

## Germanic syllable structure

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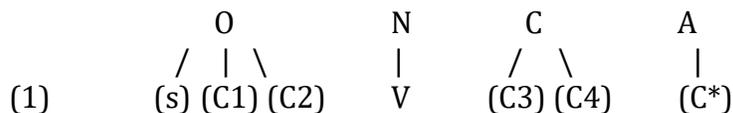
### Abstract

This chapter gives a descriptive overview of syllable structure phenomena in modern Germanic languages, mostly in their standardized form - Afrikaans, Danish, Dutch, English, Faroese, Frisian, German, Icelandic, Norwegian, Swedish. It concentrates on consonant cluster phonotactics at various positions in the word and compares the possibilities. It turns out that Germanic languages are extremely similar and all seem to use the same basic template with some minor variation.

### 1. Introduction

Germanic syllables generally can have a rather complex syllable structure, allowing consonant clusters of sometimes considerable length, and also maintaining a contrast on vowels that is by some scholars considered as length (see also Chapter x). Germanic syllables are furthermore rather similar in the kinds of syllables they allow. This is sometimes obscured by the fact that the literatures on the individual languages tend to be separate, which means that very similar conclusions have been reached independently about different languages. It is of course regrettable that the wheel has to be reinvented separately several times, but at the same time, it may be an indication that there is something right about the idea of a wheel.

In order to organize this paper, I choose the following template – without this implying any claim about the ‘real’ structure of the syllable in any individual Germanic language, or all Germanic languages considered together.



s here is a sibilant (/s/ or in some languages also /S/), C1 and C2 are (the other) consonants of the *onset* (O). The vowel forms the nucleus (V), and C3 and C4 the *coda* (C). ‘A’ is an appendix (usually only found at the end of the word), containing usually voiceless coronal consonants. Generally the nuclear vowel is the only obligatory part of the syllable. This is indicated by the fact that it is the only part that is not bracketed.

I use this template in this chapter as a descriptive tool, not because I would necessarily support any theoretical claim one can derive from it. The literature I use here has employed a variety of different representational means to describe phonotactics, but all Germanic languages seem to fit into this template. The only

point of contention may be whether Scandinavian languages have an appendix; also not all positions can be filled in all languages equally easily.

I also use (1) as a way to organize this paper: I will discuss the onset in section 3 and the coda and the appendix in section 4, before turning to what happens at the boundaries between syllables in polysyllabic words in section 5.

The word is an important domain for syllabification in all Germanic languages. Syllabification rarely crosses word-boundaries, except in some cases of cliticization, and for this reason I have taken the word also as the domain of study in this chapter. My main focus will be on those modern Germanic languages that have a standardized form – Afrikaans, Danish, Dutch, English, Faroese, Frisian, German, Icelandic, Norwegian, Swedish – mainly because sources on those languages are more readily available, but occasionally I will also consider minority languages (like Yiddish), dialects and older Germanic languages (like Gothic).

## 2. Germanic syllable onsets

### 2.1. Onsetless syllables and simple onsets

Onsets – prevocalic consonant clusters – in Germanic contain zero to three consonants, at least at the beginning of the word. Onsetless syllables are always somehow marked. They do not often occur within the word, or more specifically in the middle of a foot. If they would occur in that position, we find various types of hiatus resolution, such as gliding, the insertion of a glide, or the insertion of some other segment, such as ‘linking’ [r], [l], [n] or [h]. The latter kind of process seems interestingly more widespread in non-standardized languages than in standardized forms, with the possible exception of *r* insertion in British English. It is also typically linked to a deletion process of the same segment in the same language:

- (2) *Gliding*  
/tiara/ > [tjara] ‘tiara’ (German; Hall 1992, Hamann 2003)
- (3) *Glide insertion*  
/dialyse/ > [dijaly:sə] ‘dialysis’ (Norwegian, Kristoffersen 2000:139)  
/syamid/ > [syuani:d] ‘cyanide’
- (4) *Linking segments*  
[n] /wo i/ > [wo n i] ‘where I’ (Alemannic, Nübling and Schrambke 2004)  
[r] /sofa is/ > [sofa r is] (English ‘non-rhotic’ varieties, Wells 1982)  
[l] /bra is/ > [bra l is] (Southern Pennsylvania English, Gick 2002)  
[h]/[ɦ] /idio:m/ > [idiho:m] ‘idiom’ (Afrikaans varieties, Den Besten 2012)

Other hiatus avoidance strategies such as vowel deletion – with the exception of schwa deletion – or vowel merger are not well attested in Germanic, and in particular not as regular processes. In word-initial position a segment is sometimes inserted, such as a glottal stop (e.g. Standard German) or an [h] (e.g. South African English, Lass 2002). This seems to happen always non-contrastively, i.e. these

segments are only inserted in those languages in which glottal stop or [h] is not phonemic. But also in other Germanic languages in which we find these two segments, their occurrence is usually restricted to simplex onsets; they occur neither in coda position nor in more complex onsets.

I am aware of very few restrictions on monosegmental onsets in Germanic. Except for the velar nasal, any legitimate consonant can occur in such a position in all Germanic languages. Some discussion would be possible on voiced and voiceless fricatives, and in particular sibilants, as some languages have a preference for one or the other in such a position, and historical changes may be a factor. (English has [s]ea, German has [z]ee 'lake'); however, this is mostly an issue of preference and not an absolute requirement in the synchronic state of the language (English has [z]any, German has [s]ent 'cent' so that synchronically voiced and voiceless sibilants are allowed in both languages; Van Oostendorp 2003, Fuchs et al. 2007).

A final note concerns the occurrence of word-initial geminates. Although several Germanic languages have been analysed as involving a quantity distinction on consonants (see also Chapter \*), but as far as I know only Swiss German has been claimed to also use geminate consonants in onsets:

- (5) [p:]aar 'pair' – [p]aar 'bar' (Thurgovian Swiss German; Kraehenmann 2001)  
[t:]ankx 'tank' – [t]ankx 'thank'  
[k:]aar 'coach' – [k]aar 'cooked'

The length distinction here replaces the voicing distinction we find elsewhere, as becomes clear when we compare these words to their cognates in other Germanic languages (like the English glosses for the first two words).

## 2.2. Complex onsets

It is interesting to try one's hand at setting up a plausible typology of word-initial biconsonantal clusters (disregarding for a moment the clusters starting with s, which will be discussed in section 2.3). English is the least permissive of all Germanic languages (except maybe some Germanic-based creoles) in the range of complex onsets that are allowed (basically only obstruent-liquid clusters), and Southern German and Yiddish the most permissive.

Like for non-Germanic languages, sonority is an important notion to understand the structure of complex onsets in Germanic languages. There is a general tendency to follow sonority sequencing restrictions, although there are some interesting differences as to how strictly these are implemented. We will use a rather simplex sonority hierarchy here, although more detailed ones have been suggested for individual languages (Parker 2011 gives an overview):

- (6) *Sonority hierarchy*  
plosives < fricatives < nasals < liquids < glides < vowels

The sonority sequencing generalization on onsets holds that:

- (7) *Sonority Sequencing Generalization* (SSG, cf. Parker 2011)  
 Within an onset, consonant sequences should not display falling sonority.

Onsets in Germanic generally obey the SSG. In some languages, the restrictions on clusters might be stricter than this, for instance not allowing clusters a sonority plateau with a sonority distance that is too small (e.g. the two segments having *the same* sonority). All Germanic languages allow obstruent plus liquid clusters, such as [pl, kl, bl, gl, vl, pr, kr, tr], etc. The clusters [tl] and [dl] are usually excluded from the list of possibilities, although some languages have exceptional words (e.g. Yiddish *thiä* ‘gallows’). The avoidance of these clusters is usually seen as an indication of the Obligatory Contour Principle (OCP, e.g. Kager and Shatzman 2007): [t], [d] and [l] are all specified as coronal and we cannot have onset clusters with consonants of the same place of articulation. This would entail that [r], which can freely co-occur with [t] or [d] is placeless, or at least not coronal (e.g. Kristoffersen 2000:51 on Norwegian).

Other kinds of clusters tend to be more restricted. [kn] is the only obstruent-nasal cluster with a nasal that seems quite widespread in both North- and West-Germanic. E.g. Swedish has words like *knekt* ‘knight’ or *knapp* ‘scarce’. English is an exception, as etymological *kn* clusters have obviously been simplified to [n] (witness *knee* and *gnome*). Clusters with *pn* are rare also elsewhere (and typically are Greek loanwords, like Swedish *pneumatisk*); again such clusters are simplified in English. /tn/ may again be excluded completely for reasons of OCP. Clusters where the second nasal consonant is anything other than *n* (like *m*) are excluded everywhere. Certain clusters seem to have disappeared in most West Germanic varieties (see more on North Germanic in Chapter \*). This is true for clusters starting with *h*. Vennemann (1988:46) gives the following historical developments for German:

(8)	Early OHG	Late OHG	NHG	
	<i>hnigan</i>	<i>nigan</i>	<i>neigen</i>	‘to bow’
	<i>hlut</i>	<i>lut</i>	<i>laut</i>	‘loud’
	<i>hruofan</i>	<i>ruofan</i>	<i>rufen</i>	‘to call’
	<i>hwiz</i>	<i>wiz</i>	<i>weiss</i>	‘white’
	OHG = Old High German, NHG = New High German			

Af far as I am aware, other West Germanic languages have undergone the same development; only *hw* clusters have remained unchanged in some dialects of English.

Germanic languages differ as to whether or not they allow clusters with a glide as a second element. They are considered more ‘normal’ in the literature on Northern Germanic; the examples which are given are usually derived from Old Norse. For instance, Basbøll (2005:177) mentions *mjød* ‘the viking’s sweet beer’ and *Njord* (name). [nj] sequences are typical for names, and for this reason Vestergaard (1968) did not consider them, but Basbøll points out that such sequences are easily pronounced by Danish speakers, and he asserts that they therefore do belong to the Danish system.

With an obstruent as its first member, *j* is definitely part of a complex onset in Scandinavian languages, although there might be some restrictions. E.g. Árnason (2011:175) mentions the following forms for Faroese:

- (9) *þjátra* ‘to speak gently’                      *bjarga* ‘to save’                      (Faroese)  
*ffjall* ‘mountain’  
*spjaldur* ‘board, plaque’  
*stjórn* ‘governing body, board’  
*mjólk* ‘milk’  
*njóta* ‘to enjoy’  
*rjóta* ‘to snore’  
*ljótur* ‘ugly’

Most of these cases (with the exception of *stj*, *nj*, *rj* and *lj*) have a labial consonant for reasons that need further inquiry. In Icelandic we also find occasional three-positional onsets with *j*, such as *fljóta* ‘to float’ or *grjót* ‘rocks’. I suppose that one could raise the issue in those cases whether *j* is not part of the nucleus rather than the onset, and whether sequences like *lj* or *pj* are not really monosegmental, which could explain why velars and coronal plosives seem to be absent (they would be fully palatalized) and why we have no clusters, but I know of no literature taking up this question.

In West Germanic, such sequences are really considered exceptional and/or typical of loanwords and names (such as *Piotr*). English has sequences such as [kj]ute, com[pj]ute, and [tj]une, but such clusters are different from ‘ordinary’ complex onsets in a number of ways, for instance in being rather unstable across dialects: American English generally does not have [tj]une, most dialects do not have [blj]ew or [glj]ue. Welsh English does, which means it has rather unusually long clusters, while East Anglian English does not permit any of these clusters (Szigetvári 2016). Even if we take this crossdialectal instability into account, it is surprising that English, which otherwise seems to be the least permissive of all Germanic languages in terms of what are allowed onset clusters, appears to be most flexible here. Frisian also has word-initial clusters like [pj]isk ‘peach’ or [kj]uw ‘gill’, but here the initial glide is most profitably seen as part of a complex nucleus (Visser 1997:189).

The other glide (be it /v/ or /w/) seems more happily occurring in clusters in those languages that have it, at least after velar and coronal plosives (Dutch *kwaad* ‘angry’, *twee* ‘two’, *dwaas* ‘foolish’). After labials or after velar fricatives, [w] is not found, probably again for reasons of OCP; exceptions are sometimes loanwords from Romance (like *pueblo*).

Southern German dialects also allow for obstruent-obstruent clusters. The following examples are from Tyrolean (Alber and Meneguzzo 2016:33-34):

- (10) *kfollen* ‘fallen’ (past participle) (Tyrolean German)  
*pfeid* ‘news’  
*kxluan* ‘small’

Yiddish is similarly permissive, and may be even more so in certain respects since it also allows for sonorant-sonorant clusters (Jacobs: 2005:123-124).

- (11) *tfilə* 'prayer' (Yiddish)  
*ptirə* 'prayer'  
*mloxəm* 'kings'

The historical origin of such forms is diverse. The Tyrolean examples above result from a process of vowel deletion within the cluster (the form for 'fallen' for instance has as its Standard German cognate *gefallen*, with a schwa between *g* and *f*, and *ge*). The Yiddish examples show that these kinds of clusters can also be found in loanwords (in this case, from Hebrew). Loanwords also play a role in the phonotactics of other Germanic languages, that will have (typical Greek-derived) words starting with *pt-*, *ps-*, *ks-* or *mn-*. In each of these cases the second consonant is a coronal. The most important exception is again English, which has simplified these clusters when it borrowed the same loanwords as the other languages. Still also the Southern German and the Yiddish clusters are not completely unrestricted; for instance, we do not find examples of words starting with rising sonority clusters (*rt*), such as we find in Czech (Rącz 2010).

### 2.3 sC clusters

Germanic languages all have clusters consisting of a sibilant followed by an obstruent violating sonority restrictions on phonotactics, because the fricative can be followed by a stop, as well as violating size restrictions, because *s* initial clusters can be three-consonantal clusters.

Languages vary which sibilants can occupy the *s* position. Some languages, like the Scandinavian languages, Gothic, Dutch, Afrikaans and Frisian, only allow for [s] to occur there. Others such as German, Yiddish allow for more variation. German (Wiese 1996, Alber 2007) and Yiddish (Jacobs 2005) have both [s]C and [ʃ]C clusters, that are possibly contrastive. In German (12a), the common options are [ʃp, ʃt] and [sk], but [sp, st] and [ʃk] are also attested, and according to Wiese there is no strong tendency to assimilate those latter clusters:

- (12) a. *Spiel* [ʃpil] 'game', *Spezies* [spezies] 'species' (German)  
b. *svive* 'environment', *ʃvarc* 'black' (Yiddish)

According to Hammond (1999:35), for English the following distributional statement holds:

- (13) a. [s] cannot precede [r];  
b. [ʃ] can only precede an [r].  
(14) a. *shrink*, \**srink* (English)  
b. *spy*, *star*, *screen*, \**shpy*, \**shtar*, \**shcreen*. (English)

The statement in (13a) is virtually exceptionless, and furthermore also seems to hold of the other Germanic languages. It has sometimes been suggested that words such as *schrijven* ‘to write’ start with [sr] in Dutch (Kooij and Van Oostendorp 2004), but if that is the case, this cluster is indistinguishable from [srx]. (13b) has exceptions in German and Yiddish loanwords in Dutch (*schlemiel*, *shtick*). One could therefore also say that all West Germanic languages have both [[c] and [sc]. In Yiddish, the sibilant seems furthermore to be subject to voicing assimilation to the following obstruent or (labial) nasal (Jacobs 2005):

- (15) a. *skarbovə* ‘trite’, *zgulə* ‘remedy’, *staž* ‘seniority’ (Yiddish)  
 b. *zman* ‘semester’, *žmenə* ‘handful’

Yiddish is exceptional in this respect; in other Germanic languages, voiced obstruents are simply not allowed in such clusters.

It is sometimes claimed that sC clusters are actually not clusters but single segments (see Goad 2011 for a crosslinguistic overview). This would allow us to assume that that initial clusters are always maximally bisegmental, but it also would solve some other problems. For example, Visser (1997:109) points out that Frisian – like many other Germanic languages – has a process of degemination within e.g. compounds, and that this affects also sC clusters:

- (16) *list+stik* > li[st]ik ‘piece of a frame’ (Frisian)  
*fisk+skaal* > fi[sk]aal ‘fish dish’

In Gothic, sC clusters reduplicate (e.g. in the preterite) as a whole when C is an obstruent, but only partly when C is a sonorant. This can be taken as an indication that the former cases are monosegmental (Voyles 1980, Keydana 2011).

- (17) *slepan* ‘to sleep’ – *saislep* ‘to sleep – pret.’ (Gothic)  
*staldan* ‘possess’ – *staistald* ‘possess – pret.’

In some creole languages based on Germanic languages, sp clusters have been reduced completely, typically to the non-sibilant (Wells 1982). On the other hand, there are restrictions on the kinds of cluster that can follow s that may be more difficult to account for from the point of view of a monosegmental analysis. Kristoffersen (1999) posits constraints to rule out \*skn and \*stv in Norwegian, even though sk, st, kn and tv are all possible. Jacobs (200) remarks that there are no triconsonantal voiced clusters (\*zbr) in Yiddish. Such restrictions seem to point to these clusters being particularly marked.

## 4. Codas and appendices

### 4.1 Monosegmental codas

Codas tend to be crosslinguistically more restrictive than onsets. As we have seen, monosegmental onsets can be filled by virtually any consonant, but this is not the

case for codas. In the first place, many Germanic languages, and (all of their dialects) have a process of final devoicing, so that voiced obstruents are excluded from this position in those languages (see Chapter \*\*). As I indicated above, furthermore also the ‘placeless’ segments [ʔ] and [h] are avoided in this position.

Some special attention should be paid to the velar nasal, of which the occurrence is also restricted. The segment is historically derived from an [ŋg] (or [ŋg]) cluster, and this cluster-like behavior still holds in the Germanic languages. In some dialects (like Northern German) it even still surfaces as such:

(18) *Di[ŋk] – Di[ŋg]e* ‘thing- things’ (Northern German; cf. Standard German *Di[ŋ]*)

In most other languages, the cluster has been simplified to [ŋ], but its behaviour still is that of a cluster, as it cannot occur after diphthongs or long vowels (see also section 4.2.), or in the onset:

(19) *\*ŋa, \*ba:ŋ, \*bein, \*ba:ŋ, baŋ* ‘afraid’, *bein* ‘leg’ (Standard German)

The ‘cluster’ origin of the velar nasal cannot be the only reason for this behaviour, however. In some varieties, [ŋ] demonstrably has a different origin, but still shows the same behaviour. E.g., in Cologne German, coronals in coda have been historically velarized. But in case the preceding vowel is a diphthong (or a long vowel) it is shortened:

(20) *braun > brunŋ* ‘brown’ (Cologne German, Scheer 1999)

The phonotactic constraint that [ŋ] does not occur after a long vowel is thus maintained, even though there is no reason to assume that this nasal corresponds to a cluster at any level of analysis.

#### 4.2. Biconsonantal codas

All Germanic languages allow complex codas at least at the end of the word, although there generally is a restriction on the preceding vowels: clusters do not occur after long/tense/fortis vowels (see also Chapter \*\*). Within the word, clusters tend to be more restricted, and unstressed syllables in particular usually allow for simpler codas only.

The sonority scale is again an important tool for at least organizing our understanding of these clusters. Like all languages allow for obstruent-liquid clusters in the onset, they also all allow for liquid-obstruent clusters in the coda. As a matter of fact, fewer restrictions seem to apply, in the sense that [lt] (and /ld/) clusters are unproblematic as codas, even if their mirror images are not as onsets. These clusters are sometimes broken up. Some varieties of Yiddish (Central Yiddish and West Yiddish, Jacobs 2005, Herzog *et al.* 1992) break up clusters of *r* followed by another consonant, but not when the cluster is followed by a vowel. One way to see this is of course that only codas are broken up this way (and when a vowel follows, the obstruent is put into the onset of the following syllable):

- (21) *ʃtark* ‘strong’ > [ʃtarək] (Yiddish, Herzog *et al.* 1992:134)  
*ʃtarkə* ‘strong (PL) \* [ʃtarəkə]

Dutch and Frisian have similar patterns of optional epenthesis also after /l/:

- (22) *skalm* ‘link’ [skəl(ə)m] (Frisian, Visser 1997:76)

Epenthesis is prevented before a coronal consonant, so that Frisian *held* ‘hero’ is not pronounced as \*[helət]. Similar kind of observations can be made on sonorant-sonorant clusters: provided they have a following sonority profile (for instance, the first is a liquid and the second a nasal). For instance, Norwegian has *kvalm* ‘nauseated’. In Yiddish, Frisian and Dutch dialects, such clusters can again be broken by a schwa.

All Germanic dialects also allow for (some) nasal+obstruent clusters. Such clusters are never broken by a schwa. In monomorphemic forms, the nasal and the obstruent are always homorganic, and maybe that blocks the epenthesis of schwa: *lamb* and *land* are words of Icelandic, but \**lanb* or \**lamd* are not (Aranáson 2011:166). If a morpheme boundary appears between the two consonants, more complexity is allowed so that we find *lengd* [leɪŋt] ‘length’ (from *langur* ‘long’) or *kímdi* [chimti] ‘smiled’ (from *kima* ‘smile’). In both cases, the obstruent is coronal, and that seems typical for this kind of structure.

There seems a general tendency to avoid such clusters if the second consonant is a fricative or is voiced. I know of no examples in any variety of Germanic in which it can be a *voiced fricative*. Clusters with a voiceless fricative can be found (English *triumph*, *dance* and its cognates in other languages) although usually only in loanwords from Romance, while clusters with a voiced obstruent show some unexpected behaviour. I have already indicated above that /ŋg/ has simplified to /ŋ/ in many languages; the same has often happened to historical /mb/ (as in English *lamb*). /nd/ clusters are an exception in English (*land*), but in most dialects Norwegian, for example, they have also simplified (to [n]). Chapman (1962) reports that there are only a few ‘archaic’ dialects that have retained the [d].

There can be some discussion as to whether the Germanic languages have coda sequences of rising sonority (i.e. starting with an obstruent or a nasal, followed by a liquid). On the surface they generally do not allow for such sequences, but it is sometimes argued that underlyingly they do have them. E.g. Rice (2002, 2004) points out that in Norwegian imperatives can occur before vowel-initial, but not before consonant-initial words:

- (23) a. *Sykl opp bakken* (Norwegian, Rice 2002)  
 Bike up the hill! (imperative)  
 b. \**Sykl ned bakken*  
 Bike down the hill

We can draw two kinds of conclusions on these facts. On the one hand, we can conclude that the imperative form for ‘bike!’ in Norwegian ends in a rising sonority

cluster (*sykl*), but at the same time, we can also see that such clusters only show up when they can be syllabified in an onset. Within the nominal domain in Norwegian, furthermore, rising sonority clusters can show up with an epenthetic schwa (*pepər*) or a syllabic consonant (*pepr*) (Kristoffersen 1999).

Similar arguments can be made for other Germanic languages. E.g. the Dutch noun *filter* [filtər] shows up without the schwa in the derived verb *filtreren*, leading Booij to suggest that the schwa is not underlying, but epenthesized. This epenthesis process should be distinguished from the one in sonorant-consonant clusters (such as *kerk* > *kerrək*), because the latter is optional whereas the former is obligatory (Van Oostendorp 2000).

In German, we find an interesting difference between consonant-liquid clusters and consonant-nasal clusters (Noske 1992). One seems to trigger schwa epenthesis within the cluster, the other at its edge:

- (24) *er zittert* ([tsɪtərt – tsɪtət]) ‘he trembles’ (German)  
*er atmet* ([atmət]) ‘he breathes’

Noske (1992) proposes that this is because liquids are lexically syllabic in these positions, but nasals are not (see also Issatschenko 1974). Notice that in German nouns, on the other hand, schwa also appears before the nasal; the relevant noun in this case is *Atem* ‘breath’. The issue is even more complicated, as Wiese (1999) points out, as /r/ and /l/ also behave differently in another paradigm, viz. before adjectival inflection:

- (25) *trocken+e* ‘dry’ (inflected) (German)  
*sicher+e* ‘certain’ (inflected)  
*dunkel+e* ‘dark’ (inflected)

In some way, different kinds of word-final sonorant consonants clearly interact differently with different kinds of morphological structures.

Sometimes (for instance in English, Norwegian or, for German, in [ʁ]) the final sonorant is realized as syllabic. In no case I know are rising sonority clusters ever realized as complex codas, even if we have reason to assume they are so ‘underlyingly’.

Complex codas are often only allowed at the end of the word, or at least their distribution is much more limited within the word. For some authors (e.g. Kristoffersen 1999, Van Oostendorp 2000) this has been a reason to assume that codas are really only monosegmental. The second consonant is then analysed as an onset of an otherwise empty syllable, which is only permitted word-finally. This idea also converges with analyses of vowel quantity: typically we find only monosegmental codas after long (or tense) vowels. The reason could be that rhymes are maximally bisegmental in Germanic, the long/tense vowels occupy the rhyme on their own, so that there is only place for the following ‘onset’. This kind of analysis has to explain why the onsets of final empty nuclei are maximally monosegmental.

#### 4.3. Appendices

Word-final voiceless coronal obstruents behave slightly differently from other segments in all Germanic languages. First, these consonants can be the source of clusters that are much longer than bisegmental codas. Most often we find these in morphologically complex forms:

- (26) a. *helped, waltzed, parks, boxed* (English)  
 b. *glaubst* 'believes' (2S), *lächelnd* 'smiling' (German)  
 c. *erft* 'inherits' (3S), *denkt* 'thinks' (3S) (Dutch)  
 d. *hests* 'horse' (Gen.) (Icelandic)  
 e. *manst* 'you remember' (Faroese)

But we find the same complexity occasionally also in words without a discernible morphological structure (e.g. English *text*, German *Markt* 'market', Dutch *herfst* 'autumn'). Kristoffersen (1999) denies the existence of a coronal appendix in Norwegian. According to this author, we only find complex codas, which of course can have a coronal second consonant. If we analyse such *sC* clusters furthermore as monosegmental, we can also accommodate words like Norwegian *kunst* 'art' (as well as the Faroese example in (26e)). This seems typical for mainland Scandinavian languages; other kinds of words mentioned in (26) can not be accommodated however, so that apparently other Germanic languages do have more complex clusters. In some loanwords, such as *extra*, we also find an *s* between [k] and [tr] as an extratemplatic consonant.

In many of these languages there is also a tendency for simplification. Varieties of English and Dutch display tendencies to delete final coronals (Goeman 1999; Fabricius 2002; Guy 1980, 1991a, b, Hinskens 1992; Kiparsky 1988; Labov 1969). The process is often variable, depending on many different sociolinguistic and phonological factors:

- (27) *gewirkt / gewirk* 'worked' (Limburg Dutch, Hinskens 1992)  
*walked / walk* (English varieties, Guy 1980)

In Afrikaans the process has affected many stems historically, resulting in alternations (Conradie 1981, 1982, Hinskens 2009):

- (28) *lig* 'light' – *ligte* 'lights' (Afrikaans, Conradie 1981)  
*hoof* 'head' – *hoofde* 'heads'

The plural suffix is arguably *-e*, and the *t* (or *d*) only surfaces in front of it. In some cases, the *t* also shows up in the plural in cases where it is etymologically not warranted:

- (29) *graf* 'grave' – *grafte* 'graves' (Afrikaans, Conradie 1981)

Voiceless coronal obstruents thus seem to play a role outside of the ordinary template; they can be added almost freely, especially at the end of the word, and they can also be more freely deleted than other consonants.

## 5. Syllable boundaries and syllable contact

The boundaries between syllables, in particular within a foot, are not always easy to discover. In particular in English, speakers seem to disagree on the precise position of syllable boundaries. In a famous experiment, Cutler *et al.* (1983) found that French speakers found it more difficult to find the sequence *bal* in *balance* than in *balcon* and inversely more difficult to find *ba* in *balcon* than in *balance*, English speakers basically did not make that difference, because syllable boundaries seemed less important to them. It is not entirely clear what the theoretical interpretation of this old fact should be.

Vennemann (1988) has pointed out the relevance of the Syllable Contact Law (SCL) for the typology of Indo-European languages:

(30) *Syllable Contact Law* (Vennemann 1988:40; adapted)

A syllable contact A.B is the more preferred, the stronger the sonority of the offset A and the less the sonority of the onset B; more precisely – the greater the characteristic difference CS(A)-CS(B) between the sonority of A and that of B.

The SCL is responsible for the difference between the following names in German:

(31) *Wartha* /var.ta/, *Tatra* /ta.tra/ (German)

In principle, /tat/ and /ra/ are well-formed German syllables, but the string /tatra/ will be syllabified as *ta.tra* in German. The SCL says that this is because /t.r/ involves a coda with smaller sonority than the following onset. This is dispreferred to /a.t/ in *ta.tra* in which the more sonorous /a/ is followed by the less sonorous /t/.

The SCL does not always hold for multimorphemic forms, where alignment to morpheme boundaries seems to take precedence:

(32) *täg.lich* 'daily' (< /tag/+/lich/) (German)

Also clusters such as /tl/ which are not accepted word-initially will be separated by a syllable boundary word-internally:

(33) *At.las* (German)

Murray and Vennemann (1982) interpret West Germanic Consonant Gemination in this way. Before glides, obstruents geminate:

(34) *satjan*, *skapjan* (Gothic)

*settian, skeppian* (Old Saxonian)

The Gothic examples have a bad syllable contact (*sat.jan*) and Old Saxonian has a better contact because (*set.tian*). /r/ before /j/ did not geminate, possibly because the syllable contact was not that bad, but according to Vennemann (1988) there still was a problem which was solved by strengthening the glide to /g/ in Middle High German:

(35) *far.io* > *ver.ie* > *Ferge* 'ferryman' (Middle High German)

Vennemann provides a catalogue of other responses to violations of the Syllable Contact Law in Germanic and other Indo-European languages. The fact that such repairs exist as historical processes also implies that the Syllable Contact Law states preferences and not absolute grammaticality. In a language like Norwegian *eple* is also still syllabified as *ep.le*, in apparent violation of the SCL.

## Conclusion

Germanic syllable structure is remarkably stable across the various languages. The template in (1) basically suffices to describe all of them, with the possible exception of the appendix position, and some variation among languages as to how sonority restrictions regulate the possibility of adjacent segments. I have not been able to find a good overview of consonant cluster phonotactics in earlier stages of Germanic, but it seems safe to say that also over the course of time the system has remained fairly stable.

It is not entirely clear what it means. As other chapters in this volume attest, the Germanic languages have shifted in all kinds of directions in other dimensions, and Germanic clearly has been in contact with other languages (Slavic, Romance) which work with very different templates. Consonant phonotactics thus seems to be subject to some kind of 'macroparameter' which is not very flexible.

It might be interesting to also attempt a theoretical interpretation of the smaller differences which we do find in Germanic, for instance along the lines of Alber and Meneguzzo (2016)'s optimality-theoretic approach. This would basically have to account for the slightly different role that sonority sequencing and syllable contact play in the various languages. Why it is these sonority related issues that are most variable, is an answer which to my knowledge no phonological theory has an answer to.

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