kokos epos
rebus kubus fiat kievit robot

(45) VV–VC : FINAL STRESS

karaf giraf tabak barak kozak
barok vasal tabel libel hotel
bacil pupil katrol program kolom
roman tiran flacon wagon spion
japan baron gazon gallop decor
moreas matras proces adres kolo
debate frepat patat raket boeket
tablet floret rozet fagot cachot

The majority of the finally stressed cases end in the sequences that we mentioned above as attracting stress in the VC–VC cases. The picture is less neat, however, and in some classes there are more exceptions than regular cases.
31 x <et> (1 exc.)
12 x <el>
2 x <es> (3 exc.)
6 x <ot> (1 exc.)
6 x <ol>
2 x <os> (6 exc.)
20 x <on> (22 exc.)
5 x <il>
5 x <at> (1 exc.)

This concludes our discussion of the bisyllabic nouns. So far the safest generalization is that the penultimate syllable is stressed, unless the final syllable is superheavy; in that case we find final stress. The number of exceptions is large, however, and although a significant subclass can be identified on the basis of the segmental make-up of the final syllable the conclusion is inevitable that stress in Dutch is lexical. By this I mean that whatever stress rule we propose it makes more sense to interpret this rule as a lexical redundancy rule than as a rule that actually applies to items that have not been specified for stress.

Before proposing an analysis I will first go through the trisyllabic nouns (not containing a syllable with schwa). Here we will find some evidence for the claim that the VV/VC difference is relevant for the purpose of stress placement.

5.3.1.2. Trisyllabic nouns
The generalization that final superheavy syllables are stressed is not refuted by trisyllabic words. The following list is overwhelming, compared to the almost total absence of exceptions.

(parachute paragraaf negatief sarcofaag mozaiek
kannibal kapitaal ritueel gladiool diadeem
idioom vaticaan pelikan fenomeen legioen
paviljoen kapitein karabijn epigoon kaviaar
atmosfeer formuleer meteor amateur avontuur
speculaas paradijs abrikoos appaart dynamiet
parasiet kwaliteit kosmonaut farmaceut instituut

X-X-VCC : FINAL

 dividend arabesk ordonnans dialect architect
adjunt foliant ledikant diamant dissident
perkament testament hyacint labrynt cineast

Turning then to trisyllabic nouns consisting of VC and VV syllables we can have the following logically possible types. After each type the number of cases that occur in the corpus has been indicated:

(49) INITIAL  PREFINAL  FINAL

In six out of eight cases the prefinal pattern is dominant. The two exceptional cases involve a sequence of VV-VC#, but contrary to what one might perhaps expect we find an dominant initial stress and not final stress in these cases.

To study the cases more closely let us look at the relevant examples. For the first two types we find no examples with initial stress:

Type a: VC-VC-VC

(50) VC-VC-VC : PREFINAL
abstractum perfectum badminton transistor atlantis
syntaxis wilhelmsus consensuum prospectus

Type b: VC-VC-VV

(51) VC-VC-VV : FINAL
postiljon compagnon castagnet

Type c: VC-VV-VV

(52) VC-VV-VV : PREFINAL
walhalla chinchilla gorilla vendetta confessie
commissie * peraccissie * attractie infectie confectie
infectie restrictie inductie instructie condictio
spaghetti * parlando commando embargo espresso

(53) **VC-VC-VV** : **FINAL**

chimpansee * employees * compagnie * industrie * belletterie
amnestie

Proceeding on the assumption that prefinal stress is regular, we mark the words with final stress as exceptional (i.e. [F]). Observe that these words have the same endings that we also found among the bisyllabic exceptional words, i.e. <ou>, <et> and <ee> (cf. 38, 41 and 46). The remaining cases end in <ie>. Among the bisyllabic two words ending in <ie> constitute a relatively large group of exceptions (see the table in (41), entry /I/).

**Type c**: **VC-VC-VV**

For the third class we find the three logical possibilities, although prefinal stress is dominant.

(54) **VC-VC-VV** : **INITIAL**

formica * maccia * maffia raffia dahlia
hernia * fuschia * razzia tombola pergola
hosipita belgrado indigo piccolo eskimo
embryo * bungalow

It seems that prefinal <i> (/I/) is easily "neglected", a fact that has been noticed by several students of Dutch stress. It is possible to suggest that an <i> in prefinal position gives rise to a mismatch when placed in S position. Kager & Visch (1983) suggest that we acknowledge the fact that segment sonority in general is relevant for stress assignment, but the data indicate that the only convincing instance involves prefinal <i>. This does not warrant such a general claim. I therefore prefer to regard the stress-rejecting behavior of prefinal <i> as an arbitrary property of this segment.

In the next set of examples we see that there are in addition a few exceptions to this subregularity:

(55) **VC-VC-VV** : **PREFINAL**

alpaca armada college nirvana passiva

concilie communie bombarie bacterie mysterie
victorie historie invasie adhesie diffuse
ilusie inflatie ambitie conditie andijve
alkali tornado torpedo meccano albinio
bambino alpino gestapo sombrero allegro

(56) **VC-VV-VV** : **FINAL**

orchidee attaché amfible farmacie raspodie
harmonie fantasie

The cases with final stress again have typical stress-attracting endings, viz. <ee> or <ö> (both stand for /ë/) and <ie>.

**Type d**: **VV-VV-VV**

The fourth class is the largest one. Stress is predominantly on the penultimate syllable. In the majority of cases with initial stress we find the "unstressable" <i> and most finally stressed words end in one of the stress-attracting sequences <ee>, <ie> or <ei>.

(57) **VV-VV-VV** : **INITIAL**

canada papega omega aria parin
varia gloria fresia cavia paprika
primula pagina platina opera dominee
kolibrie maraboe alibi farao risico
mikado video stereo radio studio
regio folio polio patio ratio
animo domino rotary

(58) **VV-VV-VV** : **PREFINAL**

spirea bodega maria judoka koala
skela pyjama diploma aroma arena
hyena maizena angina mascara sahara
angora natura mimosa valeta peseta
valuta jeohova fiducie tragedie remedie
komodie religie familie opinia mahone
kolonie kanarie materie memerie cohesie
precicie provisie erosie legatie negatie
editie militie politie maneitie positie
nottie emotie promotie devote obiute
spinatze salami bikini okapi maori
rodeo imago dynamo piano casino
kimono bolero furtato

(59) VV-VV-VV : FINAL
chocola procedé scarabée coryfee matines
diarree protegé melodie parodie prosodie
strategie litanie reünie thérapie théorie
calorie afasie reliksie jaloere poezie
defilé canapé comité cihorei specerij
negorij curacao residu paraplu

Type e: VV-VV-VC
This class requires our special attention.

(60) VV-VV-VC : INITIAL
bineac decibel abraham requiem unicum
stadium medium odium jodium podium
velium helium opium natrium vacuum
ramadan rataplan specimen colofon oden
marathon stadiou orion salomon libanon
beriton horizon jaguar lucifer jupiter
senior junior monitor ananas litotes
socrates syfilis nucleus genius tetanus
lazarus habitus horizon

(61) VI-VV-VC : PREFINAL
museum supinum decorum futurum pronomen
senator curator pluralis dualis adonis
viceariss salaris notaris clematis pleuritis

(62) VV-VV-VC : FINAL
manik frikadel citadel karamell kolonel
aquarel bagatel krokdil protocol parasites
diagram colofon capuchon piador etiket
diagram colofon capuchon piador etiket
diagram colofon capuchon piador etiket

initial syllable. With respect to trisyllabic words having initial stress we have observed above that in most cases the prefinal syllable contains <i>. In this class a significant number of words with initial stress do not fall under the generalization that a prefinal <i> is skipped:

(63) vacuum ramadan rataplan
odeon colofon oregon
marathon salomon jaguar
libanon oberon equator
ananas litotes nucleus
modulus tetanus lazarus

The stress rule that I want to formulate must account for the fact that trisyllabic words of this type have predominantly initial stress. At this point we can conclude for the first time that a rule that assigns penultimate stress in all cases (unless the final syllable is superheavy) is not going to be successful in accounting for all the dominant patterns. Admittedly, my definition of the notion 'dominant pattern' (involving the definens 'majority') must be followed to the letter, because we are dealing with small numbers of words here. But I see no reason so far to think that we are on the wrong track. For completeness let us observe that the cases with final stress typically end in a stress-attracting sequence (cf. the table in 38).

Type f: VV-VC-VC
In this class and the following one as well, we find predominantly prefinal stress and most cases with final stress end in a stress-attracting syllable.

(64) VV-VC-VC : PREFINAL
pacific kanunnik elektron professor reactor
reflecter detector synopsis hibiscus meniscus
alumnus olympus abortus augustus

(65) VV-VC-VC : FINAL
apostrof parallel tarantel

This type is interesting because here the dominant pattern is not to have stress on the penultimate syllable, but rather on the antepenultimate, i.e.
Type 9: VV-VC-VV

(66) VV-VC-VV : PREFINAL
waranda agenda mazurka programma dilemma
havanna madonna elektra placenta aceto
siesta provincie parochie emulsie defensie
processie professie emissie redactie retractie
kwinten licentie proportie chianti fiasco
flamino stiletto libretto risotto

(67) VV-VC-VV : FINAL
odyssee neuralgie autopsie travestie sacrastie
demasqué fricandeau

As in class a and b, these two classes lack cases with initial stress. We can make an interesting generalization here: in all types with a penultimate VC syllable initial stress is lacking.

Type h: VC-VC-VC
Like type e, this type shows a majority of words having initial stress:

(68) VC-VC-VC : INITIAL
almanak tomahawk carnivale archipel alcohol
practicum calcium cadmium maximum astrakan
charlatan mocassin lexicon pantheon pentagon
epsilon handbook sanzibar pancreas hercules
albatros syllabus omnibus exodus nutlius
dactylus terminus octopus alfabet

(69) VC-VC-VC : PREFINAL
erratim passivum dictator messias brandarisis
enclisis

(70) VC-VC-VC : FINAL
almanak tomahawk carnivale
alcohol astrakan charlatan
mocassin pantheon pentagon
pancreas hercules albatros
syllabus exodus octopus
alfabet

We have now gathered sufficient data to turn to the formal analysis.

5.3.1.3. A metrical analysis
In the previous two sections I have discussed bi- and trisyllabic words that consist of syllables without a schwa. We saw that an initial hypothesis saying that prefinal stress is predominant in all cases meets with the problem that words ending in the sequence VV-VC# have initial stress as the predominant pattern. In this section I will propose an analysis that explains the occurrence of all the patterns that were found to be dominant. This analysis will then be confronted with a wider range of data, including trisyllabic words with a schwa and words consisting of four syllables.

The first analysis is embodied in the following stress rule:

(72) Dutch stress
a. Assign feet from right to left that are
   -binary
   -O-sensitive
   -labelled SW
b. Assign a word tree that is
   -right branching
   -labelled by the LCPR
c. LCPR
   In the configuration [AB] B is Strong iff
   i. it branches
   ii. it dominates a superheavy syllable
   iii. it dominates a marked syllable ([+F])

The type of foot on which this analysis is based has been discussed above:
Given the formulation of the LCDR, words with final superheavy or muted syllables always receive final stress. The special role of this labelling rule becomes clear in example (79) where it predicts antepenultimate stress, whereas a simple stress labelling would give final stress.

To illustrate the working of the LCDR compare the following examples:

1. a. __________
   b. __________
   c. __________
   d. __________

2. a. __________
   b. __________
   c. __________
   d. __________

3. a. __________
   b. __________
   c. __________
   d. __________

An extra stipulation must be made for words with exceptional final stress.

We must prevent a syllable marked as IP from becoming the weak final in a foot. To achieve this we might give such syllables a place on the scale as high as superheavy syllables. For bi- and trisyllabic words the analysis predicts the following metrical structures:

- [V] W V C [V] W V C
- [V] W V C [V] W V C
- [V] W V C [V] W V C
- [V] W V C [V] W V C

Mismatches:

- a. __________
  b. __________
  c. __________
  d. __________

The interesting aspect of this analysis is that the unexpected behavior of these types of words (VW-VC in 76, VW-VC and VC-WV in 78 and 79 respectively) all ending in the same sequence VW-VC is straightforwardly explained. The crucial point is that the vowel in this context cannot be considered into a single foot since the main constraint that syllabic weight difference cannot be contradicted by the SW labelling.
As was mentioned in chapter 3, some find it attractive to argue that superheavy syllables are in fact branching feet themselves:

\[
(79) \quad \begin{array}{c}
\sigma \\
\mathcal{C} \mathcal{V} \mathcal{X} \mathcal{C}
\end{array}
\]

The identical behavior of superheavy syllables and branching feet would then be explained and clause 11 of the LCPR could be eliminated. Proposals along these lines can be found in McCarthy’s analysis of stress in Arabic dialects (McCarthy 1979). In the following figures “X” stands for either VV or VC syllables:

\[
(80) \quad \begin{array}{cccc}
\begin{array}{c}
\mathcal{F} \\
\mathcal{C} \mathcal{V} \mathcal{C} \mathcal{C}
\end{array} & \begin{array}{c}
\mathcal{F} \\
\mathcal{C} \mathcal{V} \mathcal{C} \mathcal{C}
\end{array} & \begin{array}{c}
\mathcal{F} \\
\mathcal{X} \mathcal{C} \mathcal{V} \mathcal{C}
\end{array} & \begin{array}{c}
\mathcal{F} \\
\mathcal{X} \mathcal{C} \mathcal{V} \mathcal{C}
\end{array}
\end{array}
\]

I will not adopt this point of view, however. In the next section I will discuss a method of explaining the equivalence of a superheavy syllable and a “real” branching foot that is not based on questionable assumptions concerning constituent structure.

5.3.1.4. Extension of the data base
The next type of case that I will consider are words with schwa. The present analysis predicts that if a schwa occurs in the final syllable, stress will be on the penultimate syllable.

\[
(81) \quad \begin{array}{c}
\mathcal{F} \\
\mathcal{X} \mathcal{X} \mathcal{X}
\end{array}
\]

Because syllables with a schwa are lower on the scale than any other type of syllable they can be combined into a foot with the preceding syllable. The

LCPR labels the final foot with S. The number of exceptions that I know of is small, compared to the list of regular cases.

\[
(82) \quad \text{X-X-S : PREFINAL}
\]

- allure
- amandel
- antenn
- apache
- asperge
- bagage
- ballade
- benzine
- brigade
- capsule
- cassette
- cylinder
- colonne
- commode
- computer
- controle
- corsage
- diaken
- discipel
- douane
- egypse
- eksamen
- ellende
- enquete
- eskader
- etage
- etoppe
- examen
- extase
- fanfare
- formule
- horoge
- hypnoze
- jenever
- kabouter
- kadaver
- kalender
- kaliber
- kamille
- karakter
- kastanje
- kazerne
- kazurfel
- komkommer
- lavendel
- lawine
- legende
- machine
- malaise
- manoeuvre
- maquette
- marine
- mascotte
- methode
- mirakel
- molukken
- morfine
- narcose
- notulen
- novelle
- november
- nuance
- case
- obstakel
- oktober
- orakel
- oranje
- pantoffel
- papaver
- parabel
- parade
- parterre
- plankte
- principe
- prognose
- psychose
- rabarber
- rancune
- ravage
- rotonde
- routine
- salade
- satire
- seconde
- suede
- taverne
- tentakel
- tentamen
- theater
- tirade
- trapese
- tribune
- vedette
- vehikel
- visite
- vitrage
- vitrine
- volume
- zigeuner

\[
(83) \quad \text{X-X-S : EXCEPTIONS}
\]

- manchester
- oorkonde
- armoede
- betuwe
- nijmegen
- veluwe
- weduwe

The analysis proposed in the preceding section predicts that if the schwa is in second position and a full vowel in final position we will find initial stress. This is so because it is not possible to assign a foot to the last two syllables in those cases; the final syllable is heavier than the penultimate syllable and a mismatch would be the result. However, if the final syllable is superheavy we predict final stress:
syllables with a schwa, but I will discuss the stress pattern of words consisting of four syllables. Our stress rule makes the following predictions:

1. no initial stress
2. final stress if the final syllable is superheavy
3. antepenultimate stress if the final syllable is heavier than the penultimate syllable (VV-VC# and V-X#)
4. penultimate stress in the remaining cases

As for the first prediction it can be said that the number of words with initial stress is limited to two types of cases. First there are a few grammatical terms like infinitief, accusatief, nominatief and secondly there are place names like Schéveningen, Amserdagen with schwa in the second and fourth syllable. Both categories must be marked as exceptions.

Proceeding with the second prediction, I have not found any exception:

affinitiet, alexandrië, analoë, aperitief, apocalyps
capaciteit, cinematoccoop, coëfficiënt, deodorant, egelantier
experiment, idiolect, ingrediënt, initiaal, karikatuur, lettertuur, locomotief, materiaal, meridiaan
prerogatief, rozemarijn, salamandrië

The third prediction is borne out, although there are exceptions. Let us first consider the regular cases. Clearly if the third syllable has a schwa and the fourth a full vowel we cannot construct a foot over the last two syllables because this would result in a mismatch:

We see that the number of exceptions is rather high and one might want to question the significance of the generalization that I make here. It cannot be denied, however, that the stress rule that has been established above, makes the correct prediction, assuming, as I have done all along, that the dominant patterns must be treated as regular. As long as the alternative is to treat all words of the type considered here as having unpredictable stress, I see no reason to abandon the present analysis.

In the next section I will return to the prosodic characteristics of
More frequent is the type where the final syllable is closed and the penultimate open. In those cases it is also impossible to combine the final sequence VV-VC into one foot, because of the mismatch condition. Such words have the same structure as the one assigned to rinoceros:

\((91)\)  \(X\times X\times VV-VC: ANTEPENULTIMATE\)

<table>
<thead>
<tr>
<th>accordeon</th>
<th>acrostichon</th>
<th>adagium</th>
<th>adverbium</th>
<th>alluvium</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonium</td>
<td>anonymus</td>
<td>aquarium</td>
<td>arsenicium</td>
<td>basilicum</td>
</tr>
<tr>
<td>catalogus</td>
<td>colloquium</td>
<td>compendium</td>
<td>compositor</td>
<td>criterium</td>
</tr>
<tr>
<td>decennium</td>
<td>delirium</td>
<td>emeritus</td>
<td>geranium</td>
<td>gymnasium</td>
</tr>
<tr>
<td>harmonium</td>
<td>hospitium</td>
<td>imperium</td>
<td>jerusalem</td>
<td>magnesium</td>
</tr>
<tr>
<td>millennium</td>
<td>napoleon</td>
<td>plutonium</td>
<td>politicus</td>
<td>stipendium</td>
</tr>
<tr>
<td>symposion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

But there are quite a few exceptions:

\((92)\)  \(X\times X\times VV-VC: PREFINAL\)

<table>
<thead>
<tr>
<th>alligator</th>
<th>archivaris</th>
<th>curiosum</th>
<th>indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>irrealis</td>
<td>jubileum</td>
<td>mausoleum</td>
<td>navigator</td>
</tr>
<tr>
<td>oerangoetan</td>
<td>radiator</td>
<td>relativum</td>
<td></td>
</tr>
</tbody>
</table>

In addition there are also words having antepenultimate stress that do not conform to the generalization that in such cases the prefinal syllable has less weight than the final syllable:

\((93)\)  \(X\times X\times X: ANTEPENULTIMATE\)

<table>
<thead>
<tr>
<th>acasia</th>
<th>adagio</th>
<th>alinea</th>
<th>ammonia</th>
<th>apocope</th>
</tr>
</thead>
<tbody>
<tr>
<td>azalea</td>
<td>batavia</td>
<td>begonia</td>
<td>deposito</td>
<td>facsimile</td>
</tr>
<tr>
<td>forsythia</td>
<td>gardenia</td>
<td>grammatika</td>
<td>harmonika</td>
<td>magnolia</td>
</tr>
<tr>
<td>majolica</td>
<td>malaria</td>
<td>penelope</td>
<td>petunia</td>
<td>scenario</td>
</tr>
<tr>
<td>utopia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We should not fail to observe, however, that nearly all of them show a prefinal \(<i>\i>\), a vowel that, as we have seen before, usually rejects stress.

A small but interesting group involves words that have a schwa in the second syllable and a final sequence VV-VC\#. Above we saw that such words get antepenultimate stress if the second syllable has a full vowel. Our rule predicts the following structure for such words:

\((94)\)

\[ F \times W \times W \times S \]

And indeed words of this type have penultimate stress:

<table>
<thead>
<tr>
<th>difteritis</th>
<th>atheneum</th>
</tr>
</thead>
<tbody>
<tr>
<td>dromedaris</td>
<td>elevator</td>
</tr>
<tr>
<td>pikketanis</td>
<td></td>
</tr>
</tbody>
</table>

For the remaining group of words ending in two heavy syllables our stress rule predicts penultimate stress.

\((95)\)  \(X\times X\times X: PREFINAL\)

<table>
<thead>
<tr>
<th>academia</th>
<th>allegretto</th>
<th>alliantie</th>
<th>apriori</th>
<th>audientie</th>
</tr>
</thead>
<tbody>
<tr>
<td>axiom</td>
<td>caballero</td>
<td>cartharia</td>
<td>desperado</td>
<td>diabolo</td>
</tr>
<tr>
<td>diaphragma</td>
<td>domicilie</td>
<td>eldorado</td>
<td>esperanto</td>
<td>eucalyptus</td>
</tr>
<tr>
<td>evangelie</td>
<td>exercitie</td>
<td>februari</td>
<td>hacienda</td>
<td>harakiri</td>
</tr>
<tr>
<td>influenza</td>
<td>intermesso</td>
<td>januari</td>
<td>leontina</td>
<td>macaroni</td>
</tr>
<tr>
<td>maharadjia</td>
<td>monopolie</td>
<td>niagara</td>
<td>oppositie</td>
<td>palestina</td>
</tr>
<tr>
<td>panorama</td>
<td>paradigma</td>
<td>paranoia</td>
<td>pianola</td>
<td>picciulli</td>
</tr>
<tr>
<td>referendum</td>
<td>repercussie</td>
<td>rhododendron</td>
<td>seminaria</td>
<td>theorea</td>
</tr>
</tbody>
</table>

The following words have exceptional final stress:

\((97)\)  \(X\times X\times X: FINAL\)

<table>
<thead>
<tr>
<th>allegorie</th>
<th>ammoniak</th>
<th>anatomic</th>
<th>cabriole</th>
<th>categorie</th>
</tr>
</thead>
<tbody>
<tr>
<td>cavalerie</td>
<td>ceremonie</td>
<td>epidemie</td>
<td>epileptie</td>
<td>eucharistie</td>
</tr>
<tr>
<td>filosofie</td>
<td>hegemonie</td>
<td>individu</td>
<td>marionet</td>
<td>ontogenie</td>
</tr>
<tr>
<td>portemonnee</td>
<td>toreador</td>
<td></td>
<td></td>
<td>varieté</td>
</tr>
</tbody>
</table>
Note that some of them end in 〈et〉, some in 〈ed〉 and some in 〈ie〉. We have seen before that these endings receive "irregular stress".

The final group of words with four syllables to be considered are those with a schwa in the final syllable. Here the rule predicts penultimate stress and there are, as far as I know, no exceptions:

(98) X-X-X-et: PREFINAL
acrivastan  acrision  acredade  ambulancel  anecdote
baricade  blocage  camouflaze  catastrophe  cellulose
chocolat  discipline  entourage  epidem  garderobe
grenadine  helikopter  heroin  hypothese  karbonade
limonade  limousine  logaritme  margarine  marmelade
mayonnaise  nicotine  pantomime  perioide  piramide
pierrette  polonaise  polyester  privilege  procedure
salamander  serenade  serpentine  synagoge  tamarinde
terpentine  vacature  vellacum  vestibule  vitamine

This completes our overview of the facts concerning monomorphemic nouns. An analysis has been presented that makes the correct predictions with respect to the occurrence of dominant patterns. It has been pointed out that many of the exceptions fall under a relatively small set of subregularities that all refer to the segmental make-up of the final syllable, and, in one case (involving 〈i〉), to the segmental make-up of the prefinal syllable.

The reader may have noted that I have not discussed bi- or trisyllabic words having superheavy syllables in non-final position. One can think of many logically possible combinations of heavy and superheavy syllables, and make interesting predictions with regard to the stress pattern of such words. Unfortunately, the number of monomorphemic words having superheavy syllables in non-final position is too small to test the predictions that follow from the analysis that was proposed here.

5.3.1.5. Syllables with a schwa and an alternative analysis
In this section I will start by pointing out that the previous analysis is inadequate in one respect and that precisely on this point a more adequate analysis is conceivable. I will investigate the consequences of adopting the alternative analysis, taking into account what was proposed in the previous chapter, and show that it compares favorably to the analysis that has been presented first.

There are two facts involving the schwa that the preceding analysis does not explain. Firstly, schwas can never bear main stress. There are no exceptions to this generalization. This is in sharp contrast to the influence of all other syllable types on stress placement, where we find some or many exceptions in each case, as we have seen in the previous sections. Secondly, because schwas are absolutely unstressable and the foot type used in the metrical analysis is bounded, we cannot assign prosodic structure in those cases where two schwas occur in a sequence:

(99) F
evenment  →  evenement -?

It would seem that we must add a constraint to the preceding analysis (as in 100a), saying that a schwa may not appear in a strong or only syllable of a foot, and, in addition, a special foot type as in (100b), that is assigned to a word if two schwas occur in a row:

(100) a. a 〈( ... \(s)\) ...〉
     F
     m
     S
     S
     W
     W
     X
     e

In van der Hulst and Moortgat (1981) an analysis of Dutch stress was proposed that was designed to capture these two facts more straightforwardly.

The type of foot that is adopted in van der Hulst and Moortgat (henceforth HM) is quantity determined, left dominant and unbounded. The foot type is called "determined", because the head of the foot is required to dominate a full vowel. This property, and the property of unboundedness, was invoked to explain the fact that syllables with a schwa can never bear stress. Identifying the notion "head of foot" with "stress" we explain straightforwardly that syllables with schwa may never be stressed since the type of foot that is chosen requires schwas to occur in W positions of the foot and a full vowel in S position:
Stated in full the stress rule on which this second analysis is based looks as follows. Differences with respect to the preceding analysis have been marked with a star:

Dutch stress

a. Assign feet that are
   *-unbounded
   *-quantity-determined
   -labelled SW

b. Assign a word tree that is
   -right branching
   -labelled by the LCPR

c. LCPR
   In the configuration [AB] B is Strong iff
   i. it branches
   ii. it dominates a superheavy syllable
   iii. it dominates a marked syllable ([+]P)

A minor point is that to assign unbounded feet it is unnecessary to specify a direction. Given this alternative analysis, Dutch no longer presents evidence for the "fourth foot type". What we have used here is the unbounded counterpart of the second type in (16). Another consequence of this proposal is that the analysis can quite easily be extended to the derived vocabulary since suffixes (both derivational and inflectional) with schwas are numerous in Dutch. In (183) I give some examples of both derived and simple words. In giving these examples, I introduce another difference with respect to the preceding analysis. In line with the proposals advanced in the previous chapter, I will no longer assume that metrical structure is binary branching:

In those cases where more than two schwas occur in a row it is possible to apply several rules that delete certain schwas. For example *gezamelijk* can easily be pronounced as *gezamelijk*. In the case of *verschrikkelijkere* we find an alternative form *verschrikkelijkere*. I have not investigated rules of schwa deletion systematically, but the facts just mentioned suggest that a foot comprising three syllables, of which there are two with a schwa, constitutes an upper limit.

Apart from suffixes with a schwa, Dutch has many suffixes with the syllabic structure VVC or VCC. It is clear that words that are derived with these suffixes are equally well accounted for in both this and the preceding analysis. It is not my intention to discuss the stress pattern of complex words in detail here, so I will not discuss these cases any further.

The second and the third row of examples in (183) show schwas that precede the main stress. Following Rischel (1982), I assumed in chapter 4
that such syllables are adjoined to the stress foot by means of a stray syllable convention. I also argued in chapter 4 that, instead of the structure that I proposed for these words in (103), it is possible to say that syllables that precede the stress foot are grouped into a second foot that is adjoined to the stress foot by means of the convention just mentioned (see 60 and 81 in chapter 4):

\[
\text{(104) a. } \quad \text{begeleiden} \\
\text{b. } \quad \text{vergemakkelijken} \\
\text{c. } \quad \text{verschrikkelijkere} \\
\text{begenadigende}
\]

Structures of this type, I argued, might be used to characterize an antipole stress, i.e. a secondary stress which is located on the syllable that is furthest away from the syllable that has main stress. It is true that syllables with schwa in initial position, separated by one syllable from the syllable that has main stress, are relatively prominent. In terms of rhythm, I feel no difference between begeleiden (with an initial schwa) and fenomenen (with full vowels in every syllable, except the last). On the other hand, it is traditionally claimed that syllables with a schwa are not suitable locations to anchor a pitch accent (ignoring emphatic speech). If this is so, it would be undesirable that a syllable with a schwa is the head of the antipole stress foot. When the syllables that precede the main stressed syllable contain full vowels, however, there is no objection against grouping these syllables into a second foot, of which the leftmost daughter is labelled \( S \).

Let us now investigate the further consequences of adopting the HM analysis. The choice of a quantity determined unbou nded foot entails that each full vowel requires a separate foot. This also leads to a significant difference between this analysis and the preceding one. Consider the following examples:

\[
\text{(105) a. } \quad \text{bisem} \\
\text{b. } \quad \text{bezem} \\
\text{c. } \quad \text{kapelaan} \\
\text{d. } \quad \text{kapitein}
\]

In the previous analysis each pair will be assigned the same prosodic structure (i.e. that of bezem and kapelaan).

The following examples seem to suggest that the LCPR does relevant work in this analysis too:

\[
\text{(106) a. } \quad \text{ballade} \\
\text{b. } \quad \text{kapitein} \\
\text{c. } \quad \text{orchidee} \\
\text{d. } \quad \text{odessee}
\]

With respect to bisyllabic words we predict in all cases the structure that was assigned to bisem (in 105a), i.e. two monosyllabic feet, labelled SW by the LCPR.

A tacit assumption on which this alternative analysis is based, is the following. To account for words like odessee, with penultimate stress, foot assignment must be iterative, i.e. it is crucial that, after assigning a foot to the final syllable, preceding syllables with a full vowel are assigned a foot as well. This implies that the alternative analysis does not conform to the theory proposed in chapter 4, because I argued there that foot assignment need not be an iterative rule in that theory. However, if we apply foot assignment non-iteratively, we arrive at the following structure for a word like odessee:

\[
\text{(107) odessee}
\]

I.e. the stress rule, if applied non-iteratively, assigns a stress foot to the final syllable and the preceding syllables are grouped into an antipole stress foot, according to the procedure discussed above (and in chapter 4 in more detail).

I will now suggest a revision of the HM analysis that will allow me to maintain the claim that stress rules apply non-iteratively. Let us recall that the type of foot employed by HM differs in two ways from the type of foot that was employed in the first analysis;
The first difference involves the number of syllables that may be grouped into one foot and the second difference involves the type of syllable that is allowed to occur in weak position, i.e., in the HM type of foot the syllables that occupy the weak position must be light (i.e., contain a schwa), whereas in the other foot type both light and heavy syllables are allowed to occur in weak position. It is possible then to distinguish still another foot type, i.e., one that differs in one respect only from the foot type used in the first analysis:

I.e., a foot type that is unbounded and that allows only heavy syllables in strong position and both heavy and light syllables in weak position. With the analysis proposed in the previous section, this revised HM proposal shares the fact that we adopt a foot type that does not occur in the standard inventory. Without further adjustments, this foot type is not going to be useful, however, because it predicts that stress will fall on the first syllable of the word that contains a full vowel:

There is a very simple way to formulate a condition that prevents too many syllables with full vowels to be grouped into one foot. Suppose we take the idea of "syllable weight" seriously and say that each prosodic category is assigned an index that specifies its weight. We might say that the weight index can be derived compositionally from the number of morae that a syllable contains:

Assuming the mora theory, the scaling of syllables can thus be derived and need not be stipulated by means of an independent weight scale. Let us furthermore assume that the compositional computation of weight values is carried through above the syllable level, which means that feet will be assigned values as well.

It is now possible to say that feet have an upper weight limit, being [4]. In this way we "lose" the possibility to make full use of the fact that the foot is unbounded. There can be at most two schwas following a full vowel (2+1+1=4), but this may not be a bad result because, as I showed above, sequences of more than two schwas are subject to various deletion processes. We only allow the following feet:

In (114) it is demonstrated what structures we now assign to the various classes of words:
The final two syllables of *ballade* can be combined into one foot, but it would not be possible to include the first syllable as well. In the case of *kapitein*, ending in a superheavy syllable, the foot can only comprise the final syllable. In the case of *odesse* and *bismu* it is possible to combine the two final syllables into one foot, and this is where the difference with respect to the HM analysis is revealed.

Making use of weight indices and the notion of an upper weight limit for feet allows me to retain the idea that foot-assignment is non-iterative. In addition, weight indices have another advantage. In section 3.3.1.3. I promised to come back to the (unexplained) fact that superheavy syllables (i.e. VXC) behave just like branching feet. In that section I rejected the "easy way out" of simply labelling such syllables with a node label F. Observe now that within the present analysis the equivalence of superheavy syllables and branching feet has been explained without questionable assumptions about constituent structure. A superheavy syllable acts like a foot, because its weight index is almost the same as that of a maximal foot.

With respect to words like *orchidee*, with exceptional final stress, I will assume that the final syllable is lexically assigned a weight index [3], thus accounting for the fact that these syllables cannot be combined into a foot with the preceding syllable:

Alternatively, we might say that such words are stored in the lexicon with a final monosyllabic foot.

Another consequence of the present analysis is that the LCPR becomes virtually superfluous. In the original HM analysis, this labelling rule is

It is not the case, however, that the analysis that was presented in section 3.3.1.3. and the HM analysis, both in its original and in its revised form, have the same descriptive coverage. A notable difference between the two analyses involves the VV/VC distinction. The reader will have noticed that this distinction is ignored in the analyses that have been presented in this section. Within the original HM analysis, this follows from the fact that each syllable with a full vowel constitutes a foot. It is therefore not possible to arrive at a mismatch (i.e. VV-VC), because we cannot combine a VV syllable and a VC syllable into one foot in the first place, even in the order VC-VC. A direct consequence of this difference is that a certain class of words having antepenultimate stress moves from the class of "regular" cases to the class of "exceptions". Recall that the first analysis correctly predicts that we find initial stress in trisyllabic words ending in the sequence VV-VC. In the original HM analysis we can only account for antepenultimate stress by saying that the final syllable is extrametrical:

To capture the fact that a certain generalization can be made with respect to words ending in the sequence VV-VC, we might formulate a redundancy rule saying that a final VC is extrametrical if it is preceded by a VV syllable. This move, however, involves the claim that extrametricality rules can be context-sensitive, and thus increases the power of this device considerably.
In the revised RM analysis two syllables with a full vowel can be combined into one foot, but since both VV and VC syllables have the same weight index, we do not block the possibility of a foot in which a VV and a VC syllable co-occur.

\[
\begin{array}{c|c}
\text{F} & \text{F} \\
\hline
\hline
\text{VV} & \text{VC} \\
\hline
\text{VC} & \text{VV}
\end{array}
\]

Let us investigate the "damage" by making precise here what was gained by treating VV and VC as being of different weight. The class of cases with antepenultimate stress was split up into a class of real exceptions (for which we invoke extrametricality) and a class of words that is "revealed" as regular. However the generalization that words ending in VU-VC? receive antepenultimate stress faces a class of exceptions containing words of this type that bear penultimate stress. The number of exceptions of this type must be subtracted from the number of words that have moved into the class of regular cases. Performing the required calculation leads to the conclusion that the first analysis has slightly fewer exceptions than the second analysis. All things being equal one might therefore hold the opinion that there must be a weak preference for acknowledging the VV/VC distinction and hence for the first analysis.

The price we pay if we neglect the VV/VC distinction is that words of the type almanak with initial stress must be stored with an extrametrical final syllable. I mention here a general consideration which suggests that we gain a more constrained theory of stress assignment, if we are prepared to neglect the VV/VC distinction. In chapter 4 we discussed all types of stress systems that are known to exist. Two large classes were distinguished. In one type of system main stress could be located anywhere in the word (the unbounded type), whereas in the other type of system main stress was assigned to one of the two or three peripheral syllables. The first analysis that was offered suggests that the three peripheral syllables are relevant, but there is a wrinkle. In the cases where stress is on one of the three peripheral syllables (e.g. the Latin system) it is always the case that the final syllable is "invisible". This explains why its composition is of no relevance. In the analysis, presented in section 5.3.1.3, however, we crucially must know how the final syllable is composed. This suggests that this analysis is on the wrong track.

A second consideration that is in favor of the alternative analysis, in which we ignore the VV/VC distinction, is that the LCRS is no longer necessary. The labelling of word trees is always WS, and this, as I argued above, follows from the fact that syllables preceding the stress foot, whether or not they are combined into a second foot themselves, are adjoined to the stress foot by means of a general convention.

A third advantage of the alternative analysis involves the use of a weight scale. A positive consequence of ignoring the VV/VC distinction is that the use of a weight scale becomes unnecessary. The weight differences of light, heavy and superheavy syllables can be derived compositionally from their internal make-up, i.e. from the number of morae that they contain. In this respect the alternative analysis is more economical since no use is made of an ad hoc device (a weight scale), invented to explain the facts of Dutch stress.

On the basis of these considerations I believe that the revised RM analysis represents an improvement of the analysis that was presented in the previous section. The former analysis gives a more principled account of the prosodic behavior of syllables with a schwa and makes no use of an independently stated weight scale. All this compensates for the fact that this analysis misses what seems to be a rather marginal generalization.

5.3.2. Extension of the analysis to adjectives and verbs

The stress pattern of adjectives and verbs is not different from what we have found for nouns, although verbs are not very interesting because Dutch has only a handful of underived verbs with more than one full vowel. Adjectives that have more than one full vowel end in practically all cases in a superheavy syllable. These adjectives have final stress. The few remaining cases have final stress as well. Consider the following data:

\[
\begin{array}{llll}
\text{abrupt} & \text{aburd} & \text{acut} \\
\text{affreus} & \text{apart} & \text{brutal} \\
\text{banseal} & \text{bankrot} & \text{apert} \\
\text{clandestien} & \text{complet} & \text{copieu} \\
\text{curieus} & \text{decent} & \text{deliciu} \\
\text{direct} & \text{diver} & \text{dociel} \\
\text{equal} & \text{enorm} & \text{exact} \\
\text{extern} & \text{extrem} & \text{fameu} \\
\text{feodaal} & \text{feudaal} & \text{fidel} \\
\end{array}
\]
5.4. Conclusions

In this chapter I have compared several analyses of Dutch stress, and finally argued in favor of an analysis that conforms to the proposals that were advanced in chapter 4. It has been shown that stress placement is sensitive to syllable structure, and in particular to the number of morae that a syllable may contain. The particular proposals with respect to syllable structure in Dutch that were advanced in chapter 3 are also supported then by the analysis of stress in Dutch monomorphemic words.

The present analysis is incomplete in the sense that I have said little about the placement of stress in the derived vocabulary. This is of course an important issue but I believe a proper treatment requires a separate monograph.

Adjectives ending in a sequence full vowel-schwa also conform to the analysis. They have penultimate stress:

\[(120)\]
formidabel  illuster  integer
macabere  liquide  luguber
morbose  sinister

I know of only three adjectives ending in VC (all having final stress) and no examples ending in VV:

\[(121)\]
bizar  kapot  koket

There is no objection then to saying that the analysis motivated on the basis of a corpus of underived nouns is valid for the whole underived vocabulary.