

# Prosodic templates in Modern German and Dutch

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## 1 Introduction

Over the past two decades, ground breaking work in phonology has profoundly changed the way we think about sounds and sound systems. Instead of focussing primarily on individual sounds as had been the trend, linguists have started to investigate how prosody, and in particular the organisation of syllables into feet can help us better understand how sound systems and even paradigms work in human language.

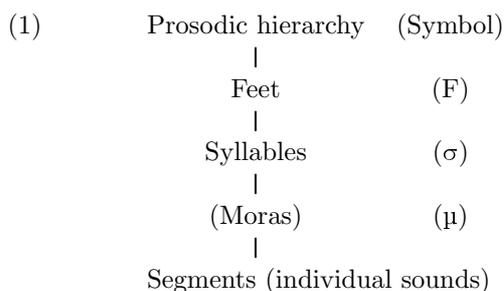
The goal of this paper is to demonstrate the role that prosody plays in shaping a variety of paradigms in Modern German and Dutch, namely short words formed with an *i*-suffix, which Germans use to form nicknames, like *Susi* from *Susanna*, or to create slang words, e.g., *Hausi* from *Hausaufgabe* ‘homework,’ plural formation in German and Dutch and lastly Dutch diminutive formation. I argue that these data conform to a prescribed prosodic shape which I will refer to as a template.

Before commencing, however, it is important to clarify some of the relevant technical background. With that in mind, I now turn to a brief overview of the core notions of prosody.

## 2 Beyond the segment: Prosodic structure?

### 2.1 The prosodic hierarchy syllabic trochees

The picture in (1) shows the organisation of individual sounds or segments into syllables, which in turn can further be grouped into feet. This grouping is known as the prosodic hierarchy:



Taking a look at the example in (2), we can see how segments are syllabified and footed.

- (2) a. Prosodic structure of winter (Foot type: syllabic trochee)  
[wín.ter] ([. . .]=foot; .=syllable break; ´=stress)
- b. Syllabic trochee = [ $\acute{\sigma}$ ] ( $\acute{\sigma}$  = a stressed syllable;  $\sigma$  = a syllable)

Here the word *winter* is syllabified into two syllables as *win* and *ter*. The syllable boundary is indicated by the period. As you will also notice, the first syllable is stressed, while the second is not. Together this sequence of a stressed syllable followed by an unstressed syllable forms a

type of foot known as a syllabic trochee. This is one of the main types of feet in Modern German and Dutch, though by no means the only type since some feet are monosyllabic.

## 2.2 What are templates?

So one question remains, namely what do I mean by a template? A template can be thought of as the fixed prescribed shape that a word or paradigm must have to be well-formed. In other words, a template stipulates a prosodic unit, e.g., a foot or syllable, or a combination of prosodic units, e.g., one foot and two syllables, which constrains the shape of stems or words. The template used in a particular paradigm is assumed specifically for that paradigm and does not necessarily dictate the shape of all words and paradigms, as will be shown for Dutch. With these things in mind, we can now examine the data.

## 3 Prosodic templates in Modern German

### 3.1 German *i*-constructions

In German, abbreviations and nicknames can be formed by taking a portion of the word and adding *i* to the end. Examples are given in (3):

- (3) Formation of abbreviations and nicknames in German (based on Féry 1997)

a. Personal names

Katharina	[Ká.thi]	Andreas	[Án.di]
Thómas	[Tó.mmi]	Gabriele	[Gá.bi]
Susanna	[Sú.si]	Sebástien	[Bá.sti]

b. Nouns

Studént	‘student’	[Stú.di]
Háusaufgábe	‘homework’	[Háusi]
Méerschweinchen	‘guinea pig’	[Méeri]
Kriminalromán	‘detective novel’	[Krími]
Kompóst	‘compost’	Kom[pósti]

c. Adjectives<sup>1</sup>

doof	‘stupid, silly’	[dóo.fi]
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As these examples illustrate, *i*-formations are typically constructed by taking the first part of the word up to and including the beginning of the second syllable, e.g., *Andreas* > *An.d-*, and then adding the suffix *-i*. As the forms in the right hand column of (3) show, the short form in every case ends in a syllabic trochee, namely the sequence of a stressed syllable followed by an unstressed syllable. Regardless of where the stress fell on the original word, the stress is shifted to the second to last syllable of the word to ensure that the word ends in the stressed-unstressed syllable sequence. For instance, in the word *Student*, the stress is on the final syllable. However, in *Studi*, the stress has been shifted to the first syllable which results in the stressed-unstressed sequence of the required syllabic trochee.

Thus, the result of all *i*-formations adhere to a particular foot shape, namely they must all end in a syllabic trochee. Since this is a specific shape which all *i*-formations must have, then we can say that this trochaic requirement is the prosodic template for *i*-formations. In fact, Féry (1997: 465) states the following:

<sup>1</sup>It should be noted that many speakers actually produce *doofi* as *doo[v]i*. However, since the voicing of the fricative does not play a role in the current discussion, it is set aside.

The result of this suffixation is namely prosodically stipulated, and the stems are virtually wedged into a template by force to fit this prescribed form. The stipulation is that the resulting word must build a trochee; that means, it must consist of an accented syllable followed by an unaccented syllable. [My translation]

I would thus propose that *i*-formation uses the specific template shown in (4) where the square brackets represent the boundaries of the foot and the number sign indicates the end of the word:

- (4) Template for *i*-construction: ... [  $\acute{\sigma} + i$  ] #

The template can thus be read to mean that the word will end in a stressed syllable plus the suffix *i*.

### 3.2 German plurals (Wiese 2000 and 2001)

Perhaps one of the most intriguing sets of data from Modern German comes from the plurals. The apparent chaos of the German plurals looks much more systematic when viewed from the perspective of prosodic unity. In fact plural formation in German exhibits templatic behaviour similar to that found in the *i*-constructions. Setting aside umlaut in the plural, German has five discrete plural markers (Wiese 2001). Examples are provided in (5).

- (5) Plural formation suffixes in German (umlaut set aside) (Wiese 2001)

a.	-e	Hund+e ‘dogs’, Tisch+e ‘tables’, Argument+e ‘arguments’, Paket+e ‘packages’
b.	-(e)n	Uhr+en ‘watches’, Frau+en ‘women’, Partei+en ‘parties’, Idee+en ‘ideas’
c.	-er	Kind+er ‘children’, Wäld+er ‘forests’, Spital+er ‘hospitals’, Regiment+er ‘regiments’
d.	-Ø	Vögel ‘birds’, Ruder ‘oars’, Computer ‘computers’, Filter ‘filters’
e.	-s	Auto+s ‘cars’, Club+s ‘clubs’, Sofa+s ‘sofas’, Clown+s ‘clowns’

Since the plural suffix *-s* serves as a default and fails to pattern with the other plural markers prosodically, I will leave it aside in the discussion. This means that the plural forms relevant to a discussion of prosodic templates are those in (5a)-(5d). As these examples illustrate, originally monosyllabic nouns become disyllabic in the plural, while disyllabic nouns such as *der Vogel* ~ *die Vögel* ‘bird,’ *der Filter* ~ *die Filter* ‘filter,’ etc. from (5d) take the zero morpheme.

When we examine the choice between *-en* and *-n* illustrated in (6), we see that the shape of the plural forms is constrained by more than just a two syllable minimum.

- (6) Allomorphy of the plural suffix *-(e)n* (examples from Wiese 2001: 20)

a.	Uhr+en ‘watches, clocks’	[ $\acute{\sigma}\sigma$ ]	b.	Stéuer+n ‘taxes’	[ $\acute{\sigma}\sigma$ ]
	Jágd+en ‘hunts’	[ $\acute{\sigma}\sigma$ ]		Máuer+n ‘walls’	[ $\acute{\sigma}\sigma$ ]
	Fabrík+en ‘factories’	$\sigma$ [ $\acute{\sigma}\sigma$ ]		Númmér+n ‘numbers’	[ $\acute{\sigma}\sigma$ ]
	Figúr+en ‘figures’	$\sigma$ [ $\acute{\sigma}\sigma$ ]		Táfel+n ‘tables, tablets’	[ $\acute{\sigma}\sigma$ ]
	Idée+en ‘ideas’	$\sigma$ [ $\acute{\sigma}\sigma$ ]		Scháufel+n ‘shovels’	[ $\acute{\sigma}\sigma$ ]

As these examples show, the plural forms also conform to a final disyllabic trochee. This pattern is illustrated immediately to the right of each example. In fact, the disyllabic minimum requirement is a consequence of this larger overriding constraint that plural forms end in a

syllabic trochee since this very foot type assumes two syllables. As such, the plural ending *-en* forms the second syllable of the trochee for the monosyllabic stems in the examples in (6a), for instance, *Uhr+en*, *Jagd+en*, etc. In the case of the disyllabic singulars, *Fabrik*, *Figúr*, and *Idée*, the final syllable is stressed, meaning that the addition of the plural suffix *-en* results in the requisite stressed-unstressed syllable sequence of the disyllabic trochee. In each of the (6b) examples, on the other hand, the singular already conforms to a disyllabic trochee and thus the plural suffix *-n* does not disrupt this shape since it does not add an additional syllable.

- (7) a. \*Uhr+n     [ó]                    b. \*Steuer+en     [óσ]σ  
       \*Jagd+n     [ó]                         \*Mauer+en     [óσ]σ  
       \*Figur+n    σ[ó]                         \*Tafel+en     [óσ]σ

Now let us consider for a moment if the converse occurred, as illustrated in (7). The incorrect plural forms, marked by the asterisk, either lack the second syllable to create the disyllabic trochee as in (7a) or they include one syllable too many to the right edge of the trochaic foot as in (7b).

At this point, we can summarise the plural as in (8) where again the square brackets denote the foot boundaries:

- (8) The syllabic trochee in Modern German plurals
- a. -e     [Hún.de] ‘dogs’, [Tí.sche] ‘tables’, Argu[mén.te] ‘arguments’,  
           Pa[ké.te] ‘packages’
  - b. -(e)n [Uh.ren] ‘watches’, [Fráu.en] ‘women’, Par[téi.en] ‘parties’, I[dée.en] ‘ideas’
  - c. -er    [Kín.der] ‘children’, Regi[mén.ter] ‘regiments’
  - d. -Ø     [Vó.gel] ‘birds’, [Rú.der] ‘oars’, Com[pú.ter] ‘computers’, [Fíl.ter] ‘filters’

These examples permit us to draw the generalisation that all plural forms, except those formed by the *-s*, end in this syllabic trochee. By extension, we can thus argue that the syllabic trochee forms the German plural template which applies to the right edge of the plural.

## 4 Prosodic templates in Modern Dutch

### 4.1 Dutch plurals

The pattern in Dutch is similar to that found in German, despite differences in the plural markers themselves. In Dutch, the plural is formed by adding either *-s* or *-en* to the noun stem. Whereas the plural suffix *-s* did not interact with prosodic structure in German, it does in Dutch. As Booij (1998) states, *-s* is found after an unstressed syllable, while *-en* forms the plural after a stressed syllable. This is illustrated in (9):

- (9) Plural formation in Dutch (examples from Booij 1998 and van der Hulst and Kooij 1998)
- | <b>-s following unstressed syllable</b> | <b>-en following stressed syllable</b> |
|---|--|
| kánon ~ kánons ‘canon’                  | kanón ~ kanónnen ‘gun’                 |
| nátie ~ náties ‘nation’                 | geníe ~ genién ‘genius’                |
| váder ~ vaders ‘father’                 | non ~ nonnen ‘nun’                     |
| tóekan ~ tóekans ‘tucan’                | knie ~ knien ‘knee’                    |
|   | bal ~ ballen ‘ball (object for play)’  |

Booij proposes that the choice of plural suffixes is motivated by foot structure, so that plural nouns end in disyllabic trochees. Consequently, if the base ends in a trochaic foot, then plurals will have *-s*; otherwise, plurals will take *-(e)n* (van der Hulst and Kooij 1998). For bases already ending in a trochaic foot, the addition of *-s* will not disturb this desired foot structure. The

addition of *-en* to a stem which does not already end in a trochaic foot results in the formation of a disyllabic foot.

The so-called exceptions to this pattern can also receive a systematic account. Examples are provided in (10).

(10) Apparent exceptions to Dutch plural formation

a. Non-native words:

*bal* ~ *bals* ‘ball, dance’ (vs. *bal* ~ *ballen* ‘ball, sphere’), *club* ~ *clubs* ‘id.’, *stop* ~ *stops* ‘id.’ (vs. *stop* ~ *stoppen* ‘plug’), *cadéau* ~ *cadéau’s* ‘gift’, etc. (cf. van der Hulst and Kooij 1998).

b. Specific suffixes select a particular plural suffix:

- i. diminutive always has plural with *-s*, e.g., *kopjes* ‘little cups’, *huisjes* ‘little houses’;
- ii. words ending in *-ing* always take *-en*, e.g., *haringen* ‘herring [pl.]’, *wandelingen* ‘walks’, *leerlingen* ‘pupils, students.’

c. Words ending in schwa:

Either *-s* or *-en*: *kad[ə]* ‘quay’ ~ *kad[ə]s/kad[ə]n* (< *kade-en*) (cf. Booij 1998)

For instance, many non-native words form their plural using *-s*, as in (10a), thereby retaining the plural form and/or prosodic structure of the source language.

For words ending in schwa, prevocalic schwa-deletion would delete the stem-final schwa if *-en* were affixed. This deletion would eliminate the additional syllable which would otherwise disrupt foot structure, e.g., \**kade+en* (without deletion) versus *kad+en* (with deletion). Both *kades* and *kaden* form the desired disyllabic trochee at the end of the plural and thus the outcome of both pluralisations would fit the plural template. Although both are possible plural forms, van der Hulst and Kooij (1998) note that the forms with *-en* are not as common. This can be easily explained by the fact that in speech, the *n* of the plural ending is frequently lost, rendering the plural identical to the singular form. This would be avoided to ensure morphological transparency between the singular and the plural forms.

The plural template in Dutch can thus be described in the following terms: the plural should end in disyllabic trochee, i.e., [óσ]. Recall that this is the same template proposed for German plurals.

All three sets of data presented thus far have provided examples where the output of suffixation must end in a disyllabic trochee. However, as already noted above, this is not the only type of foot possible in either German or Dutch. Consequently it is not enough to say that the words must end in a foot. Rather they must end in a very particular type of foot, namely the disyllabic trochee, the sequence of a stressed syllable followed by an unstressed syllable. This stipulation as I have pointed out serves as a template, the prescribed shape of the plural form or *i*-construction, which determines the well-formedness of the suffixed form.

## 4.2 Dutch diminutives

An additional type of foot-based template can also be described at this point. This template is exemplified by Dutch diminutives. As the data in (11)<sup>2</sup> illustrate, the diminutive suffix has a number of forms depending on a variety of factors, including the final consonant. For instance, when the noun ends in an obstruent, as in (11b), the suffix is simply *-je*.

Most noteworthy, however, are the diminutive forms of nouns ending in sonorants, i.e., nasals, liquids, and glides. Nouns ending in a vowel and single liquid or nasal have the extended suffix

<sup>2</sup> V denotes a vowel and C denotes a consonant in the tables and in the discussion.

(11) Distribution of diminutive allomorphs in Standard Dutch (based on van der Hulst 1984)

**a. -etje**

Stem ending in. . .	Examples	
short V + liquid	balletje ‘ball’ karretje ‘car’	tolletje ‘toll, duty’ torretje ‘beetle’
+ nasal	kannetje ‘can’ kammetje ‘comb’ tangetje ‘tongs’	tonnetje ‘cask; ton’ bommetje ‘bomb’ tongetje ‘tongue’

**b. -je**

obstruent	busje ‘bus’ hulsje ‘shell, cover’ balkje ‘beam; staff’	baasje ‘master’ kerkje ‘church’ huisje ‘house’
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**c. -pje**

long V + [m]	duimpje ‘thumb’ boompje ‘tree’	raampje ‘ramp’ bloempje ‘flower’
short V + liquid + [m]	halmpje ‘stalk, blade’ zwermpje ‘swarm’	bermpje ‘edge of road’

**d. -tje**

long V + [n]	laantje ‘avenue’ duintje ‘dune’	boontje ‘bean’ Heintje ‘man, Harry’
+ [l]	baaltje ‘bale’ wieltje ‘wheel’	kuiltje <sup>3</sup> ‘pit, hole’ stoeltje ‘chair’
+ [r]	boortje ‘drill’ veertje ‘feather; ferry’	boertje ‘farmer’ vuurtje ‘fire’
+ [j]	zooitje ‘heap, bunch’ vlaaitje ‘flan, tart’	boeitje ‘handcuff, buoy’ kooitje ‘cage; duck decoy’
+ [w]	eeuwtje ‘century, age’ duwtje ‘push, shove’	kieuwtje ‘gill’ zwaluwtje ‘swallow (bird)’
+ Ø	zeetje ‘sea’ laatje (< lade ‘drawer’)	kadootje ‘gift’ uitje ‘onion; outing’
short V + [r] + [n]	kerntje ‘stone, nucleus’	urntje ‘urn’

-etje as in (11a), while all others have the suffix -tje with the assimilation of the consonant *t* to the place of articulation of the word final consonant, e.g., *p* after *m*, etc.

The question remains, however, as to why the extended -etje form appears in some cases, but the -tje/-pje-type forms elsewhere? An examination of the prosodic structure of the noun stems sheds light on this alternation. As (12) illustrates, there are two distinct groups. In the first group are stems which are either heavy, in other words end in a VVC or VCC, also known as superheavy syllables, or stems which are disyllabic both of which are shown in (12a). The second group includes those stems which are light, i.e., those stems with rhymes of the shape -VC, as in (12b).

Stems that are disyllabic ( $\sigma\sigma$ ) and heavy (H) as in (12a) pattern together in taking the -Tje<sup>4</sup> diminutive ending, while the light stems in (12b) take the extended ending -etje. The behaviour of these stems is thus demonstrated to be based on their weight or shape as summarised in (13).

In the history of the West Germanic languages such as German, English, and Dutch, a heavy

<sup>3</sup>In addition to the meaning “small hole or pit”, *kuiltje* can also refer to a dimple.

<sup>4</sup>*T* represents all voiceless stops without reference to place of articulation.

- (12) Diminutive endings for light (L) versus heavy (H) stems for nouns ending in liquids or nasals

**a. Unextended diminutive ending attaches to H or  $\sigma\sigma$  stems**

-tje	$\sigma\sigma$	short V + [n]	haventje	torentje
-tje	H	long V + [n]	laantje	boontje
-tje	$\sigma\sigma$	short V + [l]	duintje	heintje
-tje	H	long V + l	lepeltje	mereltje
			baaltje	kuiltje
			wieltje	stoeltje
-tje	$\sigma\sigma$	short V + [r]	bakkertje	gozertje
-tje	H	long V + [r]	boortje	boertje
			veertje	vuurtje
-pje	$\sigma\sigma$	short V + [m]	bodempje	
-pje	H	long V + [m]	duimpje	raampje
			boompje	bloempje
-pje	H	short V + liquid + [m]	halmpje	bermpje
			zwermpje	

**b. Extended diminutive ending (-etje) attaches to light stems**

-etje	L = CVC > LL	short V + nasal	kannetje	tonnetje
			kammetje	bommetje
			tangetje	tongetje
-etje	L = CVC > LL	short V + liquid	balletje	tolletje
			karretje	torretje

$$(13) \left\{ \begin{array}{c} H \\ \sigma\sigma \end{array} \right\} + \text{Tje}$$

$$L + \text{etje}$$

syllable could form a foot on its own while the sequence of two syllables (where  $\sigma_1$  is typically L, and  $\sigma_2$  is L or H) was equivalent to a H syllable via resolution (cf. e.g., Boutkan 1995). Conversely, a light stem alone was not considered equivalent to H although it could be argued to form a foot on its own.

If we consider the possibility that the schwa is not part of the diminutive suffix itself, but rather serves to expand the stem to which it attaches, then the addition of -e- between the light noun and the diminutive suffix expands the stem to the shape CVCe or [LL] rendering it prosodically equivalent to  $\sigma\sigma$  and therewith H. This scenario is illustrated in (14).

- (14) Prosodic shapes of stems pre- and post-diminutive formation

Original stem	Diminutive Formation	Prosodic Shape of Stem Output
H laan	H + Cje laantje	H + Cje
$\sigma\sigma$ bezem	$\sigma\sigma$ + Cje bezempje	$\sigma\sigma$ + Cje
L bal	L + ə + tje balletje	$\sigma\sigma$ + tje

Since the prosodic shape of stems following diminutive formation is either H or  $\sigma\sigma$ , regardless of the initial shape of the noun, I propose that the prosodic template to which the diminutive suffix appends is either a H or  $\sigma\sigma$  stem when the noun ends in a liquid or nasal. I argue that

schwa is epenthesised to a light stem noun so as to fit the stem to the prosodic template, in this case  $\sigma\sigma$ , which is necessary for diminutive affixation to occur. Although the light stem could arguably form a foot on its own, as has been suggested elsewhere, it would thus not be enough for the stem to simply be one foot to satisfy the requirements of suffixation. Rather, the stem must conform to the specific shape of the prosodic templates H or  $\sigma\sigma$ .

- (15) Template for diminutive formation of nouns ending in sonorants

$$\left\{ \begin{array}{c} \text{H} \\ \sigma\sigma \end{array} \right\} + \text{Tje}$$

Interestingly, some dialects show the effects of vowel lengthening in addition to schwa epenthesis as a means of ensuring that the stem fits the template to which the diminutive ending affixes itself as (16)<sup>5</sup> illustrates:

- (16) Possible diminutive forms for *bal* (Geert Booij, p.c.)

$$\begin{array}{ll} [\text{L L}] + \text{chien} & [\text{H}] + \text{chien} \\ \text{ba l}\text{ə} + \text{chien} & \text{baal} + \text{chien} \end{array}$$

In single dialects, speakers can opt to fit the originally light stem to the template to which the diminutive suffix attaches by either extending the stem with schwa as in *balletje* or *ballechien* to create the  $\sigma\sigma$  stem shape or by lengthening the stem vowel to create a single H stem syllable, e.g., [baaltjə] or *baalchien*.

## 5 Conclusions

In this paper, I have shown that prosodic units such as syllables and feet have helped shape lexical paradigms in German and Dutch. Plural forms and *i*-constructions were shown to conform to a specific shape such that they must end in a foot constructed of two syllables, the first stressed, the second unstressed. For these sets of data, the template determines the shape of the word after suffixation. In the case of the Dutch diminutives, it is the stem to which the diminutive ending is affixed that must fit to a specific templatic shape. Here the stem must be either a heavy syllable or a disyllabic sequence, namely LL or LH. Thus, the so-called extended suffix *-etje* was treated as the epenthesis of schwa to the noun stem itself, thereby bringing it into line with the requisite shape so the diminutive ending *-tje* could be attached. This has an analogue in the lengthening of vowels in some dialects which serves the same purpose, namely ensuring the correct prosodic shape of the noun prior to suffixation.

It is not enough to talk about the role of feet, since a variety of types of feet are possible. Instead, a very specific shape or weight is required for the well-formedness of words in these paradigms. Consequently, we see the ability that prosodic templates have in shaping, and indeed reshaping, paradigms in languages such as German and Dutch.

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<sup>5</sup>The *-chien* suffix is used in some Dutch dialects to form the diminutive. Despite the differences in suffixes used, the prosodic pattern affecting stems is similar across dialects affected by these templates.

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